

**Stina Wallin**

# **Occupational self-efficacy among ageing workers**

A resource for a full working life





## Stina Wallin

Born 1968

### Previous studies and degrees

Degree of Master of Medical Science, Physiotherapy, Umeå University, 2014

Physiotherapist, Bachelor of Healthcare, Arcada University of Applied Sciences, 2003

Registered Physiotherapist, Vasa Svenska Hälsovårdsläroanstalt, 1994

Trained Masseur, Korsnäs Kurscentral, 1989

Registered Child Nurse, Vasa Svenska Sjukvårdsläroanstalt, 1987

The author is specialised in management of prolonged pain (2006), occupational health (2006), and Mechanical Diagnosis and Therapy (MDT) (2007). She has worked at a rehabilitation clinic (1995–2014), and in occupational health care (2015–2018). Currently, the author works as a university lecturer in Health Sciences at Åbo Akademi University.



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*If you think you can, you probably can.  
If you think you can't, well that self-limiting and self-fulfilling belief  
might well stop you doing something you're perfectly capable of doing.*

*Alfred Bandura*



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Det är med stor tacksamhet och ödmjukhet som jag idag skriver mitt förord. Avhandlingsarbetet har varit en väldigt intressant, spännande, lärorik och också utmanande resa. En resa där jag de allra flesta dagar trivts otroligt bra med mina åtaganden och haft väldigt roligt. Men med inslag av dagar då jag funderat hur jag hamnade här, hur jag i all värld egentligen tänkte. Det är en resa jag kommer att minnas med värme, och med en gnutta vemod, nu när jag seglar i hamn.

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Det finns många som stöttat mig på min avhandlingsresa. Jag vill börja med att tacka de respondenter som deltagit i studierna. Utan era värdefulla bidrag hade denna avhandling inte varit möjlig. Tack för att ni ville hjälpa till att sätta äldre arbetstagare i centrum.

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och glädje, och ibland tårar, som vi delat genom åren. Våra veckoträffar var ovärderliga under pandemitiden. Jag vill också tacka doktorandvännerna Annika och Janina för ert stöd under resan. Tack även till alla andra nuvarande och tidigare kollegor på vårdvetenskapen och på vår våning. Ni som delat med er av kunskap i akademiska diskussioner. Ni som delat icke-akademiska diskussioner och skratt under de ack så viktiga och lättsamma kaffe- och lunchpauserna. Ni som öppenhjärtigt välkomnade mig in i gemenskapen.

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Gullbjärji, Vörå, den 4 oktober, 2023

*Stina Wallin*



# Abstract

## Wallin Stina, 2023: Occupational self-efficacy among ageing workers – A resource for a full working life

Supervisors:

Professor Lisbeth Fagerström, PhD, RN, Åbo Akademi University

Associate Professor Annacristine Fjellman-Wiklund, PhD, RPT, Umeå University, Sweden

**Background:** Occupational self-efficacy refers to workers' beliefs in their own capabilities to successfully perform tasks related to their occupational domain. Self-efficacy determines how people act in different situations and persevere in the face of obstacles. Retaining ageing workers longer in their working lives has become a major concern due to increasing shortage of work staff. Work ability is important for ageing workers, since it predicts longer working lives, and declining work ability among ageing workers is often caused by difficulties in adapting work-related changes to changes in individual resources. To have longer working lives, workers must also be motivated to work. Occupational self-efficacy is crucial for adapting to changes in one's working life and meeting job demands and is positively related to work motivation. However, occupational self-efficacy has been less studied among ageing workers.

**Aim:** The overall aim of this thesis is to explore and deepen the understanding of occupational self-efficacy as a resource for a full working life among ageing workers. An additional aim is to explore the relationships between occupational self-efficacy for a full working life, work ability and work motivation.

**Methods:** A convergent mixed methods design was applied in this thesis. Quantitative and qualitative data were concurrently collected in 2018 using a cross-sectional survey ( $n = 359$ ). The included samples of ageing workers, that is workers aged 45 years and older, consisted of home care workers and engineers. The questionnaire included validated and reliable measuring scales (the Work Ability Index, the Occupational Self- Efficacy Scale – Short Form, and the Utrecht Work Engagement Scale), and four open-ended questions concerning what positively and negatively affects occupational self-efficacy for a full working life and work motivation. Quantitative and qualitative data were of equal importance and were integrated into the aim, data analysis, results, and discussion. In Study I, binary logistic regression was performed to examine the relationships between work ability, occupational self-efficacy, and work engagement. In Studies II and III, a mixed methods design with a qualitative to quantitative approach was used to analyse the collected data from the participants. First, the qualitative data was analysed separately for each open-ended question and separately for home care workers and engineers using an inductive manifest content analysis. The qualitative analyses were based on 1,634 utterances from the participants about what positively and negatively affects their occupational self-efficacy for a full working life, and 1,937 utterances about what positively and negatively affects

their work motivation. Next, the findings were integrated by transforming the qualitative data into quantitative data to examine which of the emerged aspects were most prominent. The integrated results from home care workers and engineers were further compared with each other and finally merged and compared in a joint display for final interpretation.

**Results:** The findings in Study I showed statistically significant relationships between work ability, occupational self-efficacy, and work engagement. Higher occupational self-efficacy was more often related to higher work ability. According to Studies II and III, the most prominent aspects of occupational self-efficacy for a full working life were health, and working conditions (physical, mental, social, and organisational) that eventually affect health either positively or negatively. Meaningfulness of work, intrinsic motivation, competence, and private life were also vital aspects. Similarly, the most prominent aspects of work motivation were working conditions, stimulating and meaningful work, and competence. Health declines and high workloads that threaten health seemed to decrease work motivation to a higher degree than good health improved it. The findings were mostly similar for both home care workers and engineers, despite their differences in work content, work challenges, work context, education, and gender. The integration showed that most of the key findings for occupational self-efficacy for a full working life, work motivation and the work ability model used in this thesis (the Work Ability House) were mostly consistent. Meaningfulness of work, private economy, and upcoming retirement expand the Work Ability House model.

**Conclusion:** The main findings of this thesis emphasise the value of occupational self-efficacy as a resource for ageing workers' full working life. The main areas that need to be considered to improve occupational self-efficacy for a full working life are primarily health, and working conditions that eventually affect health, as well as meaningfulness of work, intrinsic motivation, and competence. The findings suggest that there is also a need to reflect on individual essential work-related health issues at a deeper level, as well as reflect on the meaningfulness of work, and what enhances both, in order to support the movement towards a perceived better health and work ability for a full working life. This includes reflecting on and supporting the emerged aspects of occupational self-efficacy for a full working life in relation to the four sources of self-efficacy belief development according to the Bandura's theory: mastery experiences, vicarious experiences, verbal persuasion, and coping with physiological and affective states. These deeper reflections should be undertaken by the workers themselves, close supervisors and employers, as well as occupational health and HR professionals, to promote long working lives.

**Keywords:** occupational self-efficacy, personal resource, work ability, work motivation, ageing workers, older workers, full working life, occupational gerontology, occupational health, quantitative approach, qualitative approach, mixed methods approach, health sciences, caring science

# Abstrakt

## Wallin Stina, 2023: Äldre arbetstagares arbetsrelaterade self-efficacy – En resurs för att nå ett helt arbetsliv

Handledare:

Professor Lisbeth Fagerström, PhD, Åbo Akademi

Docent Annacristine Fjellman-Wiklund, PhD, Umeå universitet, Sverige

**Bakgrund:** Arbetsrelaterad self-efficacy definieras som arbetstagares tilltro till egen förmåga (på svenska även självförmåga) att framgångsrikt klara av aktiviteter inom sitt arbetsområde. Self-efficacy beskriver hur människor agerar i olika situationer och hur de uthärdar när de möter hinder. Det är angeläget att äldre arbetstagare hålls längre kvar i arbetslivet på grund av en ökande brist på arbetskraft. Arbetsförmåga predicerar längre arbetsliv. Försämringar av arbetsförmåga hos äldre arbetstagare orsakas ofta av svårigheter att anpassa arbetsrelaterade förändringar till förändringar i de individuella resurserna. För att längre arbetsliv ska vara möjligt bör arbetstagare också vara motiverade att arbeta. Arbetsrelaterad self-efficacy har visat sig vara betydelsefull för lyckad anpassning sig till nutida föränderliga arbetsliv, för att möta arbetskrav och för arbetsmotivation. Trots detta är arbetsrelaterad self-efficacy hos äldre arbetstagare relativt lite undersökt.

**Syfte:** Det övergripande syftet med denna doktorsavhandling är att undersöka och fördjupa förståelsen av äldre arbetstagares arbetsrelaterade self-efficacy som en resurs för att nå ett helt arbetsliv och att utforska sambandet mellan arbetsrelaterad self-efficacy till att nå ett helt arbetsliv, arbetsförmåga och arbetsmotivation.

**Metoder:** I avhandlingen tillämpades en konvergent mixad metoddesign (mixed methods). Det kvantitativa och kvalitativa datamaterialet samlades in vid samma tillfälle år 2018 med hjälp av ett frågeformulär ( $n = 359$ ). Det inkluderade urvalet av äldre arbetstagare, dvs. 45 år och äldre, bestod av hemvårdare och ingenjörer. Frågeformuläret omfattade de validerade och reliabla mätskalorna Arbetsförmågeindex, Occupational Self Efficacy Scale - Short Form och Utrecht Work Engagement Scale samt fyra öppna frågor om vad som inverkar positivt och negativt på arbetsrelaterad self-efficacy till att nå ett helt arbetsliv och på arbetsmotivation. Både det kvantitativa och kvalitativa datamaterialet var av lika stor betydelse och integrerades i syfte, dataanalys, resultat och diskussion. I studie I användes logistisk regressionsanalys för att undersöka sambandet mellan arbetsförmåga, arbetsrelaterad self-efficacy och arbetsengagemang. Studierna II och III hade en mixad metoddesign med ett kvalitativt till kvantitativt tillvägagångssätt. Initialt analyserades det kvalitativa datamaterialet separat för hemvårdare och ingenjörer samt för varje öppen fråga med hjälp av induktiv manifest innehållsanalys. De kvalitativa analyserna baserades på 1634 yttranden från deltagarna om vad som positivt och negativt påverkar deras arbetsrelaterade self-efficacy till att nå ett helt arbetsliv och 1937 yttranden om

vad som positivt och negativt påverkar deras arbetsmotivation. Därefter integrerades resultaten genom att transformera de kvalitativa analysresultaten till kvantitativa data för att undersöka vilka aspekter som var de mest framträdande. De integrerade resultaten från hemvårdare och ingenjörer jämfördes ytterligare med varandra och sammanslogs slutligen till en ny helhet där resultaten från alla tre delstudier jämfördes för en slutlig tolkning.

**Resultat:** Resultaten i studie I visade ett statistiskt signifikant samband mellan arbetsförmåga, arbetsrelaterad self-efficacy och arbetsengagemang. Högre arbetsrelaterad self-efficacy hade samband med bättre arbetsförmåga. Studierna II och III visade att de mest framträdande aspekterna för arbetsrelaterad self-efficacy till att nå ett helt arbetsliv var hälsa och arbetsförhållanden vilka småningom påverkar hälsan endera positivt eller negativt. Dessutom var meningsfullhet i arbetet, inre motivation och kompetens betydande aspekter. Mest framträdande för arbetsmotivation var likaså arbetsförhållanden, stimulerande och meningsfullt arbete samt kompetens. Försämrad hälsa och hög arbetsbelastning som hotar hälsan verkade minska arbetsmotivationen i högre grad än vad en god hälsa förbättrade den. Resultaten var överlag lika för både hemvårdarna och ingenjörerna trots skillnader i arbetsinnehåll, arbetskrav, arbetskontext, utbildning och kön. Integrationen visade att de huvudsakliga resultaten för arbetsrelaterad self-efficacy till att nå ett helt arbetsliv, arbetsmotivation och den modell för arbetsförmåga som användes i avhandlingen (Arbetsförmågehuset) var mestadels överensstämmande. Meningsfullhet i arbetet, privatekonomi och förestående pensionering utvidgar modellen Arbetsförmågehuset.

**Slutsatser:** De huvudsakliga resultaten i denna avhandling understryker betydelsen av arbetsrelaterad self-efficacy som en viktig resurs för att äldre arbetstagare ska kunna arbeta ett helt arbetsliv. Hälsa och arbetsförhållanden som påverkar hälsan är de betydelsefullaste områdena för att förbättra arbetsrelaterad self-efficacy till att nå ett helt arbetsliv. Meningsfullhet i arbetet, inre motivation och kompetens är likaså av stor betydelse. Resultaten indikerar ett behov av att reflektera för individen betydelsefulla arbetsrelaterade hälsofrågor på djupare nivåer och arbetets meningsfullhet, samt vad som förstärker dem, för att stödja arbetstagaren att röra sig mot en bättre upplevd hälsa och arbetsförmåga för ett helt arbetsliv. Detta inbegriper att reflektera över och stödja de framkomna aspekterna för arbetsrelaterad self-efficacy till ett helt arbetsliv utifrån de fyra källor som enligt Banduras teori utvecklar self-efficacy (tidigare erfarenheter, observation av andra, verbal övertalning samt hantering av fysiska och psykiska reaktioner). I ett aktivt arbete för att främja långt arbetsliv bör såväl arbetstagaren själv som närmaste ledare, arbetsgivare samt personal inom företagshälsovård och HR företa dessa djupare reflektioner.

**Nyckelord:** arbetsrelaterad self-efficacy, arbetsrelaterad tilltro till egen förmåga, arbetsrelaterad självförmåga, personlig resurs, arbetsförmåga, arbetsmotivation, äldre arbetstagare, helt arbetsliv, arbetshälsa, kvantitativ metod, kvalitativ metod, mixed methods, hälsovetenskap, vårdvetenskap

# Tiivistelmä

## Wallin Stina, 2023: Ikääntyneiden työntekijöiden ammatillinen minäpystyvyys – Täyden työuran voimavara

Ohjaajat:

Professori Lisbeth Fagerström, PhD, Åbo Akademi

Dosentti Annacristine Fjellman-Wiklund, PhD, Umeå universitet, Ruotsi

**Tausta:** Ammatillisella minäpystyvyydellä tarkoitetaan työntekijöiden luottamusta omiin kykyihinsä suoriutua onnistuneesti heidän ammattialaansa liittyvistä työtehtävistä. Minäpystyvyys selittää, miten ihmiset toimivat erilaisissa tilanteissa ja kestävät esteiden edessä. Ikääntyvien työntekijöiden pitämisestä mukana työelämässä pidempään on tullut suuri huolenaihe nykyisessä jatkuvasti muuttuvassa työelämässä, jossa henkilöstöpula lisääntyy. Työkyky on tärkeää ikääntyville työntekijöille, koska se ennustaa pidempää työuraa. Ikääntyvien työntekijöiden työkyvyn heikkeneminen johtuu usein vaikeuksista mukauttaa työhön liittyviä muutoksia yksilön voimavarojen muutoksiin. Jotta työura piteneisi, työntekijän on myös oltava motivoitunut työskentelemään. Ammatillinen minäpystyvyys on tärkeää työelämän muutoksiin sopeutumisessa, työn vaatimuksiin vastaamisessa ja positiivisessa yhteydessä työmotivaatioon. Ammatillista minäpystyvyyttä on kuitenkin tutkittu suhteellisen vähän ikääntyvien työntekijöiden keskuudessa.

**Tavoitteet:** Tämän väitöstutkimuksen yleisenä tavoitteena on tutkia ja syventää ymmärrystä ammatillisesta minäpystyvyydestä täyden työuran voimavarana ikääntyvien työntekijöiden kontekstissa. Lisäksi tavoitteena on tutkia täyden työuran ammatillisen minäpystyvyyden, työkyvyn ja -motivaation välisiä suhteita.

**Menetelmät:** Tässä väitöstutkimuksessa käytettiin konvergenttia monimenetelmä-tutkimusta (convergent mixed methods). Kvantitatiivinen ja kvalitatiivinen aineisto kerättiin samanaikaisesti vuonna 2018 poikkileikkaustutkimuksella (n = 359). Mukana olleiden ikääntyvien työntekijöiden, eli 45-vuotiaiden ja sitä vanhempien työntekijöiden, otokset koostuivat kotihoidon työntekijöistä ja insinööreistä. Kyselylomakkeeseen sisältyivät validoidut ja luotettavat arviointimenetelmät Työkykyindeksi, Occupational Self- Efficacy Scale - Short Form ja Utrecht Work Engagement Scale sekä neljä avointa kysymystä, jotka koskivat sitä, mikä vaikuttaa myönteisesti tai kielteisesti ammatilliseen minäpystyvyyteen täyden työuran ja työmotivaation kannalta. Kvantitatiiviset ja kvalitatiiviset tiedot olivat yhtä tärkeitä, ja ne yhdistettiin tavoitteessa, tietojen analysoinnissa, tuloksissa ja keskustelussa. Tutkimuksessa I suoritettiin binäärinen logistinen regressioanalyysi työkyvyn, ammatillisen minäpystyvyyden ja työn imun välisen suhteen tutkimiseksi. Tutkimuksissa II ja III suoritettiin erikseen monimenetelmä-tutkimus, jossa käytettiin kvalitatiivista ja kvantitatiivista lähestymistapaa kotihoidon työntekijöiden ja insinöörien tulosten analysoimiseksi. Ensin kunkin avoimen kysymyksen laadullinen aineisto analysoitiin erikseen kotihoitajille ja insinööreille manuaalisesti kvalitatiivisen induktiivisen manifestinen sisällönanalyysin avulla.

Laadulliset analyysit perustuivat 1634 ilmaisuun siitä, mikä vaikuttaa myönteisesti tai kielteisesti heidän ammatilliseen minäpystyvyyteensä täyteen työuraan, ja 1937 ilmaisuun siitä, mikä vaikuttaa myönteisesti tai kielteisesti heidän työmotivaatioonsa. Seuraavaksi tulokset integroitiin muuttamalla laadullinen aineisto määrälliseksi aineistoksi, jotta voitiin tutkia, mitkä esiin tulleista näkökohdista olivat merkittävimpiä. Kotihoidon työntekijöiden ja insinöörien integroitua tuloksia verrattiin sen jälkeen toisiinsa, ja lopuksi ne yhdistettiin ja vertailtiin yhdistetyssä taulukossa lopullista tulkintaa varten.

**Tulokset:** Tutkimuksen I tulokset osoittivat tilastollisesti merkittävän yhteyden työkyvyn, ammatillisen minäpystyvyyden ja työn imun välillä. Korkeampi ammatillinen minäpystyvyys oli useammin yhteydessä korkeampaan työkykyyn. Tutkimusten II ja III mukaan täyden työuran kannalta ammatillisen minäpystyvyyden merkityksellisimmät tekijät olivat terveys ja työolot, jotka lopulta vaikuttavat terveyteen joko myönteisesti tai kielteisesti. Lisäksi työn mielekkyys, sisäinen motivaatio ja pätevyys olivat tärkeitä näkökohtia. Vastaavasti työmotivaation merkittävimmät tekijät olivat työolot, innostava ja mielekäs työ sekä pätevyys. Terveiden heikkeneminen ja terveyttä uhkaava suuri työmäärä näyttivät vähentävän työmotivaatiota enemmän kuin hyvä terveys sitä paransi. Tulokset olivat enimmäkseen samankaltaisia sekä kotihoidon työntekijöiden että insinöörien kohdalla, vaikka työn sisältö, työn haasteet, työympäristö, koulutus ja sukupuoli erosivat toisistaan. Suurin osa kaikkien tutkimusten keskeisistä havainnoista on yhteneväisiä ja perustavanlaatuisia näkökohtia sekä täyden työuraan liittyvän ammatilliseen minäpystyvyyteen, työmotivaatioon että valittuun työkykymalliin liittyen. Työn mielekkyys, yksityistalous ja tuleva eläkkeelle siirtyminen laajentavat olemassa olevaa Työkykytalon mallia.

**Johtopäätökset:** Tämän tutkielman tärkeimmät tulokset korostavat ammatillista minäpystyvyyttä ikääntyvien työntekijöiden täyden työuran voimavarana. Tärkeimmät alueet, jotka on otettava huomioon ammatillisen minäpystyvyyden parantamiseksi täyttä työuraa varten, ovat ennen kaikkea terveys ja siihen vaikuttavat työolot, työn mielekkyys, sisäinen motivaatio ja pätevyys. Tulokset osoittavat, että on tarpeen pohtia yksilöllisiä olennaisia työhön liittyviä terveysasioita syvemmällä tasolla sekä työn mielekkyyttä, ja sitä, mikä niitä parantaa, jotta voidaan tukea kulkua kohti koettua parempaa terveyttä ja työkykyä. Tähän kuuluu myös ammatillisen minäpystyvyyden esiin tulleiden näkökohtien pohtiminen ja tukeminen täysipainoisen työelämän kannalta suhteessa Banduran teorian neljään lähteeseen, jotka kehittävät minäpystyvyyttä (aiemmat kokemukset, mallioppiminen, verbaalinen suostuttelu sekä fyysisten ja psykologisten reaktioiden hallinta). Työntekijöiden itsensä, lähiesihenkilöiden, työnantajien sekä työterveyshuollon- ja henkilöstöhallinnon ammattilaisten olisi aktiivisesti ryhdyttävä näihin syvällisempiin pohdintoihin pitkien työurien edistämiseksi.

**Avainsanat:** ammatillinen minäpystyvyys, henkilökohtainen voimavara, työkyky, työmotivaatio, ikääntyvät työntekijät, ikääntyneet työntekijät, työgerontologia, työterveys, täysi työura, kvantitatiivinen lähestymistapa, kvalitatiivinen lähestymistapa, monimenetelmä tutkimus, terveystieteet, hoitotiede

# List of original publications

## Article I

Wallin, S., Rauhala, A., Fjellman-Wiklund, A., Nyman, P., & Fagerström, L. (2021). Occupational self-efficacy and work engagement associated with work ability among an ageing workforce: a cross-sectional study. *Work*, 70(2), 591–602. <https://doi.org/10.3233/WOR-213595>

## Article II

Wallin, S., Fjellman-Wiklund, A., & Fagerström, L. (2022). Work motivation and occupational self-efficacy belief to continue working among ageing home care nurses: a mixed methods study. *BMC Nursing*, 21, 31. <https://doi.org/10.1186/s12912-021-00780-3>

## Article III

Wallin, S., Fjellman-Wiklund, A., & Fagerström, L. (2023). Aging engineers' occupational self-efficacy—a mixed methods study. *Frontiers in Psychology*, 14, 1152310. <https://doi.org/10.3389/fpsyg.2023.1152310>

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# 1. Introduction

What makes people capable of overcoming challenges in life? What makes them continue even when they are facing great difficulties? Can the same approach also be applied for a longer working life? Belief in our own capabilities, also known as self-efficacy belief, is a theory that explains how people act in different situations and persevere when they are facing obstacles (Bandura, 1997, 2012). Self-efficacy is considered an important personal resource for workers (Bakker & Demerouti, 2017, Rigotti et al., 2008), and crucial in coping with the continuous changes in current working life (Del Libano et al., 2012; Turgut & Neuhaus, 2020). The continuously changing working life causes challenges for every worker but particularly for the ageing workforce (Ilmarinen, 2019). In higher age, difficulties in adapting work-related changes to changes in the individual's resources often cause work ability declines (Ilmarinen, 2012). Work ability, defined as a balance between job demands and the individual's resources (Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015; Ilmarinen et al., 2005), is significant for ageing workers since it has high predictive power for longer working lives (Brzykcy et al., 2019; Eurofound, 2023; FIOH, 2023; Ilmarinen & Ilmarinen, 2015; Nivalainen, 2021; Prakash et al., 2019). Occupational self-efficacy (Rigotti et al., 2008) is considered essential to meet job demands (Fullemann et al., 2015). However, it is seldom included in practices to support ageing workers (Cloostermans et al., 2015).

Another major issue that impacts current working life is the ageing population in European society, which causes an increasing shortage in the workforce (Eurofound, 2021, 2023; EU, 2023; Kühn et al., 2018). To address the increasing need for workers, efforts to support prolonged working lives are already taken at the individual, organisational, national, and international levels (Eurofound, 2023; FIOH, n.d.; OECD, 2019). Many states have raised the official retirement age (Crawford et al., 2016; OECD, 2019). In the pension reform that took place in Finland in 2017, the goal was to raise the average retirement age to 62.4 years (Finnish Centre for Pensions, n.d.). In 2020, the average labour market exit age had already increased to 63.8 years (Kannisto & Vidlund, 2022). Still, Finnish people leave working life earlier compared to people in other Nordic countries (FIOH, 2023). Nevertheless, there is a growing number of older workers who want to prolong their working career (Carlstedt et al., 2018; Eurofound, 2022; Nivalainen, 2021; OECD, 2019), although this progress is uncertain (OECD, 2019). To continue working, the worker must also have a willingness to work (Nilsson, 2020). A common false negative stereotype is that older workers are less motivated (Ng & Feldman, 2012) and less engaged in work (Bakker, Demerouti, & Sanz-Vergel, 2014). Nevertheless, such age stereotypes increase retirement intentions (Bal et al., 2015; Ng & Feldman, 2012; von Hippel et al., 2013; Weiss et al., 2022).

A sustainable working life refers to workers not only continue to work throughout a full working life (Eurofound, 2015), but also retire in good health (Andersen et al., 2020). Research has already provided substantial evidence on what influences a sustainable working life, such as good physical, mental, social and organisational working conditions, a good balance between working conditions and workers' individual needs and resources throughout their working life, as well as self-fulfilment, development, work-life balance, and the private economy (for a comprehensive overview, see Eurofound, 2021, 2023; Fisher et al., 2016; Kühn, 2018; Laaksonen et al., 2022; Neupane et al., 2023; Nilsson, 2020, 2021). The focus of this thesis is not to verify these factors, but rather to explore whether occupational self-efficacy can act as an additional resource for workers to cope with and overcome challenges in working life, and thus for a full working life. In this thesis, a 'full working life' refers to workers continuing to work until their expected retirement age.

The review of previous research on self-efficacy prior to this thesis, revealed that self-efficacy is an important personal resource for workers (Bakker & Demerouti, 2017; Rigotti et al., 2008), that, for example, positively affects work motivation (Cetin & Askun, 2018; Hadi, 2023; Salanova et al., 2011) and engagement (Bakker, Demerouti, & Sanz-Vergel, 2014). However, few studies were found about occupational self-efficacy among ageing workers.

Hence, the overarching aim of this thesis is to explore and deepen the understanding of occupational self-efficacy as a resource for a full working life in the context of ageing workers. A mixed methods design is applied since neither quantitative nor qualitative methods alone can answer the overarching aim of the thesis (Creswell & Plano Clark, 2018). Three studies are included in this work. The first study investigated the relationship between ageing workers' work ability, occupational self-efficacy, and work engagement. The second and third studies explored resources and barriers to occupational self-efficacy for a full working life and to work motivation described by ageing home care workers (Study II) and engineers (Study III). The findings from the three studies are integrated and compared to reach a deeper understanding of occupational self-efficacy as a resource for ageing workers and longer working lives.

## 2. Background

To understand self-efficacy as a resource for a full working life, its relationship to work- and health-related outcomes, as well as to ageing in working life, needs to be presented. The sample included in this thesis is also described in this chapter.

### 2.1 Self-efficacy in working life

Self-efficacy is considered an important personal resource for workers (Bakker & Demerouti, 2017; Rigotti et al., 2008). Self-efficacy contributes to job satisfaction (Guarnaccia et al., 2018; Yeves et al., 2019) and wellbeing at work (Bakker & Demerouti, 2017; Salanova et al., 2011), also in jobs with high demands (Onyishi et al., 2018). Several studies have supported that self-efficacy leads to better motivation (Cetin & Askun, 2018; Hadi, 2023; Salanova et al., 2011) and job performance (Cetin & Askun, 2018; Hadi, 2023; Schönfeld et al., 2017). A positive relationship between occupational self-efficacy (OSE) and work engagement has also been found in several studies (Alessandri et al., 2015; Bakker et al., 2011; Guarnaccia et al., 2018; Liu & Huang, 2019), especially when workers are facing high job demands (Xanthopoulou et al., 2013). Thus, improving workers' self-efficacy may help workers meet emotional demands at work (Xanthopoulou et al., 2013) and facilitate their work engagement (Alessandri et al., 2015; Xanthopoulou et al., 2013). Previous research has shown that OSE can be a predictor of work engagement as well (Liu & Huang, 2019).

Because of the significant role of self-efficacy, scholars have recommended that interventions to increase performance in working life should start with evaluating individual self-efficacy beliefs and, thereafter, eventually increase them (Alessandri et al., 2015). Only after that should a programme aimed to increase work motivation or engagement be started. This conclusion was drawn from a study where work self-efficacy was found crucial for turning positive orientation—that is, facing reality from a positive stance—and work engagement into successful job performance (Alessandri et al., 2015). When work self-efficacy levels were high or medium, work engagement partially mediated this positive orientation on job performance, but this was not the case when self-efficacy beliefs were low. The researchers stated that workers with high work engagement may experience failures at work if their self-efficacy is low (Alessandri et al., 2015). In another study, work engagement also mediated professional self-efficacy on job performance (Bernales-Turpo et al., 2022).

Work engagement is considered close to the concept of work motivation (Mauno et al., 2007). Intrinsic motivation—that is, to perform an activity for its own sake to achieve satisfaction (Deci et al., 2017)—is crucial for continuing working until retirement age (van den Berg, 2011). Ageing workers are found to be more motivated by intrinsic factors (Guglielmi et al., 2016). However, factors that influence work motivation may differ in different contexts and cultures (Toode

et al., 2011). Thus, work motivation needs to be understood in the relevant work context.

A research gap regarding personal resources and work ability was highlighted by Converso et al. (2018). However, their previous study showed a positive relationship between personal resources, such as work-related self-efficacy, hope, optimism, and resilience, and work ability in a sample of nurses ranging from 23–64 years of age (Converso et al., 2018). The scholars concluded that personal resources, together with job resources, might reduce the negative effect of age on work ability. Similarly, another study found that personal resources, together with job resources, might have a long-term effect on work ability (Airila et al., 2014). In this study, the personal resource of self-esteem predicted work ability, mediated by work engagement. Also, in another study on patients in surgical care, aged 41–58 years old, self-efficacy contributed to increased work ability (Ng et al., 2015).

Work ability (Brzykcy et al., 2019; Ilmarinen & Ilmarinen, 2015; Prakash et al., 2019), as well as health, are significant for remaining in working life until retirement age (Carlstedt et al., 2018; Eurofound, 2023) or even beyond (Staudinger et al., 2016). The importance of maintaining work ability is especially stressed in professions with high physical and mental workloads (Ministry of Social Affairs and Health, n.d.). However, one major concern is whether the health of ageing work staff will support longer working lives (Laaksonen et al., 2022). Since long-lasting health problems increase with age (Eurostat Statistics Explained, 2022; WHO, 2018), the number of workers with long-lasting health problems will increase (Ilmarinen, 2012; Sundstrup et al., 2017). There is also a higher risk for early retirement when having one or more illnesses (Neupane et al. 2022). According to Eurostat Statistics, 39% of 45–64 year olds in European Union countries had a self-reported long-standing health problem in 2021 (Eurostat Statistics Explained, 2022). Corresponding statistics for Finnish people in the same age group showed that as many as 55% had one or more long-lasting health problems. However, only 24% of them reported that their health problems caused long-standing limitations. As many as 69% reported good or very good health (Eurostat Statistics Explained, 2022).

However, not all health problems necessary negatively affect work ability (Laaksonen et al., 2022). Although work ability tends to decrease with age, a high individual variability also exists (Converso et al., 2018; van den Berg et al., 2009). Finnish people do have less health problems and better work ability compared to the beginning of the 2000s (Laaksonen et al., 2022). Additionally, health problems seem to affect working life less than before, and workers do work longer despite health problems and decreased work ability.

## 2.2 Self-efficacy and health

Self-efficacy is related to several positive health-related outcomes. Previous research has shown that self-efficacy is effective in both short- and long-term health promotion and health behaviour change (Affendi et al., 2018; Bandura, 2004; Holmes et al., 2014; Schönfeld et al., 2017; Sheeran et al., 2016). For instance, people with high health-related self-efficacy are more adherent to healthy self-management behaviour in chronic diseases (Wang et al., 2021) such as diabetes mellitus (Devarajoo & Chinna, 2017) and hypertension (Mensorio et al., 2019). Based on the findings in a systematic review on the effectiveness of pain management programmes for people with musculoskeletal chronic pain, self-efficacy was considered prognostic for physical functioning (Hayward & Siobhan, 2021). On the other hand, the evidence for outcomes on disability, health-related quality of life, and pain was weak, and no evidence was found for psychological variables and disease severity.

Furthermore, self-efficacy is shown to be a predictor of return-to-work after long-term sickness absence (Brouwer et al., 2010; Jeong et al., 2019; Volker et al., 2015). Workers with high self-efficacy are more likely to return to work sustainably after ill health due to musculoskeletal disorders and common mental disorders, compared to those with low self-efficacy (Etuknwa et al., 2019). Scholars have suggested that enhancing self-efficacy is valuable in reducing absenteeism from work (Borgogni et al., 2013).

Self-efficacy is also considered mentally protective. Previous research has indicated that self-efficacy contributes to resistance against stress, anxiety, and challenging situations (e.g. Bandura, 2012; Schönfeld et al., 2017). By increasing OSE, perceived mental strain might decrease, and individual and organisational well-being might be promoted (Tomas, 2021). In a study that investigated a stress management programme, OSE mediated the positive effect of the programme on stress (Nixon et al., 2022). Another study found that self-efficacy was protective in preventing burnout for workers, and even more for workers with more years of work experience and older workers compared to younger ones (Shoji et al., 2016). The older workers had a stronger established link between their self-efficacy belief to deal with demanding events and a lower risk of burnout. In a study on the effect of a stressor-detachment model, OSE predicted psychological disengagement from work, even though OSE did not moderate the impact of high workload on psychological disengagement (Clauss et al., 2021). These findings indicated that people with high OSE detach better since they worry less about work-related issues during time off from work.

There is also research indicating that self-efficacy can either increase or decrease psychophysiological stress response depending on whether one judges a stressor as a threat or a challenge (Schönfeld et al., 2017). Even though support of initial low levels of self-efficacy provides beneficial effects, initial high self-efficacy might result in poorer performance to save one's resources if the effort

needed to succeed is perceived as very high. Past performance, task difficulty and invested effort, the subjective importance of success, the probability of success, and motivation for the task, as well as feedback from others and the context, all influence the relationship between self-efficacy and performance. Whether self-efficacy should be increased or decreased is, thus, an individual issue (Schönfeld et al., 2017).

## **2.3 Self-efficacy and ageing in working life**

Self-efficacy scores might change over time. Some studies have reported higher levels of OSE among older workers compared to younger ones (Chiesa et al., 2016; Fullemann et al., 2015). Conversely, age-related decline has been found in general self-efficacy (Dingemans & Henkens, 2015). According to a meta-meta-analysis, individual self-efficacy scores can increase over time due to social development trends (Jiao et al., 2021). This may reduce the effects of interventions, because scores of self-efficacy increase both among intervention groups and control groups, as well as reduce the predictive effect of self-efficacy regarding, for example, job performance. Negative age attitudes also tend to affect self-efficacy. Significant relations between negative age attitudes and lower self-efficacy are found (Fasbender & Gerpott, 2021; Weber et al., 2019, 2020), both regarding workers' own (Paggi & Jopp, 2015) and organisational negative attitudes towards ageing (Chiesa et al., 2016). However, some studies showed no effect of age stereotypes on self-efficacy (Weber et al., 2019).

Ageing in working life can be understood in different ways. According to a review by Nilsson (2016), there are four concepts of ageing that seem to be important for longer working lives: biological, social, cognitive, and chronological age. Biological ageing refers to workers' individual health, and ageing of body cells and functions, and whether it is appropriate to remain working considering the physical and mental work environment, work pace, and working hours. Social ageing concerns social inclusion, expectations, and a person's identity regarding different social positions throughout life. Social ageing also includes the attitudes of managers and organisations, as well as family, leisure, and the surrounding. Cognitive ageing relates to the workers' cognitive or mental development throughout different life stages. It includes competence, skills, and motivating and meaningful activities in work that influence motivation and trust to learn new things. Chronological age refers to calendar age, and relates to retirement systems, organisational policies, economic incentives, and personal financial circumstances (Nilsson, 2016).

There is no universally accepted definition of the term 'ageing workers' (Bohlinger & Van Loo, 2010). Definitions differ depending on the theoretical perspective, discipline, practical interests, and empirical considerations. Seen from a work-life perspective, ageing workers constitute a group of people in the second half of their working careers and are described by chronological age. Based on age groupings used in European and international statistics, ageing



workers are defined as being between 45 and 65 years old (Bohlinger & Van Loo, 2010). From the perspective of occupational health, workers aged 45 years and older have usually been described as ageing workers (Ilmarinen, 2001). The term 'ageing workers' encompasses a period where significant changes in function usually occur that can affect personal resources and work ability. However, in this period of age, there are still possibilities to improve health and functional capacity—that is, preconditions and possibilities to complete challenges, tasks, and hobbies enabling an active life (Ilmarinen, 2005). Another often used term for the ageing workforce is 'older workers', which has been defined as workers aged 55 years and older by the European Commission, Eurostat, and the International Labour Organization (Dubois et al., 2017). The term 'older workers' has been used in public discussions, regulations, and literature (Ilmarinen, 2005). The justification for the term 'older worker' is that in many countries the age of 55 has corresponded to a decline in the participation rate in the labour market (Kooij et al., 2008), and that two-thirds of individuals in this age group have at least one diagnosed chronic symptom that may negatively affect their work ability (Ilmarinen, 2005).

In this thesis, the term 'ageing worker' is used to generally describe the workforce aged 45 years and older, with no distinction between the groups of 45–54 years old and 55 years and older workers. However, the term 'ageing' is used regarding workers of 45–54 years old and 'older' for the 55 years and older workers to dichotomise the groups in the specific statistical analyses in Study I.

## **2.4 Home care workers and engineers on demand**

To meet the needs of a changing society and the significant shortage of working staff in Europe, there is a growing demand for home care workers (EU, 2023; Genet et al., 2012; Rest et al., 2012; Vehko et al., 2017) and engineers (Cedefop, 2020).

Many countries have increased or aim to increase the supply of home care services (Genet et al., 2012; Rest et al., 2012; Vehko et al., 2017) due to the expected escalation in the need for care as the population gets older (Publications Office of the European Union, 2016). Already, there is a shortage of home care staff (Genet et al., 2012; Ministry of Economic Affairs and Employment of Finland, 2020) and a large percentage of them are ageing (Kröger et al., 2018; Rostgaard et al., 2019). Home care workers have stressed concern for their own health (Kröger et al., 2018; SuPer ry, 2018) because of increased physical and mental workloads (Kröger et al., 2018; SuPer ry, 2018; Vehko et al., 2017). As a result, 75% of home care workers in Finland (SuPer ry, 2018) and 40% of home care workers in Nordic countries (Kröger et al., 2018; Rostgaard et al., 2019) have considered changing their profession. Thus, their motivation to continue working is essential for maintaining home care services (Rest et al., 2012).

The increased demand for engineers is caused by fast and continuous technical development and high numbers of retirees in Finland (Cedefop, 2020). The continuously changing working life has brought major changes such as digitalisation, globalisation, and climate change, generating new challenges in working conditions and job quality (Eurofound, 2020). Consequently, engineers' work has changed to become more complex, interconnected, and interdependent, for instance requiring global competence and unique technical skills as well as creative, social, and entrepreneurial skills (Qadir et al., 2020). According to a report, high-level educated employees in Finland also stressed high mental workloads (Miettinen, 2021).

The occupations of home care workers and engineers obviously differ (ILO, 2020). Home care work is, by tradition, a predominantly female profession, with lower educated workers, often carried out in clients' home. Engineering work is traditionally a male dominated profession, with higher educated workers, and often carried out in large, international companies. Previous studies have also shown some differences between OSE and education and gender. For example, workers with college-level education had higher levels of OSE than those with only primary education (Rigotti et al., 2008). However, in another study, less-educated people with high self-efficacy performed similarly to more-educated people (Zahodne et al., 2015). In 2015, about 75% of Finnish home care workers had more than two years of care education (vocational level), while about 25% had only one to two years (Kröger et al., 2018). Among engineers, about 90 % had a bachelor's degree from a university of applied sciences, while about 10% had a college education or a technical school education in accordance with an old model in Finland (Finnish Union of Professional Engineers, 2022). Regarding gender, some studies have reported higher OSE among men than women (Chiesa et al., 2016; Larsson et al., 2012), while other studies have found no gender differences (Guarnaccia et al., 2018; Hartman & Barber, 2020; Rigotti et al., 2008). Despite these differences between home care workers and engineers, there are also similarities, such as that both have undergone major changes in recent years, becoming more complex and demanding (Kröger et al., 2018; Qadir et al., 2020). Given that OSE is essential for adapting to change (Del Libano et al., 2012) and meeting job demands (Fullemann et al., 2015), these two in-demand, albeit very different, occupations were included in this thesis to further explore OSE among ageing workers.

### **3. Previous research**

Targeted as well as more general searches for relevant articles were conducted several times between 2018 and 2023. Targeted searching was carried out using Academic Search Complete (Ebsco), Cinahl (Ebsco), APA PsycArticles, PubMed, and Google Scholar. Additionally, some articles were found from reference lists in other articles. The key search terms used were 'occupational self-efficacy', 'work self-efficacy', 'job self-efficacy', 'professional self-efficacy', 'older workers', 'older employees', 'ageing workforce', 'ageing workers', and 'ageing workers', in combination with 'work ability', 'longer working life', 'extended working life', 'retirement', and 'turnover intention'. Searches also included keywords such as 'home care workers', 'home care staff', 'home care personnel', 'home care aid', 'nurses', 'nursing staff', 'care personnel', 'care staff', 'engineers', 'STEM', and 'technology'. Truncations were also used. Additional search options used in advanced searching were peer reviewed articles, English language, middle age 40–64 years, 45+ years, published 2012–2023.

In research on self-efficacy in working life, several different concepts of self-efficacy are used, for example occupational self-efficacy, work self-efficacy, job self-efficacy, career self-efficacy, and professional self-efficacy, but also general self-efficacy. Therefore, relevant research on the domain-specific concept of occupational self-efficacy, as well as other similar work-related self-efficacy concepts, were included. The most relevant articles regarding occupational self-efficacy or similar work-related self-efficacy concepts of ageing workers, care personnel, and engineers are presented below.

#### **3.1 Occupational and related concepts of self-efficacy among ageing workers**

The importance of OSE for understanding successful ageing at work was found in previous research (Wöhrmann et al., 2017). In this study, which included workers aged 45–65 years in a logistics company, OSE was positively related to job satisfaction and subjective health, and negatively related to work–private life conflict. The scholars suggested that subjective health and motivational outcomes might be improved by enhancing older workers' OSE through work-specific training. Furthermore, they concluded that OSE seems to be essential for successful ageing in work and in the extension of working life (Wöhrmann et al., 2017).

OSE was related to higher work motivation, job satisfaction, and life satisfaction in a study of 50–78-year-old workers (Paggi & Jopp, 2015). The scholars stated that enhancing OSE may support a continued working life. Additionally, OSE could be useful in workplace interventions aimed to develop ageing workers' job outcomes. In this study, more negative self-perceptions of ageing influenced OSE

negatively. Furthermore, higher OSE did not predict future job performance or expected retirement age (Paggi & Jopp, 2015).

Several other studies have investigated the impact of OSE or similar work-related self-efficacy on late career, retirement, and extended working life. One study explored how 55–65-year-old nurses working in intensive care experienced their working life and their reflections on late career and retirement (Sousa-Ribeiro et al., 2022). One of the themes that emerged described that the nurses were confident with their competencies to perform and deal with significant issues, which provided them with feelings of being capable in work, which is OSE. To promote longer working lives, the scholars stressed the need for developing practices enhancing OSE (Sousa-Ribeiro et al., 2022).

Personal and work-related factors that predict early exit from working life were investigated among a sample of 55 years and older workers with health limitations (Plomp et al., 2019). Three components of general self-efficacy were analysed: persistence when facing adversity, effort to complete behaviour, and willingness to initiate behaviour. In this study, only persistence when facing adversity was statistically significant related to early exit from working life (Plomp et al., 2019). Another study found that OSE, outcome expectations, and interest in occupation-related activities predicted post-retirement career planning, which is the planning of activities beyond retirement age in one's current occupational field (Wöhrmann et al., 2014). The scholars suggested that resource-oriented interventions should target these variables on the individual, organisational, and societal levels.

Several scholars have suggested that it is worthwhile to enhance OSE in occupational interventions (Chaudhary, 2014; Fullemann et al., 2015; Guarnaccia et al., 2018; Liu & Huang, 2019). In addition to workers themselves, work organisations can also benefit from enhancing workers' OSE (König et al., 2010).

Scarcity of knowledge about the domain-specific OSE among ageing workers has also been stressed (Chiesa et al., 2016; Paggi & Jopp, 2015). Another highlighted issue is that support for ageing workers often focuses on reducing job demands and increasing job resources, but more seldomly on enhancing personal resources for employment and well-being (Cloostermans et al., 2015; Vuori et al., 2019).

### **3.2 Self-efficacy and work-related outcomes among health care staff**

Several studies have investigated outcomes of work-related or general self-efficacy measurements among health care staff, but only a few studies focused on home care workers. Furthermore, the study samples included mostly participants younger than 45 years of age. For example, studies have shown that

self-efficacy is positively related to nurses' turnover intentions (De Simone et al., 2018; Van Waeyenberg et al., 2015). In another study, work-related self-efficacy and safety promoted the work ability of home care workers and assistant nurses (Larsson et al., 2012). In this study, workers with lower levels of physical exertion and stronger safety, as well as older workers, had higher self-efficacy. Self-efficacy was also positively correlated with work ability in a study that included different health care professionals (Cotrim et al., 2021).

Conflicting results have been seen on the relationship between self-efficacy, job stress, and burnout among care staff. For example, previous research found that self-efficacy predicted burnout (Bernales-Turpo et al., 2022; He et al., 2023; Low et al., 2022). However, in the study by Bernales-Turpo et al. (2022), organisational factors and workplace stressors were considered more prominent in experience of mental health problems than self-efficacy. In another study with nursing staff, general self-efficacy did not mediate the role of occupational stress on mental health (Dianat et al., 2021). However, in one study among care workers in elderly care, work pressure and burnout negatively affected caring self-efficacy (Shrestha et al., 2021). Resources, the relationships with clients and their relatives, support from supervisors and colleagues, job satisfaction, and training opportunities were factors positively influencing factors in this study.

Furthermore, positive relationships between self-efficacy and work engagement, life satisfaction (Bernales-Turpo et al., 2022), and job satisfaction (Zhang et al., 2023) are found in other studies concerning care staff.

### **3.3 Self-efficacy and work-related outcomes among engineering staff**

Scholars have highlighted the scarcity of studies regarding engineers' experiences of relevant sources of their work-related self-efficacy (Chen et al., 2023). Furthermore, research on engineers is often a part of research including staff from fields of science, technology, engineering, and mathematics (STEM). Research that brings these four disciplines together has been criticised for often generalising the subjects of one STEM discipline to those of others (Chen et al., 2023).

Research found regarding engineers or STEM most often included younger engineers and was related to early career or students. For example, studies have reported that self-efficacy enhanced STEM students' careers (Syed et al., 2018), and contributed to engineering students' interests in engineering (Concannon et al., 2019). A meta-analysis that investigated the influence of the sources of self-efficacy on outcome expectations in a sample of STEM employees showed the strongest effect for mastery experiences, vicarious learning, and verbal persuasion (Sheu et al., 2018). Another study qualitatively explored the sources of undergraduate engineering students' self-efficacy to complete engineering

tasks (Chen et al., 2023). The most relevant sources were mastery experiences through academic performance and emotional experiences, followed by vicarious experiences through social interactions and encouragement from instructors and engineers (Chen et al., 2023). One study, including engineers aged 22–55 years, investigated the moderating effects of personal self-efficacy and job control on the relationships between job demands and employee responses (Panatik et al., 2011). The findings reported that higher personal self-efficacy buffered the negative effect of job demands on mental strain.

## **4. Theoretical perspective**

This chapter defines the theoretical perspectives of self-efficacy, as well as the views of work ability and health used in this thesis. Since people's self-efficacy varies across situations and domains, it is inappropriate to classify people as having generally high or low self-efficacy belief without referring to a particular domain, circumstance, or behaviour (Bandura, 2012). Therefore, Alfred Bandura, the originator of the theory of self-efficacy, recommended the use of domain-specific self-efficacy. Appropriately, in this thesis, the domain-specific occupational self-efficacy (OSE) is used in accordance with its definition as workers' belief in their capability to successfully perform tasks involved in their occupational domain (Rigotti et al., 2008). Using the concept of OSE makes it possible to compare workers in different organisations and with different tasks (Rigotti et al., 2008). However, a description of the theory of self-efficacy is needed to facilitate the understanding of the concept.

Furthermore, as discussed in earlier chapters, the significance of work ability and health for longer working lives has been emphasised. A researcher's perspective of work ability will affect the chosen methodologies and priorities in research (Lederer et al., 2014). Therefore, a researcher must express the perspective of work ability chosen. Likewise, choosing the perspective of health impacts how health is understood (Winroth, 2018). Consequently, the foundations of work ability and health that are in this thesis are also described in this chapter.

### **4.1 The theory of self-efficacy**

The concept of self-efficacy is positioned within the framework of social cognitive theory (Bandura, 1997, 2012). This theory has an agentic perspective, meaning that people measure influence and control over their thoughts, feelings, motivations, and actions. Self-efficacy is essential in personal change (Bandura, 2004). There is a dynamic, interacting interplay between internal individual factors (cognitive, emotional, and biological factors), environment, and behaviour (Bandura 1997, 2004, 2012). Self-efficacy expectations and outcome expectations are two essential components of the theory. Self-efficacy expectations are judgements about one's ability to accomplish a specific task. Outcome expectations are judgements about the expected benefits and costs of a behaviour, what will happen when a specific task is successfully accomplished, and act as incentive motivators. Highly self-efficacious people influence what they can control by themselves or influence other people who have the required resources and knowledge to act on their behalf to reach the desired action. However, perceived self-efficacy does not derive from the number of skills one has but what one believes one can do with these skills under a variety of circumstances. Bandura stated self-efficacy as the major basis of action, meaning that people try to generate actions to reach an intended outcome. How much effort people exert in an attempt and how long they persevere when facing

obstacles are based on their level of self-efficacy. Self-efficacious people act proactively and contribute to their own lives and destinies. They believe they have the capability to produce the desired actions; they have enough motivation, can cope with affective states, facilitate thought patterns, and will persevere and be resilient in the face of the obstacles and difficulties they meet. Conversely, people have little incentive to attempt if they do not believe they can produce the desired outcome by their actions, thus overruling the best of skills. Hence, self-efficacy belief will affect how people use the skills they have and how they think, feel, and act in their daily lives (Bandura 1997, 2004, 2012).

#### **4.1.1 Four sources of developing self-efficacy**

According to Bandura (1997, 2012), self-efficacy belief is developed from four different sources of information:

***Mastery experiences*** are the strongest source of developing self-efficacy (Bandura, 1997, 2012). Experiences of success give evidence that one can provide whatever it takes to succeed. Even small successes make people try to accomplish a higher difficulty level, new activities, or activities in new settings. However, only easy successes raise expectations of quick results, and obstacles and failures might, therefore, cause discouragement. Experiences in overcoming obstacles through perseverant effort build learning opportunities of how to turn failure into success and, thus, build resilient self-efficacy. Repeated failures, on their part, generally weaken the sense of self-efficacy, particularly if the person was convinced to manage them, if the failure occurred early in the attempt, or if it was not affected by adverse external circumstances. People will adjust their self-efficacy based on the difficulty of a task, how much effort the task requires, how much help they receive, external circumstances, and how these experiences are cognitively processed (Bandura, 1997, 2012).

***Vicarious experiences*** refer to social modelling (Bandura, 1997, 2012). Seeing people similar to oneself succeed generally raises self-efficacy beliefs that one can accomplish comparable activities. In contrast, seeing others who are supposed to be similar to oneself repeatedly fail despite high effort, or if the models are perceived far too superior, might weaken self-efficacy. When having little prior experiences or uncertainty of one's own capabilities, or after repeated failures, relevant social modelling can be fruitful. Influence from digital sources might act as symbolic modelling and might also raise or weaken efficacy beliefs (Bandura, 1997, 2012).

***Verbal persuasion*** considers feedback and social support from others (Bandura, 1997, 2012). Sufficient verbal persuasion from significant others that one possesses the desired capabilities to succeed makes it easier to sustain when facing difficulties and can push one to mobilise even greater efforts to succeed. Verbal persuasion within realistic bounds can support self-change, enabling one to choose better strategies, structure activities, and develop skills to bring



success. However, verbal persuasion alone has a limited effect on creating lasting increases in perceived self-efficacy. It seems to have the greatest impact on people who already have some belief that they can succeed through their actions. In contrast, the verbally persuaded raising of unrealistic beliefs of capabilities or inappropriate feedback that highlights one's shortages might undermine future self-efficacy. A focus on the achieved progress in attaining certain goals or levels of performance will, instead, support self-efficacy development (Bandura, 1997, 2012).

***Physiological and affective states*** influence how people judge their self-efficacy (Bandura, 1997, 2012). Experiences of how physical and affective states in stressful or demanding situations have affected earlier performance will impact self-efficacy. Affective states such as positive mood activate thoughts of past successful activities and increase self-efficacy, whereas negative mood activates thoughts of past failures. For example, perceived fatigue, aches, and pains can be interpreted as physical inefficacy in activities involving physical strength and, thus, weaken self-efficacy. The perception of physical and affective reactions is more important than the intensity of the reactions themselves. Thus, by correcting misinterpretations of physical and affective states, thereby reducing stress reactions, self-efficacy can be enhanced (Bandura, 1997, 2012).

#### **4.1.2 Self-efficacy, work motivation, and work engagement**

Self-efficacy and motivation are not the same, although they are linked to each other. While self-efficacy considers a 'can do' construct, motivation considers the intention to act (Ryan & Deci, 2000). Work motivation is defined as 'a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work-related behaviour, and to determine its form, direction, intensity, and duration' (Pinder, 2008, p. 11). Perceived self-efficacy affects motivation and performance directly and through its influence on outcome expectations, goals, and sociocultural factors (Bandura, 2012; Pinder, 2008). People with high self-efficacy set higher and more challenging goals, are more committed to the goals, and have a future perspective. Challenging goals raise motivation and performance achievements (Bandura, 2012; Pinder, 2008). Having high self-efficacy may be a major contributor to task motivation. However, it is possible to have high self-efficacy regarding a task but not be motivated to perform it (Pinder, 2008).

The concept of work engagement also includes conceptual components similar to those of self-efficacy and motivation. Work engagement is defined as a 'positive, fulfilling, work-related state characterised by vigour, dedication, and absorption' (Schaufeli et al., 2002). Vigour refers to high levels of energy and mental resilience while working, the willingness to devote time and effort at work, and persistence when facing difficulties. Thus, vigour has similarities to self-efficacy; workers with high OSE are able to spend required effort to achieve their goals and are persistent when they face obstacles. Furthermore, vigour has

been considered as a motivational concept as well, by having conceptual similarities with intrinsic motivation (Mauno et al., 2007). Intrinsic motivation refers to an individual's need to perform an activity for its own sake to achieve pleasure and satisfaction (Deci et al., 2017). Previous research has also found that motivation increases work engagement (Miao et al., 2020). Work engagement is, however, considered more stable over time compared to work motivation (Mauno et al., 2007). Of the other components of work engagement, dedication relates to strong involvement in one's work and work as a significant and meaningful interest, and absorption to a state of full concentration and being deeply absorbed in one's work (Schaufeli et al., 2002).

#### **4.1.3 Self-efficacy as part of the Job Demands–Resources model**

Self-efficacy is considered a valuable personal resource. Personal resources have been successfully integrated into the well-known Job Demands–Resources model (JD-R), which addresses demands and resources in work (Bakker & Demerouti, 2007, 2014, 2017; Schaufeli & Taris, 2014; Schaufeli, 2017). The malleable self-efficacy might act as a mediator between job characteristics and well-being (Schaufeli, 2017). JD-R is built upon two underlying psychological processes: a health impairment process and a motivational process (Bakker & Demerouti, 2014, 2017; Schaufeli, 2017; Schaufeli & Taris, 2014). The health impairment process describes the pathogenic path to ill health, and the motivational process the salutogenic path to positive health (Jenny et al., 2017).

**Job demands** refer to physical, psychological, social, or organisational job-related strains, which require physical and/or psychological effort from the worker to cope with (Bakker & Demerouti, 2014, 2017; Demerouti et al., 2001; Schaufeli, 2017). Examples of job demands are emotionally demanding interactions, conflicts, high work pressure or workload, and job insecurity. Constantly high job demands are associated with a health impairment or stress process, which will incur psychological and physiological costs, drain energy, and weaken health (Bakker & Demerouti, 2007; Demerouti et al., 2001; Schaufeli, 2017). This health impairment process will, in the long run, lead to decreased work ability and increased sickness absence, as well as poor job performance and organisational commitment (Schaufeli, 2017). Later research has, however, reported that not all job demands negatively affect workers' well-being. Positively valued demands might have a motivational potential and may, therefore, enhance work engagement (Schaufeli & Taris, 2014). Research has revealed that workers approve most positive work attitudes when both job demands and job resources are high (Bakker et al., 2010).

**Job resources** are defined as positive physical, psychological, social, or organisational aspects of work (Bakker, 2011; Bakker & Demerouti, 2007, 2017; Schaufeli, 2017). Job resources improve the ability of workers to cope with job demands and the associated physiological and psychological strain, to achieve job-related goals and to promote growth and development. Autonomy, job

control, skill variety, performance feedback and support from others, opportunities for development, and meaningfulness of work are examples of job resources (Bakker & Demerouti, 2017; Bakker et al., 2003; Schaufeli, 2017; Schaufeli & Taris, 2014). When there are enough job resources, they support learning and development through their intrinsic motivational potential (Bakker, 2011; Bakker & Demerouti, 2007, 2017). Job resources play an extrinsic motivational role as well, initiating workers' willingness to fulfil work tasks and achieve goals (Bakker, 2011; Bakker & Demerouti, 2007, 2017; Schaufeli & Taris, 2014). Through the motivational process, job resources improve work engagement and may thereby increase work performance and the intention to remain in work, for example (Schaufeli, 2017). Notable is that high job resources both support work engagement and prevent burnout, while only lowering job demands will merely decrease the risk for burnout but not affect work engagement. While there are similarities in different occupations, every occupation has its own job demands and job resources (Bakker & Demerouti, 2007, 2014).

**Personal resources** were subsequently included in an extension of the JD-R theory (Bakker & Demerouti, 2007, 2014; Schaufeli, 2017). Personal resources refer to individuals' sense of whether they can successfully control and influence their environment (Bakker & Demerouti, 2017; Hobfoll et al., 2003). Typical personal resources are self-efficacy, self-esteem, and optimism. Personal resources are supposed to play similar roles to job resources. Job resources are found to predict personal resources, as well as the reverse—personal resources can positively affect job resources (Bakker & Demerouti, 2017). The higher one's personal resources, the more positive is the person's self-respect and the more are intrinsically or value-congruent goals expected to be experienced (Judge et al., 2005). Workers with sufficient personal resources are optimistic about their future and confident in their capabilities to cope with upcoming demands (Bakker & Demerouti, 2017; Xanthopoulou et al., 2007). However, they do not perceive fewer work demands; they are assumed to be more resistant to such adverse conditions. Additionally, personal resources improve the positive impact of manageable challenging job demands on motivation (Bakker & Demerouti, 2017). Personal resources enable workers to increase their job resources and tackle challenging job demands, and decrease workers' hindering job demands and obstacles, thus optimising their work environment and motivation (Bakker & Demerouti, 2017) and facilitating work engagement (Bakker & Demerouti, 2017; Xanthopoulou et al., 2007).

## **4.2 Work ability**

As work ability predicts longer working lives for ageing workers (Eurofound, 2023; FIOH, 2023; Ilmarinen & Ilmarinen, 2015; Nivalainen, 2021), it is considered a valid indicator of longer working lives in this thesis. There is no shared definition of work ability (Lederer et al., 2014; Sturesson et al., 2013), but there seems to be a consensus of work ability as 'a rational concept resulting

from the interaction of multiple dimensions that overlap and influence each other through different ecological levels' (Lederer et al., 2014). A well-known, holistic, and multidimensional model, known as the 'Work Ability House' model, describes work ability as a balance between individual resources and work demands (Gould et al., 2008; Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015). In the Work Ability House model, illustrated as a four-floor house, the lower three floors relate to individual resources (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015). The first floor represents health and physical, mental, and social functional capacity and forms the basis for work ability. The second floor concerns occupational competence, including relevant expertise, knowledge, and skills. The third floor represents the subjective experiences and understanding of the work. It includes values, attitudes, and motivation, as well as appreciation, trust, fair treatment, and support. The fourth floor consists of the work itself: work content, job demands, work environment, work community, work organisation, and leadership (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015). The fourth floor is considered to have the strongest effect on work ability (Ilmarinen, 2019). Work ability is affected by all four floors, as well as by factors outside the work, which are family, social environment, hobbies, and social media, as well as environmental circumstances in society and the economic situation (Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015). New environmental demands, such as globalisation and new technology, force additional, new organisational demands (Ilmarinen & Ilmarinen, 2015).

Whether workers decide to continue working until retirement age or not is mostly based on the factors on the third floor (Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015). The more positive the values, attitudes, and motivation are, the more likely workers will have a good and longer working life, an active ageing, and a better quality of life (Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015), as well as less perceived difficulties in daily life as they grow older (Von Bonsdorff et al., 2012). Engagement and commitment to work are also key factors on this floor (Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015).

For work ability to remain good, a sustainable balance between individual resources (health and functional capacities, competencies, values, attitudes, and motivation) and work (demands, work arrangements, and management) is essential (Ilmarinen, 2019). A decline in work ability often seen among the ageing workforce is probably due to a poor balance in this relationship (Ilmarinen, 2019). Health, functional capacity, and occupational competence are necessary but not the determining factors for having work ability (Ilmarinen et al., 2015; Tengland, 2011). Nevertheless, they are needed to some extent depending on the attributes and requirements of the work.

Questions have been raised against motivation as a part of work ability (Tengland, 2011). Healthy individuals need some basic health-related

motivation, such as some level of happiness or life satisfaction, to feel motivated to perform anything at all. However, Tengland (2011) stated that apart from this health-related motivation, motivation is not a part of work ability. Workers with an intact work ability could be less motivated to work for other reasons, for example dissatisfaction with working conditions or dislike for the job. In the case that workers must tolerate the work and are able to force themselves to work, even though they do not want to, then a motivational aspect is included as a part of that person's work ability (Tengland, 2011). On the other hand, Stureson et al. (2013) found desire and motivation to strongly influence work ability, beside personal-related factors such as self-confidence and belief in one's future ability to work. Motivation is also seen as essential when workers decide whether or not to continue working (Nilsson, 2020).

Since OSE is about personal belief and includes a motivational aspect as well, it seems relevant to consider OSE as a part of the third floor in the Work Ability House model. Furthermore, as occupational self-efficacy seems to be crucial for meeting job demands (Fullemann et al., 2015), and coping with the continuous changes in working life (Del Libano et al., 2012; Turgut & Neuhaus, 2020), the Work Ability House model is considered appropriate to describe work ability in this thesis.

### **4.3 Health in working life**

Occupational health aims to 'promote and maintain highest degree of physical, mental and social well-being of workers in all occupations' (WHO, 2023). For the worker, health means to be able to get along in work and in daily life and is related to work ability (Wärnå-Furu, 2014). The original nature of work is to be active, and work is, according to that, fundamental for both health and life. According to this view, work is meaningful for health (Wärnå-Furu, 2014). Sources for health can be described as internal or external resources (Fagerström, 2012). A person's internal resources consist of physical, mental, and existential health resources. Self-efficacy is considered as an internal health resource important for the inner dimension of health. External resources consist of a person's life context and environmental factors (Fagerström, 2012), including work environment. Practising a healthy lifestyle is important per se but restricts health to a surficial dimension (Eriksson, 1984, 2018; Wärnå-Furu, 2014). When a human being becomes aware of the deeper dimensions of health within her-/himself and actively follows her/his deeper values, a sustainable level of health might be reached. Usually, health becomes meaningful when poor health manifests. One's known existence and wholeness might be lost due to ill health, which causes suffering that pushes the individual into deeper dimensions of health. At a deeper level, health lacks meaning when one's life lacks meaning (Eriksson, 1984, 2018; Wärnå-Furu, 2014).

Health can also be described as a movement on a continuum (Antonovsky, 1987; Eriksson, 1984, 2018). According to Eriksson (1984, 2018), health is more than

the absence of illness. It is being whole in body, mind, and spirit. A person can perceive health despite objective signs of illness, and contrary, perceive ill-health despite no objective signs of illness. In the salutogenic health theory by Aaron Antonovsky, health was also described as a movement on a continuum, with the end points being total ill-health (disease) and total health (ease) (Antonovsky, 1987). Health is relative, and people move back and forward on a health ease/dis-ease continuum. They are, despite any health-related illnesses, healthy to some extent as long as they are alive. This multidimensional and dynamic theory focuses on the direction towards health, on factors that maintain and support health instead of risks for illness. Antonovsky considered the salutogenic and pathogenic views as complementary. Although the prevention and treatment of diseases and stressors are still crucial, it is important to focus on what makes some people manage and succeed even when they experience a high number of stressors, while others under the same circumstances do not (Antonovsky, 1987). This is in concordance with Fagerström (2021), who emphasised that the salutogenic and pathogenic perspectives should be considered as complementary, not as opposite. Thus, health can be experienced despite illness (Eriksson, 1984; Fagerström, 2021).

Similarly, work ability can be described as a continuum. This refers to the presumption that work ability varies from time to time over the life course, from complete work disability to perfect work ability (Tengland, 2011). Thus, work ability is a recurrent phenomenon, where different degrees of disability are seen as a normal part of working life (Lederer et al, 2014). This means that although health certainly affects work ability, commonly it does not entirely determine one's ability to work (Ilmarinen et al., 2015; Stuesson et al., 2013; Tengland, 2011).

## 5. Research gap and rationale

Based on the review of previous research, occupational self-efficacy (OSE) in the context of ageing workers, and particularly on home care workers and engineers, seems to be under-researched. These knowledge gaps, and the potential of occupational self-efficacy as a resource for longer working lives, contribute to the rationale of this thesis.

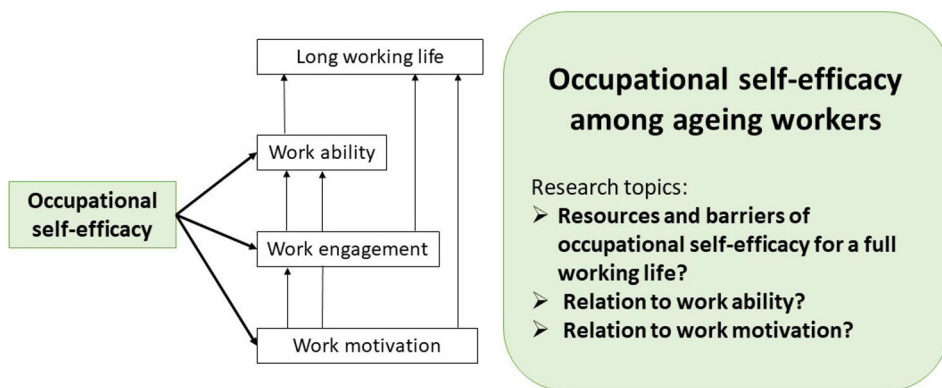
According to the theories described above, work ability and health are understood as multidimensional and holistic continuums that exist to some extent throughout the life course, despite health-related declines. In line with the theory of self-efficacy, people act upon their belief about their capabilities, not upon their actual abilities. Hence, OSE belief might facilitate the movement towards a subjectively experienced better work ability that might positively affect ageing workers' abilities to remain longer in working life. As already stated in earlier chapters, work ability is an important indicator for a longer working life among ageing workers. Furthermore, OSE might decrease the negative effects of age on work ability and support the management of unhealthy work demands. However, there is still limited knowledge about the domain-specific OSE of ageing workers in relation to work ability. Consequently, the relationship between OSE and work ability among ageing workers needs to be investigated further. Furthermore, to increase the ability to support ageing workers' OSE, knowledge about what they perceive affects their OSE belief to continue working life until the expected retirement age is crucial to explore as well.

The theories of self-efficacy, work motivation, and work engagement are partly intertwined. Earlier research has provided evidence for the positive influence of self-efficacy on work motivation. However, work motivation is dependent on context. Therefore, exploring resources and barriers of work motivation may deepen the knowledge of the relationship between OSE and work motivation in the context of ageing workers, particularly for ageing home care workers and engineers. This might also contribute to knowledge about the earlier highlighted relation between the concepts of self-efficacy and motivation. Additionally, according to previous research, OSE facilitates work engagement, but work engagement is found to mediate the effect of OSE and other personal resources on work ability, for example. However, workers having high work engagement may experience failure at work if they have a low perceived self-efficacy. Therefore, it also seems reasonable to further examine the relationships between OSE, work ability, and work engagement among ageing workers.

In this thesis, the two very different contexts of home care workers and engineers constitute the samples. Not only are these occupations in demand in current and future working lives, but the demands on both home care workers and engineers have increased significantly in recent years, threatening their longer working careers. These very different samples enable to explore several

additional aspects of OSE: What is the state of OSE when combining the settings of *ageing workers, different educational levels, different work contexts, work ability, work motivation, work engagement, and longer working life*? Are there dissimilarities, or are there fundamental similarities emphasising an important core of OSE as a resource for a full working life among ageing workers, independently of gender, education, and work context?

The results from this thesis can provide a deeper understanding and knowledge of the impact of OSE on the work ability of ageing workers, the resources, barriers of OSE for a full working life, and the relationship between OSE for a full working life and work motivation. Hence, this knowledge can add a piece to the puzzle for a sustainable working life. Figure 1 illustrates the starting points for this thesis based on previous research and theories, as well as the research topics of this thesis.



**Figure 1.** Illustration of the starting points of this thesis.



## 6. Aim and research questions

The overarching aim of this thesis is to explore and deepen the understanding of occupational self-efficacy as a resource for a full working life in the context of ageing workers. An additional aim is to explore the relations between ageing workers' OSE for a full working life, work ability, and work motivation.

The research questions that have guided this thesis were:

1. Is there a relationship between perceived work ability and occupational self-efficacy and work engagement among ageing workers in the contexts of home care workers and engineers? (Study I)
2. Are there differences in work ability, occupational self-efficacy, and work engagement between 45–54 years old and 55+ years old workers, in professions and in gender? (Study I)
3. What is positively and negatively affecting occupational self-efficacy belief to continue working until the expected retirement age and work motivation, according to ageing home care workers (Study II) and engineers (Study III)?
4. Which are the most prominent (i.e. most frequently mentioned) resources and barriers for occupational self-efficacy for a full working life and work motivation according to ageing home care workers (Study II) and engineers (Study III)?
5. Are there similarities and dissimilarities between the expressed resources and barriers for occupational self-efficacy belief for a full working life and work motivation according to ageing home care workers and engineers (Study II and III)?

## 7. Pre-understanding

Pre-understanding exists in all research in one way or another and is both necessary and unavoidable (Palmér et al., 2022). Pre-understanding refers to the development of every new insight, and knowledge is always rooted in some prior understanding of the phenomenon of interest (Alvesson & Sandberg, 2022). It is created from the lifeworld, the context in which people live, and their previous knowledge and prejudices (Palmér et al., 2022). Thus, pre-understanding is linked to the past, the actual, and the future. In research, scholars use prior academic knowledge and experience of the phenomenon under study, as well as prejudices, reflective or unreflective, accumulated from everyday participation in society and organisations (Alvesson & Sandberg, 2022). Pre-understanding enables a continuously ongoing knowledge development that is circular in character, meaning that the initial pre-understanding is enriched by further investigations guiding new pre-understandings and so on. Thus, pre-understanding is valuable by becoming aware of it. To avoid pre-understanding becoming a source of biases that negatively interfere with the ambition of valid and reliable research, it is important to clarify own pre-understanding and be aware of how it may influence the whole research process (Alvesson & Sandberg, 2022).

Educational background, work experiences, and non-academic experiences constitute the pre-understanding of this doctoral thesis. My interests in work-related issues are partly a natural result of my formal educational background with a bachelor's and master's degree in physiotherapy. This interest in the holistic perspective of health and seeing humans as a whole developed during many years of work experience with diverse rehabilitation programmes, particularly stress and pain management programmes and comprehensive vocational rehabilitation programmes, as well as work in occupational health services. This holistic perspective of health was further supported by the additional specialisation studies in prolonged pain rehabilitation and occupational health. My specific interest in self-efficacy results from many fascinating meetings with clients and their stories about how they have persevered through obstacles and learned to live with disabilities noticeably affecting their lives. Additionally, I have, since a young age, been interested in humans' internal resources and ways of coping with challenging issues in life. Facing demanding challenges in my own life has further deepened my interest in these topics. Thus, it is reasonable to conclude that my pre-understanding of the research topic, both from academic and non-academic backgrounds, has influenced and guided the research interest addressed. By being aware of my pre-understandings and by allowing the study findings to guide me, I have sought to avoid possible biases throughout the research process.

## 8. Methodological approach

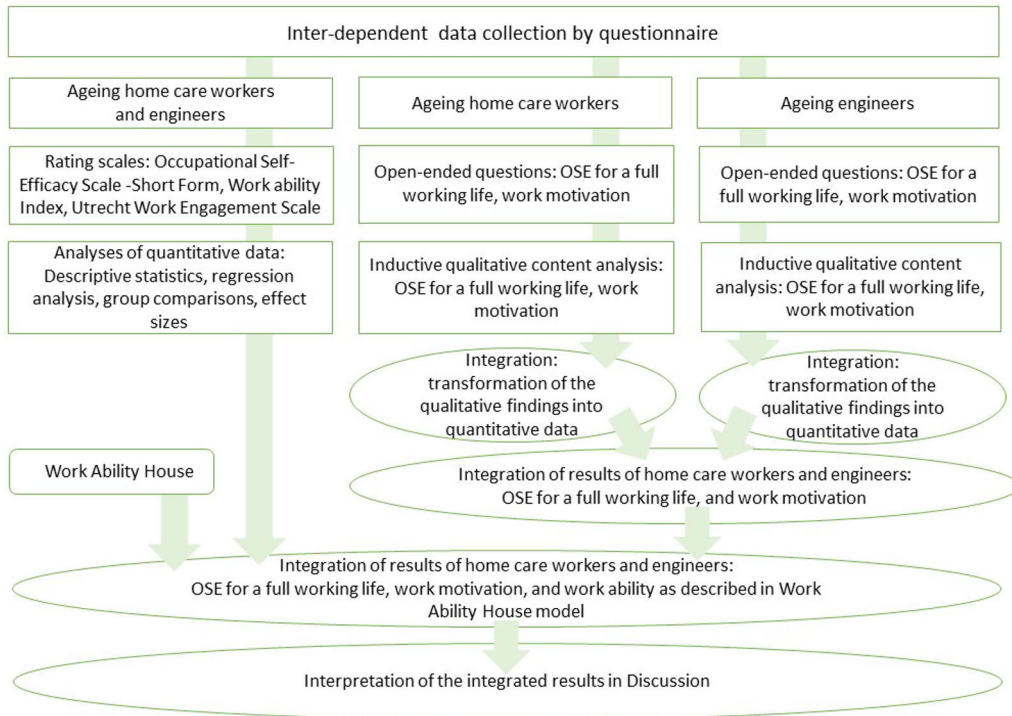
Pragmatism is suggested as a sufficient philosophical paradigm in mixed methods research (Creswell & Plano Clark, 2018; McKenna et al., 2021) and is also appropriate in this thesis. All research has a philosophical foundation, and as a researcher, it is important to be aware of one's predominant paradigm (Efstathiou, 2022). Pragmatism is oriented towards 'what works' and a real-world practice, valuing both subjective and objective knowledge by gathering data that best answer the research question (Creswell & Plano Clark, 2018). Thus, the overall aim and the research questions are of primary importance, guiding the methodology and methods used. Pragmatism supports using multiple research methods to answer the primary research question asked, and the problem studied is more important than the methods themselves (Creswell & Plano Clark, 2018).

A mixed methods design was applied in this thesis since neither quantitative nor qualitative methods alone could answer the overarching aim of this thesis. Using mixed methods in health sciences means collecting both quantitative and qualitative data, as well as integrating them in the aim, data analysis, results, and discussion (Creswell & Plano Clark, 2018; Kyngäs et al., 2020; Regnault et al., 2018). Furthermore, a mixed methods design provides a deeper understanding of a research problem compared to what one form of data collection could do on its own (Creswell, 2015). Thus, an integration of the gathered data is drawn based on the strength from both sets of data (Anguera et al., 2018).

In this thesis, a convergent mixed methods design was used (Creswell & Plano Clark, 2018; Figure 2). In convergent mixed methods research, both quantitative and qualitative data are collected concurrently but typically separately, and one data collection does not depend on the results of the other. In a convergent mixed methods design, all collected data material is equal importance (Creswell & Plano Clark, 2018). The data material in this thesis was collected on one occasion and during the same data collection, which is referred to as interdependent data collection (Boardman, 2022). The first sub-study had a quantitative research question, and Studies II and III had both qualitative and quantitative research questions. The procedures of the convergent mixed methods design used in this thesis are illustrated in Figure 2.

Data integration is a cornerstone in mixed methods research (Creswell & Plano Clark, 2018; Moseholm & Fetters, 2017; Younas et al., 2020). The integration is planned to connect, combine, and merge the results of the qualitative and quantitative data to generate conclusions from the qualitative and quantitative parts, as well as conclusions drawn after integrating the results of both. The integration intends to develop results and interpretations that are comprehensive, validated, and confirmed and, thus, deepens the understanding of the research phenomenon (Creswell & Plano Clark, 2018). Integration in this

thesis is made by transforming qualitative data into quantitative data (Studies II and III) and merging both integrations with the theoretical model of Work Ability House for interpretation. These integrations are viewed in joint displays (Figures 2–4; Creswell & Plano Clark, 2018; Moseholm & Fetters, 2017; Younas et al., 2020).



**Figure 2.** Flowchart of the procedures of the convergent mixed methods design.

## 8.1 The specific studies

Three sub-studies were included in this thesis, and their information is summarised in Table 1. The data material in this thesis was collected using a cross-sectional, anonymous, and pilot-tested survey. The survey included both close-ended measures and open-ended questions and was conducted among a sample of ageing home care workers and engineers. The survey was made available in Swedish and Finnish languages. A cross-sectional survey can reach many participants and is useful for describing a picture of a particular study population at one point in time (Cummings, 2017). This type of study design allows a simultaneous comparison of many different variables but does not allow one to derive causal relationships (Cummings, 2017; Polit & Beck, 2022).

**Table 1.** Overview of the included studies.

Study	Aim	Sample	Data	Data analysis
I	To examine the relationship between work ability and occupational self-efficacy and work engagement among ageing workers (home care workers and engineers). To explore differences and similarities regarding work ability, occupational self-efficacy, and work engagement between 45–54 years old and ≥55 years old workers, in professions and in gender. (QUANT)	45 years and older home care workers ( $n = 234$ ), and engineers ( $n = 125$ ) in Ostrobothnia, Finland.	Cross-sectional postal and web-based survey conducted in May to September 2018. Occupational Self-efficacy Scale - short form, Work Ability Index, Utrecht Work Engagement Scale.	Binary logistic regression analyses to generate odds ratios and 95% confidence intervals. Mean, median, standard deviation. Independent samples <i>t</i> -test, Mann-Whitney U test, Pearson’s chi-square test, and Fisher’s exact test. Rosenthal’s formula. Little’s Missing Completely at Random.
II	To explore aspects that are positively and negatively affecting ageing home care workers’ OSE belief to continue working until expected retirement age, as well as their work motivation. Examine where the main points in the responses are located. (QUAL→quant)	Home care workers ( $n = 234$ ) aged 45–66 years (mean 55 years), 99% women, working in Ostrobothnia, Finland.	Open-ended questions from the cross-sectional survey (See Study I): OSE belief to continue working until expected retirement age and work motivation.	An exploratory mixed methods design with a qualitative to quantitative approach. Qualitative inductive manifest content analysis followed by descriptive quantitative analysis (frequencies and percentages) based on the results in the qualitative analysis.
III	To explore aspects that are positively and negatively affecting ageing engineers’ OSE belief to continue working until expected retirement age, as well as their work motivation. Examine where the main points in the responses are located (QUAL→quant)	Engineers ( $n = 125$ ) aged 45–65 years (mean 53 years), 88% men, working in globally productive companies located in Ostrobothnia, Finland.	Open-ended questions from the cross-sectional survey (See Study I): OSE belief to continue working until expected retirement age and work motivation.	An exploratory mixed methods design with a qualitative to quantitative approach. Qualitative inductive manifest content analysis followed by descriptive quantitative analysis (frequencies and percentages) based on the results in the qualitative analysis.

QUANT: Quantitative research questions. QUAL→quant: Qualitative and quantitative research questions. Qualitative data transformed into quantitative data. (Creswell & Plano Clark, 2018)

### 8.1.1 Participants and data collection

The data material for this thesis was collected from ageing home care workers and engineers. The main inclusion criteria were being 45 years or above and having a valid employment contract. Data were collected by questionnaire between May and September 2018. Stepwise purposive sampling (Campbell et al., 2020) was used to reach the target groups. All ageing home care workers working in municipal social and healthcare communities in the addressed region were invited, regardless of their educational level. The closest supervisors of the

home care workers shared the information about the study and access to the questionnaire, which was accessible in either paper-based or web-based form. Ageing engineers were invited by purposive sampling from one company at a time. The heads of human resource management in globally productive companies in the addressed region were contacted, and the inclusion criteria were discussed. Thereafter, one company at a time with workers meeting the inclusion criteria was selected for invitation. An initial discussion was held with six companies. Engineers from two of these companies did not meet the inclusion criteria because no 45-year-olds or older engineers were employed there. These companies were excluded before the questionnaire was distributed. Finally, engineers from four companies were included. The local human resource department of each invited engineering company provided their ageing engineers with information about the study and access to the web-based questionnaire.

Overall, 833 participants (460 home care workers and 373 engineers) met the inclusion criteria and were invited to participate in the study. The questionnaire comprised data from 359 participants, yielding a response rate of 43% after three reminders (234 home care workers, 51% response rate, and 125 engineers, 34% response rate). The characteristics of the study participants are illustrated in Table 2.

**Table 2.** Characteristics of the study participants.

	<b>Home care workers</b>	<b>Engineers</b>
<i>n</i> = 359 (%)	234 (65.2)	125 (34.8)
<b>Age (years)</b>		
45–49 years	19.4	33.3
50–54 years	26.6	32.5
55–59 years	31.0	22.8
>60 years	23.0	11.4
<b>Gender</b>		
Women	99.1	12.1
Men	0.9	87.9
<b>Marital status</b>		
Single	8.3	7.2
Married/permanent relation	80.3	84.8
Divorced	11.0	8.0
Widow	0.4	0.0
<b>Educational level</b>		
Low education	68.1	0.8
High education	31.9	99.2
<b>Work experience (years)</b>	18 (18), 12.1	18 (20), 9.7

<b>Employment status</b>		
Permanent employment	88.3	100.0
Temporary employment	11.7	0.0
Full-time employment	73.0	97.6
Part-time employment	27.0	2.4
<b>Job demands</b>		
Psychologically demanding	18.5	96.0
Physically demanding	5.6	0.0
Physically and psychologically demanding	75.9	4.0
<b>Work ability index</b>	37.9 (39.8), 6.8	41.0 (42.5), 5.7
<b>Occupational self-efficacy</b> OSS-SF	5.9 (6.0), 0.8	5.8 (6.0), 0.8
<b>Work engagement</b> UWES-9	5.1 (5.3), 0.9	4.5 (5.0), 1.3

% or mean (median), standard deviation

### 8.1.2 Study I: Relationship between work ability, occupational self-efficacy, and work engagement

In the first sub-study, a quantitative approach was used to investigate the relationship between work ability, occupational self-efficacy (OSE), and work engagement in the sample of ageing home care workers and engineers. An additional aim was to examine whether there were any differences regarding these variables between the subgroups of ageing and older workers, the occupation groups, and the subgroups of poor-moderate and good-excellent work ability.

#### **Measurements**

Data were collected using validated and reliable measurements. Perceived work ability was assessed using the Work Ability Index (WAI; Tuomi et al., 1998). The WAI measures current work ability compared with lifetime best, work ability in relation to physical and mental job demands, number of current diseases diagnosed by a physician, estimated work impairment due to diseases, sick leave during the past year, own prognosis of work ability two years from now, and mental resources. The WAI summative index ranges from 7 to 49 points and is classified into poor (7–27), moderate (28–36), good (37–43), and excellent (44–49) work ability. The WAI has satisfactory internal reliability and construct validity and is considered a predictive instrument for, for example, mental and physical wellbeing (Radkiewicz & Widerszal-Bazyl, 2005), disability (Alavinia et al., 2009), sickness absence (Lundin et al., 2017; Schouten et al., 2015), and early retirement (Jääskeläinen et al., 2016; Roelen et al., 2014). Workers with poor or moderate WAI have a higher risk of losing their work ability, unless preventive or corrective measures are initiated (Ilmarinen & Ilmarinen, 2015).

Perceived OSE was measured using the domain-specific Occupational Self-Efficacy Scale – Short Form (OSS-SF; Rigotti et al., 2008) since the use of domain-specific self-efficacy is recommended (Bandura, 2012). Statements in the OSS-SF (e.g. ‘I feel prepared for most of the demands in my job’) are scored on a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Higher mean scores indicate higher perceived OSE. The use of the domain-specific OSE enables the comparison of workers from different organisations, professions, and/or jobs. Satisfactory internal consistency and evidence of construct validity have been reported for the OSS-SF measurement (Damásio et al., 2014; Rigotti et al., 2008).

Work engagement was assessed with the short version of the Utrecht Work Engagement Scale (UWES-9; Schaufeli et al., 2006). The UWES-9 includes nine items (e.g. ‘At my work, I feel that I am bursting with energy’) and measures the level of vigour, dedication, and absorption at work using a seven-point Likert scale ranging from 0 (never) to 6 (always). Higher mean scores indicate better work engagement. The UWES-9 has good internal consistency, test-retest reliability (Schaufeli et al., 2006), and construct validity (Seppälä et al., 2009).

Additionally, background variables, such as profession, gender, age, marital status, educational level, employment status, and work experience in years, were collected.

### ***Statistical analyses***

Logistic regression analysis is often used to statistically analyse relationships between qualitative variables (Pampel, 2021). It aims to find a model that best fits the data material and best describes the relationships between the included variables. The relationship between the WAI, OSS-SF, and UWES-9 was calculated by binary logistic regression analyses to generate odds ratios with 95% confidence intervals (95% CI). Prior to the analyses, the categorical variables were dichotomised into subgroups. The WAI was dichotomised into good-excellent work ability and poor-moderate work ability. This dichotomisation was motivated since workers with poor-moderate work ability are at a higher risk of losing their work ability unless supported actions are initiated (Ilmarinen & Ilmarinen, 2015). Additionally, professions were dichotomised into home care workers and engineers and age into the groups 45–54 years and 55 and above. The coefficient of determination of the logistic regression models was tested using the Nagelkerke R Square test (Field, 2018). Since the OSS-SF and UWES-9 have different scales, standardised slopes were used in the statistical analyses to facilitate the interpretation. Results of the descriptive statistics were presented as mean, median, standard deviation, and percentages. Differences between groups were evaluated using independent samples *t*-test, Mann-Whitney U test, Fisher’s exact test, and Pearson’s chi-square test. The effect size was calculated using Rosenthal’s formula (Rosenthal,



1994). Statistical significance was defined at  $p < 0.05$ . The analyses were performed using SPSS Statistics 24.0 (IBM Corporation, Armonk, NY, USA).

### **8.1.3 Studies II and III: Occupational self-efficacy for a full working life and work motivation**

A mixed methods light design was used in Studies II and III to answer a two-fold research question. Based on open-ended survey questions, Studies II and III explored what positively and negatively affected OSE to continue working until expected retirement age, as well as work motivation, in the samples of ageing home care workers (Study II) and engineers (Study III). An additional aim was to examine the most prominent (i.e. most often mentioned) resources and barriers to occupational self-efficacy and work motivation (Creswell & Plano Clark, 2018). In the open-ended questions, the participants were asked to name three things that positively affect their confidence to continue working until expected retirement age and three things that negatively affect their confidence to continue working until expected retirement (i.e. occupational self-efficacy). Additionally, two open-ended questions asked what gives participants work motivation and what negatively affects their work motivation.

#### ***Data analysis – Qualitative inductive analysis***

Studies II and III had an exploratory design using a ‘mixed methods light’ with a qualitative to quantitative approach (Creswell & Plano Clark, 2018). Hence, the findings of the qualitative analysis informed the second quantitative phase (Creswell & Plano Clark, 2018; Kyngäs et al., 2020). First, the answers to the open-ended questions were manually analysed by qualitative inductive manifest content analysis described and exemplified by Graneheim and Lundman (Graneheim & Lundman, 2004; Graneheim et al., 2017; Lindgren et al., 2020). Qualitative content analysis is a data interpretation method often used within health sciences to generate a deeper knowledge and understanding of a phenomenon. Although there are no clear rules about how to perform and interpret the data in qualitative inductive content analysis, it is a systematic method to analyse qualitative data. The researcher searches for similarities and dissimilarities in the data and creates and organises them into categories and themes on various levels of abstraction and interpretation depending on the richness of the data. A qualitative inductive manifest analysis means analysing close to the text with a low degree of abstraction and interpretation. In this thesis, a qualitative inductive manifest analysis was used since it is suitable when data material consists of mostly short answers and no verbal signals are available (Graneheim & Lundman, 2004; Graneheim et al., 2017; Lindgren et al., 2020).

In the first step of the data analysis, answers to the open-ended questions were organised in Microsoft Excel, with word-for-word answers from each participant in a separate row. All responses were read through several times to become familiar with the text. For each open-ended survey question, the topics were

analysed separately. From each question, responses were grouped into general topics. Next, the condensed text was coded. The codes were interpreted and repeatedly compared for similarities and differences. Codes with similar content were sorted into sub-categories and categories that corresponded to the meaning of the material, the context, and the aim. The analytical steps were performed in a back-and-forth process until agreement was reached by the author of this thesis and the supervisors. The author of this thesis conducted the initial analyses, and the results were thereafter reviewed and discussed to a negotiated outcome by the supervisors of this thesis (Graneheim & Lundman, 2004; Graneheim et al., 2017).

## **8.2 Data integration procedures**

The integration of the findings of this thesis was made in two different ways. First, the integration of the findings in Studies II and III was performed by transforming the qualitative data into quantitative data to conduct further analyses (Creswell & Plano Clark, 2018; Kyngäs et al., 2020). The data transformation was realised by counting the number of times each emerged category appeared, in the form of an utterance, in the data material for each open-ended question. Thus, every utterance mentioned by each study participant was counted within the category to which they were organised. Thereafter, the counts were converted into percentages to view the distribution of the categories. Thus, reporting frequencies and percentages enabled the examination of which aspects were prominent. The descriptive statistics were performed using Microsoft Office 2016 Excel. This integration was conducted separately for the home care workers and engineers for the open-ended questions regarding OSE for a full working life and for those regarding work motivation. Furthermore, the integrated findings from Studies II and III were merged into a joint display for comparing the aspects of OSE for a full working life of home care workers with those of the engineers. A similar comparison was performed regarding the aspects of work motivation.

For the interpretation of the findings of the whole thesis and to achieve the mixed methods aim to explore the relationship between OSE for a full working life, work ability, and work motivation, an additional integration was made. This further integration allowed the author to connect, combine, merge, and compare the key OSE topics of a working life with those of work motivation, the results of the quantitatively examined relationship between work ability and OSE, and the work ability concept as defined in the Work Ability House model (e.g., Gould et al., 2008; Ilmarinen & Ilmarinen, 2015). The integration is viewed in a joint display.

## 9. Ethical considerations

Three sub-studies have been completed in the research project that comprises this thesis. This thesis was performed in compliance with the ethical principles of research with human participants delineated by the Finnish National Board on Research Integrity (TENK; 2019). In accordance with ethical principles, research must be conducted responsibly to be ethically acceptable, reliable, and credible. Each researcher, as well as the whole research community, is responsible for agreeing on and acting in accordance with these principles. Respect for integrity, meticulousness, and accuracy are guidelines when conducting, recording, presenting, and evaluating the research results. The dignity, autonomy, and rights of human research participants must be respected, and unnecessary harm must be avoided. Ethical consideration starts when the research is planned and designed. Ethically sustainable research methods for collection, research, and analysis should agree with scientific criteria. Responsible conduct of research also includes acquiring required research permits and ethical review (TENK, 2019). Ethical approval for all sub-studies of this thesis was granted by the Board for Research Ethics at Åbo Akademi University, Turku, Finland, on 12 April 2018.

A fundamental part of the ethical principles is informed consent to participate in research (TENK, 2019). Informed consent includes voluntary participation in research, and participants can discontinue their participation or withdraw their consent to participation at any time without any negative consequences. The participants must receive clear information about the research purpose, content, methods, and other procedures. Furthermore, information about any potential risks or harm and how personal data is processed must be conveyed. The processing of personal data must be conducted in accordance with the law and clearly documented (TENK, 2019). In this thesis, all participants received written informed consent in accordance with these ethical principles. They were informed that completing the questionnaire implied consent to participation in the study.

Another important ethical aspect of research is responsible data storage (TENK, 2019). The researcher is responsible for the storage of data material, which includes storing and handling data material and personal data. In this thesis, a data storage plan was conducted 2018 in accordance with the General Data Protection Regulation and the guidelines at Åbo Akademi University at that time. The data storage plan was approved by the Board for Research Ethics at Åbo Akademi University as part of the ethical approval. The data material in all the studies in this thesis was stored in the author's space on Åbo Akademi University's server, which is protected by the university and requires a personal username and password for access. Each survey was given an ID number to ensure the participants' anonymity. The personal information of the participants in this thesis included indirect identification through age, education, and

workplace. All data material was transferred from the questionnaires into unidentifiable data files. The data material is stored five years after the articles have been published to ensure open access to the data material.

Åbo Akademi University encourages open science and research in accordance with national and international guidelines (Åbo Akademi University, 2022). Sustainable knowledge is built by open and shared data, materials, and results. Access to this thesis' data material can be obtained from the author and Professor Lisbeth Fagerström. According to TENK (2019), research results should be openly and responsibly communicated. Respect for other researchers and their work is another aspect of responsible research, which include citing their work accurately. The quality of the articles included in this thesis has been assured through publishing in qualitatively accepted peer-reviewed journals. The article from Study I is made openly available by parallel publishing in Åbo Akademi University Research Database AboCRIS, and the articles from Studies II and III are published open access in journals. In addition, to ensure transparency, each step of the research process has been thoroughly described, and the results are presented as tables and quotations. Best practice was considered regarding each research method that was used in this thesis to avoid scientific misconduct (statistical analyses and qualitative content analyses). Furthermore, the authors' contribution to the articles has been clearly described in each article. Conflicts of interest and external funding are declared in the published articles as well. Thus, transparency and accuracy have been prioritised during the whole research process.

## 10. Results

In this chapter, the findings from the three sub-studies are presented. The first section presents the examined relationship between work ability, occupational self-efficacy, and work engagement (Study I). The second section presents the overall findings on occupational self-efficacy for a full working life (Studies II and III), and the third section on work motivation (Studies II and III). In the last section, the integrated results of all the sub-studies are presented.

### 10.1 Work ability, occupational self-efficacy, and work engagement among home care workers and engineers (Study I)

The results of the binary logistic regression analysis showed a significant relationship between work ability (Work ability Index – WAI), occupational self-efficacy (OSE; Occupational Self-Efficacy Scale – Short Form – OSS-SF; OR 0.66; 95% CI 0.52–0.86), and work engagement (Utrecht Work Engagement Scale – UWES-9; OR 0.61; 95% CI 0.47–0.78) after adjustment for covariates (profession, gender, educational level, age groups of ageing and older workers;  $p < 0.05$ ). Higher OSE and work engagement were more often related to good-excellent work ability. Being a home care worker entailed four times greater odds of having poor-moderate work ability compared to the reference group of engineers. Similarly, being 55 years or older entailed twice greater odds of having poor-moderate work ability compared to the reference group of 45–54-year-old workers. No gender group comparison was conducted since there were only a few men ( $n = 2$ ) among the home care workers and a few women among the engineers ( $n = 15$ ). The results from the regression analyses were presented for the whole study sample since Fisher's  $r$ -to- $z$  transformation showed no significant differences in correlation between the WAI and OSS-SF between the professional groups ( $z = -1.17$ ,  $p = 0.242$ ), nor in the correlation between the WAI and UWES-9 ( $z = -1.53$ ,  $p = 0.126$ ). In subgroup binary logistic regression analyses, no differences in explanatory variables between home care workers and engineers were found.

Both home care workers and engineers had a good average level of WAI. However, there were differences between the occupation groups. According to the dichotomised WAI, 64% of home care workers and 79% of engineers had good-excellent work ability, respectively. Participants with poor-moderate work ability were generally older, women, and part-time employed, and had both physically and psychologically demanding work. These factors were more frequently related to home care workers in this study. Most of the participants perceived their work ability to be rather or very good regarding both work-related psychological demands (home care workers, 80%; engineers, 77%) and physical demands (74%; 85%). In the poor-moderate work ability group, more engineers (68%) than home care workers (43%) rated their work ability in

relation to psychological demands as poor-moderate ( $p < 0.05$ ). More diagnosed diseases were reported in the poor-moderate work ability group (mean = 3) compared to the good-excellent work ability group (mean = 1;  $p < .001$ ). The group of older workers had lower WAI (mean = 38.4) compared with ageing workers (mean = 39.6;  $p < 0.05$ ).

No significant differences were found in OSS-SF scores between the occupation groups (mean = home care workers, 5.9; engineers, 5.8). However, a significantly higher OSS-SF was found in the good-excellent work ability group (mean = 6.0) compared to the poor-moderate group (mean = 5.5;  $p < 0.001$ ). Furthermore, older workers had higher OSS-SF (mean = 5.9) compared to ageing workers (mean = 5.8;  $p < 0.05$ ). Concerning work engagement, significant differences in UWES-9 were found between home care workers (mean = 5.1) and engineers (mean = 4.5;  $p < 0.001$ ) and the good-excellent (mean = 5.1) and poor-moderate work ability group (mean = 4.5;  $p < 0.001$ ). No differences were found between the age groups concerning UWES-9.

## **10.2 Occupational self-efficacy for a full working life by home care workers and engineers (Studies II and III)**

This chapter addresses ageing home care workers' and engineers' perceived resources and barriers to occupational self-efficacy to continue working until expected retirement age. An overview of the emerged categories and sub-categories is presented in Table 3.

### **10.2.1 Occupational self-efficacy by home care workers**

The qualitative content analysis generated eight categories concerning what positively affects home care workers' OSE to continue working until retirement age and 10 categories concerning what negatively affects their OSE belief.

Health issues were often present in the home care workers' answers both regarding what positively and negatively affected OSE for a full working life. Good health, or manageable health challenges, provided confidence. Home care workers stated an intention and interest in promoting and maintaining their health. If the overall health remains, the home care workers did not see any hindrances to continue working until the expected retirement age. However, current challenges in health and balance in life and concerns of future health declines caused worries about a full working life.

Home care workers asked for a reasonable mental and physical workload to be able to continue working until the expected retirement age. Home care work was perceived as burdensome. Shift work, an increasing number of clients, clients with increasingly demanding needs, dealing with clients and relatives, and the requirement of high flexibility and responsibility were stressed by the home care workers. More tasks alongside the clients, such as an increased number of administrative tasks, and more travel time were also mentioned as negative

changes. Home care workers expressed worries about the constant hurry and increasing stress reactions. High mental strain, reduced energy, and recovery, as well as physical health issues and pain, caused uncertainty about future work. An imbalance between individual resources and an already heavy, and still increasing, physical and mental workload were emphasised. Furthermore, frequent and continuous changes in home care work due to organisational changes and fusions of organisations during recent years negatively affected OSE. The home care workers judged many of the implemented changes as irrational, not achieving expected results, or uncontrollable. Consequently, some home care workers were concerned about losing their jobs. Such changes were perceived as mentally stressful and energy draining.

A deteriorating health caused worries about work ability declines. Modified work tasks in line with current work ability were stressed as important, as well as the supply of adequate occupational health care service. Moreover, to have influence over working hours, workload, work content, and opportunities for job rotation were other positively affecting aspects. Necessary ergonomic tools and possibilities to adapt the clients' homes for their care needs, as well as job training to cope with demanding clients, provided OSE as well. An additional concern that negatively affected OSE for a full working life was the ill health of close relatives.

Perceived meaningfulness of home care work was a resource for OSE for a full working life as well. The meaning of work encompasses home care workers' great intrinsic motivation for their work. They perceived a strong desire to help and take care of people, and they received satisfaction from the work and the clients. The relations with clients provide social interaction and rewarding meetings. Additionally, positive feedback and appreciation from the clients were highlighted. However, a negative effect of lacking motivation on OSE for a full working life was mentioned by a few home care workers. Home care workers desired for their work to be valued higher in society.

A good leadership and work community provide home care workers OSE for a full working life. A leader that shows appreciation for efforts made and treats workers equally seem to improve OSE. A good leader is supportive, responsive, understanding, encouraging, and listens to the workers. On the contrary, a lack of support, respect, justice, and equality, as well as excessive demands and unclear or missing information, were perceived as negative. A strong work community and good relationships with colleagues, which sometimes grow into deeper friendships, were considered essential and generated both job satisfaction and OSE. In well-functioning work teams, colleagues supported and helped each other. However, sometimes, changing from working in a team with a poor work community to another work team could enhance the belief to continue working.

Another aspect of OSE for a full working life is the confidence of feeling skilled in the multifaceted home care work. Manageable changes and work-related challenges were considered inspirational. The home care workers emphasised that they want to further develop their professional skills as well. However, increased knowledge requirements, inadequate knowledge levels in relation to current requirements or too much responsibility were sometimes perceived as threats to their OSE. However, lack of challenges, personal development, and promotional opportunities negatively affect the belief to continue working in the home care sector. In addition, the home care workers emphasised that they want employers to view older age positively.

Satisfactory organisational resources affect OSE to continue working. Home care workers requested enough skilled home care staff. However, the lack of resources and economic savings are translated into understaffing, hiring freezes, incompetent workers, and the continuous employment of temporary workers. Some home care workers stressed concern about the poor quality of provided home care. Moreover, the negative effects of political and national decisions that impact working hours and remuneration of work were emphasised (authors' comment: Refers to regulations passed in 2016 but repealed in 2020). The low pay for home care work was another issue. A salary increase for home care work was requested. The need for income for daily living and to earn a higher pension forces home care workers to continue working. Nevertheless, future high demand for home care workers was perceived as positive. The large number of people in need of assistance and employment stability due to an extended home care service offer stable job opportunities.

Home care workers emphasised the joy of living and wisdom as resources for OSE. Zest for life, keeping a young mind, a positive attitude, and faith in the future contribute to OSE. Gained life experience, self-awareness, persistence, and making the best of own resources keep up home care workers' OSE for a full working life. Own work morale was considered essential for a long working life. Private life, such as time with family, grandchildren, and friends, as well as meaningful hobbies, were important for OSE to continue working until retirement age as well.

### **10.2.2 Occupational self-efficacy by engineers**

The qualitative analysis of the engineers' responses yielded six categories regarding what positively affects their OSE for a full working life and six categories regarding what negatively affects their OSE.

Categories related to health were frequently present in the engineers' responses as well, both positively and negatively affecting their OSE to continue working until retirement age. Engineers emphasised the significance of having satisfactory physical and mental health. Taking care of one's own physical and mental health, having control over one's own life, and having a good work-life



balance are aspects that enhance engineers' OSE to continue working. Adequate mental and physical workload, satisfactory work tasks, and influence and flexibility concerning own work is needed in this regard. Furthermore, seeing colleagues who have continued working despite poorer health than oneself enhances engineers' OSE. However, future ill health was considered likely and, thus, a cause for concern. The engineers were aware of own personal risk and lifestyle factors for ill health. Moreover, the ability to adapt the workload to one's work ability was perceived as important for OSE for a full working life.

Perceived excess and continuous mental pressure and already existing stress-related health problems were concerns that decreased engineers' OSE to continue working. The engineers emphasised an increasing amount of work added to the current high workload, as well as increased demands on effectiveness and individual performance that cause urgency and stress at work. Challenges in the physical and psychosocial work environment were addressed. The malfunctioning organisation, poorly functioning software, and short-term solutions, as well as open-plan designed offices and many travel days per year, were sources of pressure. Worryingly was a poorer perceived stress management ability compared to earlier in life. In addition to their own health, close relatives' ill health affected engineers' OSE for a full working life as well.

The engineers described the importance of a sense of belonging, including social networks, fellowship in the work community, a good work climate, and good teamwork. However, they stressed a poorer work climate where previous pleasure at work and a good work community have deteriorated. The importance of support from leaders and the organisation was highlighted. Honesty, openness, and appreciation of and confidence in the employees were prerequisites for a full working life. Engineers want to be paid attention to, even though they work in organisations characterised by business. In contrast, dissatisfaction with the leadership and organisation negatively affects OSE for a full working life. Lack of appreciation, respect, acknowledgement, poor opportunities to influence work, and high expectations and demands were also mentioned. An unclear organisation with unclear goals and much bureaucracy lowered the self-efficacy belief. Additionally, perceived employer ageism was stated as a barrier to a continued working career. An example mentioned was that the older employees were usually terminated during cooperation negotiations, while the younger ones were allowed to continue working. Furthermore, the engineers stressed that there is an existing attitude in Finnish society that only younger employees are valuable in the labour market. Gender discrimination was also mentioned by a few participants but without any further explanation.

Another source of OSE for a full working life was acquired competences and skills, as well as the ambition to further develop at work. However, engineers would like to see a higher value placed on a worker's experience than is currently

the case. Furthermore, on the one hand, the constant demand for engineers in the labour market conveyed the stability of future work. On the other hand, the constant changes in current working life, such as changes in work tasks, working conditions, and organisation, created uncertainty. Engineers were unsure whether they could learn all the new processes they needed quickly enough. In addition, some engineers were unsure about the company's ability to meet the demands of development and, thus, its future competitiveness.

Work motivation affected OSE to continue working until the expected retirement age as well. According to the engineers, own attitudes to work and private life impact their motivation. Intrinsic motivation and life orientation include meaningful work tasks and a genuine interest in the engineering sector. An approach of taking the future one day at a time with an open mind, own experiences of coping with difficulties, and seeing others successfully cope facilitate OSE for a full working life. Additionally, support from life partners and close family was crucial. Time off and meaningful leisure activities were stressed as important counterbalances to work.

The private economy was both an opportunity and a hindrance. On the one hand, an increased prioritisation of leisure time and opportunities for more time off tempt the participants from working life. Having voluntary pension insurance or a good private economy brings opportunities for earlier retirement. Dissatisfaction with the salary for the work performed increased the engineers' desire to leave a working life as well. Additionally, the increased retirement age in Finland in recent years was mentioned to lower self-efficacy. On the other hand, the need for a solid income and unpaid debts forced some of the participants to remain in working life.

**Table 3.** Resources and barriers to occupational self-efficacy for a full working life.

<b>Aspects positively affecting occupational self-efficacy to continue working until expected retirement age</b>			
<b><i>Home care workers</i></b>		<b><i>Engineers</i></b>	
<i>Categories</i>	<i>Sub-categories</i>	<i>Categories</i>	<i>Sub-categories</i>
<i>Own health</i>	<ul style="list-style-type: none"> <li>• A resource and a challenge</li> <li>• Health supporting activities</li> </ul>	<i>Engagement in one's own health</i>	<ul style="list-style-type: none"> <li>• Satisfactory physical and mental health</li> <li>• Health supporting activities</li> </ul>
<i>Workplace resources</i>	<ul style="list-style-type: none"> <li>• Satisfactory organisational resources</li> <li>• Strong workplace community</li> </ul>	<i>Healthy work environment</i>	<ul style="list-style-type: none"> <li>• Adequate workload</li> <li>• Flexibility and autonomy</li> </ul>
<i>Meaning of the work</i>	<ul style="list-style-type: none"> <li>• Intrinsic motivation</li> </ul>	<i>Intrinsic work motivation and life orientation</i>	<ul style="list-style-type: none"> <li>• Sustainable work motivation and meaningfulness</li> </ul>

	<ul style="list-style-type: none"> <li>• Satisfaction from work</li> </ul>		<ul style="list-style-type: none"> <li>• Positive life orientation</li> <li>• Learnt experiences</li> </ul>
<i>Profession in demand</i>	<ul style="list-style-type: none"> <li>• Continuous need of home care</li> <li>• Skilled in demanding work</li> </ul>	<i>Confidence in one's own competence</i>	<ul style="list-style-type: none"> <li>• Obtained knowledge and acquired skills</li> <li>• Ambition and potential for development</li> </ul>
<i>Family and leisure</i>	<ul style="list-style-type: none"> <li>• Family and friends</li> <li>• Hobbies and leisure</li> </ul>	<i>Personal life and financial conditions</i>	<ul style="list-style-type: none"> <li>• Family life and leisure</li> <li>• Retirement</li> <li>• Private economy</li> </ul>
<i>Income needed</i>			
<i>Joy of living and wisdom</i>	<ul style="list-style-type: none"> <li>• Confidence about the future</li> <li>• Joy of living</li> <li>• Wisdom of life</li> </ul>	<i>Social inclusion and leadership support</i>	<ul style="list-style-type: none"> <li>• Participation and belonging with colleagues</li> <li>• Supportive leadership and organization</li> </ul>
<i>Appreciation and feedback from clients</i>			

**Aspects negatively affecting occupational self-efficacy to continue working until expected retirement age**

<b>Home care workers</b>		<b>Engineers</b>	
<i>Categories</i>	<i>Sub-categories</i>	<i>Categories</i>	<i>Sub-categories</i>
<i>Health-related decline</i>	<ul style="list-style-type: none"> <li>• Current life and health</li> <li>• Future health challenges</li> </ul>	<i>Declining health</i>	<ul style="list-style-type: none"> <li>• Uncertain health</li> <li>• Risk factors for unhealth</li> </ul>
<i>Multifaceted work</i>	<ul style="list-style-type: none"> <li>• Demanding work</li> <li>• Imbalance between individual resources and demands</li> </ul>	<i>Consequences of workload</i>	<ul style="list-style-type: none"> <li>• High and increasing workload</li> <li>• Work related stress</li> </ul>
<i>Organizational resources</i>	<ul style="list-style-type: none"> <li>• Consequences of lack of resources</li> <li>• Unsatisfying leadership</li> </ul>	<i>Insufficient security and work well-being</i>	<ul style="list-style-type: none"> <li>• Changes in the global labour market</li> <li>• Uncertainty regarding one's own resources against challenging job demands</li> <li>• Unsatisfying leadership and work community</li> </ul>

<i>Work-related strain</i>	<ul style="list-style-type: none"> <li>• Constantly present rush</li> <li>• Imminent threat of stress</li> </ul>	<i>Declining prime mover of work</i>	<ul style="list-style-type: none"> <li>• Declining motivation and interest in the work</li> <li>• Contradictions in meaningfulness and values</li> </ul>
<i>Political and national decisions</i>		<i>Jurisdiction and societal attitudes</i>	<ul style="list-style-type: none"> <li>• Discrimination</li> <li>• Increased retirement age</li> </ul>
<i>Financial reasons</i>		<i>Leisure and economic situation</i>	
<i>Family life, leisure, and retirement</i>			
<i>Poor workplace community</i>			
<i>Lack of motivation</i>			
<i>Unemployment</i>			

### 10.3 Work motivation by home care workers and engineers (Studies II and III)

This sub-section presents the overall findings regarding what affects ageing home care workers' and engineers' work motivation, both describing perceived resources and barriers. The categories and the percentages for each category are presented in Table 4.

#### 10.3.1 Work motivation by home care workers

Seven categories emerged regarding what gives home care workers work motivation, and 10 categories described what negatively affects their work motivation. Most present in the home care workers' answers about what affected their work motivation was work environment aspects. The home care workers highlighted good relationships with colleagues and a sense of belonging in the work community, as well as good collaboration skills and well-functioning teamwork. Satisfaction with leadership was an important contributor to work motivation. This included a supportive leader with good dialogue skills – a leader that displayed appreciation and satisfaction, trusted the workers, and allowed them to take responsibility and influence their work content, routines, work schedules, work quantity, and vacations.

In contrast, leaders' negative attitudes towards the workers and a lack of response, support, and appreciation decreased work motivation. Additionally, leaders being inaccessible, excessive job demands, inadequate information and guidance, and an overall unsystematic work organisation were on the negative

side. Furthermore, several aspects of poor work climate and relationship with colleagues lowered OSE. Bad atmosphere, tired colleagues, poor collaboration, and conflicts were stressed. Home care workers emphasised poor work ethics and poor responsibility among colleagues, resulting in the loss of confidence in colleagues. Home care workers highlighted, for example, colleagues being lazy, tasks left undone, colleagues not helping each other even though needed, and high usage of private mobile phones.

An essential resource for work motivation was home care work itself. Home care work was considered meaningful, important, and necessary. Home care workers expressed an intrinsic motivation to help and care for clients, to make a difference in their everyday life, and to bring them happiness. Client meetings were perceived as enriching. Home care workers got to know their clients well and felt close to them. Home care work includes stimulating challenges that enhance work motivation, providing it is manageable. It encompasses both responsibility and freedom. Home care work was also considered demanding and unpredictable, including varying and challenging tasks and client situations that require physical and mental power and social skills. However, seeing the results of work done and success in problem-solving increase home care workers' work motivation. Trust in oneself and belief in own skills and competence were also important contributors, as well as the ability to continue to develop professional skills.

In contrast, an unsatisfactory work environment decreases work motivation. The home care workers stressed insufficient financial resources, worsening care conditions, resources not meeting the care needs, and the changes in responsibilities, tasks, and ways of working as negatively affecting their work motivation. The staff shortages also added challenges to retaining work motivation. A constantly high workload and time pressure cause adverse everyday physical and mental stress and strain. The home care workers emphasised the increase in an already high workload, more complex clients with more challenging care needs, more administrative tasks, and less time for discussing with clients and completing tasks. Sometimes, tasks were left unfinished or undone, with the quality of home care work suffering. Additionally, home care workers stressed the challenges of working in clients' homes and long travels between clients. Thus, the high demands and characteristics of home care work were considered a challenge. For work motivation to remain, sufficient health and strength to work were stressed. Chronological age rarely reduced work motivation.

Feedback from others was another resource of work motivation. Appreciation, praise, and encouragement from clients and relatives who were grateful for the received home care were perceived as valuable to the home care workers. Displayed appreciation and satisfaction from colleagues were highly important for work motivation as well.

Additionally, responses addressed private economy and private life. A stable income was needed for everyday living and to repay loans. The home care workers also stressed a wish for an adequate salary in accordance with job demands of their work. Furthermore, good relations with family and friends, having time off, and being satisfied with leisure and life increased work motivation.

### **10.3.2 Work motivation by engineers (unpublished data)**

Nine categories describe what gives engineers work motivation, and seven categories describe what negatively affects their work motivation. Positive characteristics of work were most frequently present in the engineers' answers as a resource of work motivation. Interesting, motivating, varied, and challenging work tasks with clear goals and working with world-class technology in a global work environment were highlighted. Furthermore, engineers emphasised autonomy in terms of independence and freedom in work.

Although own health was rarely mentioned as a source of work motivation, sufficient resources in work were a prerequisite for work motivation. The engineers stressed healthy workloads, reasonable demands, and possibilities for individual adaption if needed. Furthermore, resources to complete work, such as realistic and sustainable time schedules, were emphasised, as well as having appropriate work environments and work tools. Consequences of an unhealthy workload decrease engineers' work motivation. Too tight time schedules, rushing, heavy workloads, and too great challenges were stressed. Negative consequences were perceived stress and high strain, frustration, lack of recovery and meaningfulness, feelings of inadequacy, and health declines. Furthermore, the engineers highlighted monotonous and routine tasks, disturbing noise in open offices, defective software tools, and both too many and too few work travels as negatively affecting work motivation. Too few challenges decreased work motivation as well.

Having meaningful and fulfilling work was of high importance. The engineers emphasised an inner satisfaction that comes from feelings of success by completing tasks and finding solutions. The ability to use knowledge, skills, creativity, and innovativeness and to learn new things and further develop skills were resources for work motivation. Contribution to utilities in a larger perspective brings a sense of pride and usefulness in important development.

A good work community, including good and supportive relations with colleagues, a positive work climate and atmosphere, and effective teamwork, improved work motivation. Engineers also highlighted social contacts received from customers. In contrast, a poor work community with poor relations, negative colleagues and atmosphere, and demanding customers lowered their work motivation.

Leadership and management were crucial for work motivation, especially the negative impact of poor-functioning leadership. Perceived dissatisfaction with leadership and management decreased the engineers' work motivation. The engineers stressed that poor leadership, which included lack of information and instructions, unclear and unreasonable distribution of work tasks, leaders that do not listen, unfairness, broken promises, and lack of feedback and support were negatively affecting their work motivation. Furthermore, insufficient or unused competence and knowledge, unclear goals and strategy, dissatisfaction with the organisation's work method, decreased resources, and organisational changes also lowered the engineers' work motivation. Conversely, well-functioning leadership was a resource for work motivation. Openness, support from leaders and their trust in engineers' know-how, and receiving responsibility were emphasised aspects. Furthermore, the engineers asked for opportunities to use their strengths in work. Additionally, receiving positive responses on work done from employers and customers increased work motivation.

The private economy was another resource of engineers' work motivation. This category included having reasonable wages for work done, as well as the importance of having lasting and full-time work to cover living expenses and debts. However, wage dissatisfaction negatively affects work motivation.

Work motivation was rarely affected by private life, including family, home situation, leisure, and vacations. Similarly, the negative impact of age and age-related decline on work motivation was mentioned only a few times.

**Table 4.** Resources and barriers of work motivation.

<b>Aspects positively affecting work motivation</b>			
<b><i>Home care workers</i></b>		<b><i>Engineers</i></b>	
<i>Categories</i>	<i>Sub-categories</i>	<i>Categories</i>	<i>Sub-categories</i>
<i>Work environment</i>	<ul style="list-style-type: none"> <li>• Satisfaction with colleagues</li> <li>• Satisfaction with leadership and organisational resources</li> </ul>	<i>Positive characteristics of work</i>	<ul style="list-style-type: none"> <li>• Work characteristics</li> <li>• Motivating tasks</li> <li>• Autonomy</li> </ul>
<i>Significance of the work</i>	<ul style="list-style-type: none"> <li>• Meaningful work</li> <li>• Enriching client meetings</li> </ul>	<i>Meaningful and fulfilling work</i>	<ul style="list-style-type: none"> <li>• Meaningful work</li> <li>• Use of competence</li> </ul>
<i>Stimulating challenges</i>	<ul style="list-style-type: none"> <li>• Multifaceted work</li> <li>• Competence and desire to develop</li> </ul>	<i>Good work community</i>	<ul style="list-style-type: none"> <li>• Belonging and teamwork</li> <li>• Positive work environment and work community</li> </ul>

<i>External response</i>	<ul style="list-style-type: none"> <li>• Recognition from clients and relatives</li> <li>• Recognition from colleagues and management</li> </ul>	<i>Positive feedback</i>	<ul style="list-style-type: none"> <li>• Positive response on work done</li> <li>• Positive response from others</li> </ul>
<i>Income stability</i>	<ul style="list-style-type: none"> <li>• Sufficient salary</li> <li>• Regular salary</li> </ul>	<i>Private economy</i>	<ul style="list-style-type: none"> <li>• Adequate wage</li> <li>• Regular salary</li> </ul>
<i>Sufficient health and energy</i>		<i>Health</i>	
<i>Close relationship and leisure</i>		<i>Private life and leisure</i>	
		<i>Sufficient resources in work</i>	<ul style="list-style-type: none"> <li>• Healthy workload</li> <li>• Resources for carrying out work</li> </ul>
		<i>Well-functioning leadership</i>	<ul style="list-style-type: none"> <li>• Supportive leadership</li> </ul>

### Aspects negatively affecting work motivation

<b>Home care workers</b>		<b>Engineers</b>	
<i>Categories</i>	<i>Sub-categories</i>	<i>Categories</i>	<i>Sub-categories</i>
<i>Organisational work environment</i>	<ul style="list-style-type: none"> <li>• Lacking resources</li> <li>• Unsatisfactory leadership</li> </ul>	<i>Dissatisfaction with leadership and management</i>	<ul style="list-style-type: none"> <li>• Dissatisfaction with strategic management of the organisation</li> <li>• Dissatisfaction with leadership of line managers</li> </ul>
<i>Time constraints</i>	<ul style="list-style-type: none"> <li>• Significant rush and stress</li> <li>• Negative consequences of time pressure</li> </ul>	<i>Unhealthy workload</i>	<ul style="list-style-type: none"> <li>• Challenging workload</li> <li>• Negative consequences of workload</li> </ul>
<i>Job characteristics</i>	<ul style="list-style-type: none"> <li>• A challenging work</li> <li>• Job discontentment</li> </ul>	<i>Characteristics of work</i>	<ul style="list-style-type: none"> <li>• Monotonous work</li> <li>• Unsatisfactory physical work environment and work tools</li> <li>• Travelling</li> </ul>
<i>Work community</i>	<ul style="list-style-type: none"> <li>• Negative atmosphere</li> <li>• Poor engagement</li> </ul>	<i>Challenging work community and clients</i>	<ul style="list-style-type: none"> <li>• Unsatisfactory work community</li> <li>• Negative customer behaviour</li> </ul>



<i>Unsatisfactory salary level</i>		<i>Dissatisfaction with pay</i>
<i>Age</i>		<i>Age-related changes</i>
<i>Weakened health and energy</i>	<ul style="list-style-type: none"> <li>• Health declines</li> <li>• Draining physical and mental demands</li> </ul>	<i>Home and leisure</i>
<i>Feedback from clients and relatives</i>	<ul style="list-style-type: none"> <li>• Negative response from clients</li> <li>• Negative response from relatives</li> </ul>	
<i>Staff shortage</i>	<ul style="list-style-type: none"> <li>• Frequent staff shortage</li> <li>• Staff shortages entails risks</li> </ul>	
<i>National controlled decrees</i>		

## 10.4 Results of the integration of the study findings

This section presents the key findings of the integration of findings from Studies I–III, by which the qualitative and quantitative findings are brought together. The integration of the findings from Studies II and III and the merged integration of the findings of the whole thesis are viewed in side-by-side comparison joint displays (Tables 5-7).

### 10.4.1 Integrated findings of occupational self-efficacy

Home care workers gave 553 utterances ( $n = 218$ ; 93%) and engineers 304 utterances ( $n = 112$ ; 90%) about what positively affects their occupational self-efficacy to continue working until the expected retirement age. Regarding what negatively affects OSE for a full working life, home care workers gave 507 utterances ( $n = 202$ ; 86%) and the engineers 270 utterances ( $n = 107$ ; 86%). Typically, the participants gave between one to three responses for each open-ended question. The integrated findings regarding OSE are shown in Table 5.

The most often mentioned resources and barriers to OSE to continue working until the expected retirement age were similar for both home care workers and engineers, despite the differences in work tasks, work context, education, and gender. Prominent aspects similar to both occupational groups were health and personal resources, work characteristics, work environment aspects, such as resources, demands, workload, leadership, and work community, knowledge and competence, and positive age management.

**Table 5.** Integrated findings of what positively and negatively affects occupational self-efficacy for a full working life.

<b>Occupational self-efficacy belief to continue working until expected retirement age</b>			
<b>Positively affecting aspects</b>			
<b>Home care workers</b> ( <i>n</i> = 218, 553 utterances)		<b>Engineers</b> ( <i>n</i> = 112, 304 utterances)	
Own health (140)	25%	Engagement in one’s own health (76)	25%
Workplace resources (118)	21%	Confidence in one’s own competence (54)	18%
Meaning of the work (97)	18%	Healthy work environment (45)	15%
Profession in demand (94)	17%	Personal life and financial conditions (47)	15%
Family life and leisure (35)	6%	Intrinsic work motivation and life orientation (42)	14%
Joy of living and wisdom (32)	6%	Social inclusion and leadership support (40)	13%
Income needed (18)	3%		
Appreciation and feedback (17)	3%		
<b>Negatively affecting aspects</b>			
<b>Home care workers</b> ( <i>n</i> = 202, 507 utterances)		<b>Engineers</b> ( <i>n</i> = 107, 270 utterances)	
Health-related decline (145)	29%	Insufficient security and work well-being (94)	35%
Multifaceted work (115)	23%	Declining health (64)	24%
Organizational resources (96)	19%	Consequences of workload (55)	20%
Work related strain (65)	13%	Declining prime mover of work (33)	12%
Political and national decisions (23)	5%	Jurisdiction and societal attitudes (18)	7%
Workplace community (20)	4%	Leisure and economic situation (6)	2%
Financial reasons (18)	4%		
Retirement and family life (7)	1%		
Lack of motivation (7)	1%		
Unemployment (4)	1%		
The numbers in parentheses describe the number of utterances mentioned.			

Meaningfulness of work and intrinsic motivation were other often-mentioned resources of both home care workers and engineers’ OSE for a full working life. However, the declining motivation that negatively affects OSE were mentioned more often by the engineers. Learnt experiences of coping with previous challenges as well as seeing others manage were highlighted to increase OSE by

both occupations. Furthermore, the home care workers stressed the perceived joy of life and belief in a good future as essential for their OSE for a full working life.

Additionally, leisure and the private economy were both resources and barriers to OSE for both occupations, but of higher degree for engineers. The private economy facilitates OSE as a demand for a sufficient income. However, contradictory to the home care workers, some engineers revealed having such a good economy that allows them to retire earlier. National and political decisions affect both occupations' OSE but in quite dissimilar ways. Reforms of care in Finland negatively affected home care workers' OSE, while the increased retirement age negatively affected the engineers' OSE.

#### **10.4.2 Integrated findings of work motivation**

Home care workers expressed 659 utterances ( $n = 225$ , 96%) and engineers 333 utterances ( $n = 115$ , 92%) concerning what positively affected their work motivation. Correspondingly, home care workers gave 620 utterances ( $n = 227$ ; 97%) and engineers gave 325 utterances ( $n = 114$ , 91%) regarding what negatively affected their work motivation. In general, most participants provided one to three responses for each open-ended question. The integrated findings regarding work motivation are shown in Table 6.

The resources and barriers to work motivation most often mentioned were similar for both home care workers and engineers. Work environmental aspects, which can be either resources or barriers to work motivation, were most frequently mentioned by both. Manageable workloads, demands, and challenges increase work motivation, while unhealthy workloads and strain negatively affect work motivation. Health declines and high workloads that are perceived to negatively affect health appear to decrease work motivation to a greater degree than good health seems to improve work motivation. Furthermore, leadership, feedback, working community, clients, or customers can be either a resource or a barrier to work motivation according to both occupational groups.

Interesting and meaningful work tasks, as well as meaningful work that makes a difference on a deeper level and from a wider perspective, enhance work motivation for both occupational groups. Having professional competence and skills also increases motivation. In particular, the opportunity to use one's own competence was stressed as important. Furthermore, a decent private economy was noted as affecting motivation in a similar way. However, the personal economy seemed to positively affect engineers' work motivation to a greater degree than that of home care workers. Additionally, close relationships and leisure activities had some impact on work motivation. Age was however mentioned by very few engineers and home care workers, and then only as a barrier to work motivation.

**Table 6.** Integrated findings of what positively and negatively affects work motivation.

<b>Work motivation of ageing workers</b>			
<b>Positively affecting aspects</b>			
<b>Home care workers</b> ( <i>n</i> = 225, 659 utterances)		<b>Engineers</b> ( <i>n</i> = 115, 333 utterances)	
Work environment (234)	36%	Positive characteristics of work (83)	25%
Significance of the work (161)	24%	Good work community (74)	22%
Stimulating challenges (131)	20%	Meaningful and fulfilling work (64)	19%
External response (77)	12%	Private economy (45)	14%
Income stability (32)	5%	Positive feedback (25)	8%
Close relationships and leisure (18)	3%	Sufficient resources in work (24)	7%
Sufficient health and energy (6)	1%	Well-functioning leadership (10)	3%
		Private life and leisure (7)	2%
		Health (1)	0.3%
<b>Negatively affecting aspects</b>			
<b>Home care workers</b> ( <i>n</i> = 227, 620 utterances)		<b>Engineers</b> ( <i>n</i> = 114, 325 utterances)	
Organizational work environment (176)	28%	Dissatisfaction with leadership and management (144)	44%
Time constraints (144)	23%	Unhealthy workload (91)	28%
Job characteristics (119)	19%	Challenging work community and clients (39)	12%
Work community (74)	12%	Challenges in the nature of work (31)	10%
Weakened health and energy (35)	6%	Dissatisfaction with pay (14)	4%
Feedback from clients and relatives (23)	4%	Home and leisure (3)	1%
Salary level (23)	4%	Age (3)	1%
Staff shortage (19)	3%		
National controlled decrees (6)	1%		
Age (1)	0.2%		
The numbers in parentheses describe the number of utterances mentioned.			

### 10.4.3 Interpretation of integration results

The key findings of Studies I–III were merged and compared in a joint display to enable further interpretation and address the aim of exploring the relations between ageing workers’ OSE to continue working until expected retirement age, work ability (Work Ability House) and work motivation (Table 7). In this chapter, the main comparisons are presented. Further interpretations are made in the discussion chapter.

**Table 7.** Joint display comparing the themes of ageing workers' OSE for a full working - life with the Work Ability House model and themes of work motivation.

Work ability	↔ Significant relationship (Study I)	Occupational self-efficacy for a full working life (Studies II and III)		Work motivation of ageing workers (Studies II and III)
Work Ability House model (Gould et al., 2008; Ilmarinen & Ilmarinen, 2015)		Home care workers and engineers		Home care workers and engineers
	Congruent/ Discrepant/ Expanding		Congruent/ Discrepant/ Expanding	
Health and functional capacities	Congruent	Health	Congruent	Health
Work tasks, work organisation and work arrangements, working time, work environment (physical, mental, social), work community, leadership and management	Congruent	Work tasks, work organisation and work arrangements, working time, work environment (physical, mental, social), work community, leadership and management	Congruent	Work tasks, work organisation, and work arrangements, working time, work environment (physical, mental, social), work community, leadership and management
Competence, work experience, learning	Congruent	Competence, work experience, learning	Congruent	Competence, work experience, learning
Values, attitudes, motivation, fair treatment	Congruent	Values, attitudes, motivation, fair treatment	Congruent (Mainly)	Values, attitudes, motivation <b>-Fair treatment not mentioned</b>
<b>Meaningfulness not clearly expressed</b> – Has sometimes been included in values, attitudes, motivation	<b>Expanding</b>	<b>Meaningfulness of work</b>	Congruent	Meaningfulness of work
Family, social networks, leisure <b>-Retirement not included</b>	Congruent (Mainly)	Family, social networks, leisure, <b>upcoming retirement</b>	Congruent (Mainly)	Family, social networks, leisure <b>-Retirement not mentioned</b>
<b>-Not included</b>	<b>Expanding</b>	<b>Private economy</b>	Congruent	Private economy
Society, surrounding environment, legislation, policy	Congruent	Society, political and national decisions	Congruent	Society, political and national decisions

Most of the key findings of all three studies were found to be congruent with each other. Health, working conditions, competence, knowledge, values, attitudes, motivation and the influence of close relatives and leisure are all vital aspects of ageing workers' OSE for a full working life, work ability and work motivation. The statistically significant relationship found between OSE and work ability further confirms this concordance. Meaningfulness of work was prominent regarding both OSE for a full working life and work motivation. However, meaningfulness has not been a clearly expressed part of the Work Ability House model. Thus, meaningfulness expands this model. Similarly, the private economy is congruent between OSE for a full working life and work motivation but not included in the Work Ability House. Another discordance is that upcoming retirement increases OSE to continue working, whereas retirement is not viewed in the Work Ability House model nor in the aspects for work motivation. Fair treatment is seen in aspects describing values and attitudes in OSE for a full working life and the Work Ability House, but not in work motivation.

# 11. Discussion

The overall aim of this thesis was to explore and deepen the understanding of occupational self-efficacy (OSE) as a resource for a full working life in the context of ageing workers and to explore the relations between OSE, work ability and work motivation. The findings of this thesis describe the complexity of working life, in which different concepts are intertwined and interact with each other. The overall results are discussed further in this chapter.

## 11.1 Occupational self-efficacy – a resource in ageing workers’ working life

The findings of this thesis make an important contribution to the research regarding ageing workers’ OSE, since there is little research on this topic, its relation to work ability and aspects affecting ageing workers’ OSE for a full working life.

Of significant importance, the findings of Studies II and III highlight health as the most prominent aspect of ageing workers’ OSE for a full working life. Earlier research has shown the benefits of high perceived self-efficacy in, for example, health behaviour change (Affendi et al., 2018; Bandura, 2004; Holmes et al., 2014; Schönfeld et al., 2017; Sheeran et al., 2016), self-management in chronic health issues (Hayward & Siobhan, 2021; Wang et al., 2021), mental well-being (Nixon et al., 2022; Tomas, 2021), and sustainable return to work after illness (Etuknwa et al., 2019). The findings in this thesis add to the understanding of the reciprocal benefits of health as participants emphasise that having good health positively affects OSE as well.

That health is important for ageing workers is not surprising per se, since a great number of ageing workers are suffering from health problems (Eurostat Statistics Explained, 2022; WHO, 2018). Health has also been stressed as a major concern for longer working lives (Laaksonen et al., 2022). Besides health, working conditions were other aspects often mentioned by the ageing workers in the studies for this thesis, such as work content, tasks and challenges, workload, high mental stress, work community, leadership and organisation. These aspects will over the long term impact health in either a positive or negative way. However, even though the number of diseases increases the risk of early retirement (Neupane et al., 2022), perceived health is a more important predictor of longer working lives for ageing workers (Nilsson et al., 2016). This is concordant with the findings of this thesis as well. Perceived good health improved OSE for a full working life, while worries about declining health or possible future declines in health were concerns that were decreasing OSE. Thus, the findings of health as a resource and working conditions being either a resource when they are well-functioning or a detrimental barrier when poorly functioning describe complementary perspectives.

Previous research has also stressed that work environmental conditions over time affect workers' health (Staudinger, 2016) and impact their intention to retire early (Neupane et al., 2022). Therefore, purposeful work environmental management and workplace policies should address maintaining health (Nilsson, 2020; OECD, 2019; WHO, 2017) and work ability (Sundstrup et al., 2017) to ensure a sustainable working life. Ageing workers have also emphasised the importance of health promotion and protection, as well as job design, to meet their needs for a long working life (Carlstedt et al., 2018). To retain ageing workers in working life, employers must take their needs into account (Marvell & Cox, 2017). Support from leaders and colleagues (Carlstedt et al., 2018; Marvell & Cox, 2017; Nilsson, 2020) and being fairly treated and appreciated also facilitate longer working lives (Carlstedt et al., 2018; Neupane et al., 2022; Söderbacka et al., 2021). By maintaining a good work environment and atmosphere, leaders also support ageing workers' work ability (Söderbacka et al., 2021). Unfortunately, ageism and negative employer attitudes toward ageing workers remain common in working life (OECD, 2019; Staudinger et al., 2016). Such age stereotypes increase ageing workers' intention to retire (Bal et al., 2015; Ng & Feldman, 2012; Von Hippel et al., 2013; Weiss et al., 2022). Ageism was also seen in the findings of Studies II and III. Working life must become more age-friendly, including age-adjusted (Ilmarinen & Ilmarinen, 2015) and individual solutions for older workers (Eurofound, 2022; Ilmarinen & Ilmarinen, 2015). In addition to age-discrimination policies (Staudinger et al., 2016), cultural change is required to enable longer working lives (Carlstedt et al., 2018).

The factors facilitating a full, or even an extended, working life for ageing workers are what make work fulfilling and contribute to healthy ageing (Carlstedt et al., 2018; Marvell & Cox 2017). Thus, in addition to employers, the whole society benefits from enhancing workers' health and work ability across the whole lifespan, which results in a more active and healthy ageing (Ilmarinen & Ilmarinen, 2015; Neupane & Nygård, 2021). This will, in turn, lessen the economic burden on society (Ilmarinen & Ilmarinen, 2015). At last, workers are responsible for their own health, but since people spend a large part of their lives doing work, they cannot remain healthy if they are working in an unhealthy work environment.

In Finland, laws have for years mandated employers to organise occupational healthcare (Ministry of Social Affairs and Health, 2022) and to organise cooperation to promote workers' occupational health, work ability and safety (Occupational Safety and Health Administration, 2022). Thus, there are well-developed and required methods for promoting, preventing, and maintaining workers' occupational health. However, many of these actions represent a pathogenic approach; they are primarily focused on deficits and obstacles (Lindström & Eriksson, 2005), minimising development of illness and risk for unhealth and accidents (Fagerström, 2021). From a pathogenic perspective, health is the absence of symptoms and illnesses. Yet, in a salutogenic approach,



the emphasis is on the sources of health (Antonovsky, 1987) and on what gives and supports health (Fagerström, 2021). Health itself is not the goal, but a resource. Although salutogenic and pathogenic perspectives can be perceived as opposite, both are needed and should be recognised as complementary perspectives (Antonovsky, 1987; Fagerström, 2021). Nevertheless, addressing what supports workers' health is important to occupational health (Söderbacka, 2020), and this could be addressed even more.

The findings from Study I suggest that a higher OSE is more often related to a good to excellent work ability among ageing workers. However, because of the cross-sectional study design, no causality between OSE and work ability could be determined. People with higher OSE might have better initial work ability as well, and in that case, their work ability is not improved by a higher OSE. Nevertheless, the revealed relationship between OSE and work ability has been supported by previous studies. However, these studies were conducted with samples that also included younger workers (Airila et al., 2014; Converso et al., 2018; Cotrim et al., 2021; Larsson et al., 2012; Ng et al., 2015), and other concepts of self-efficacy (Converso et al., 2018; Cotrim et al., 2021; Larsson et al., 2012; Ng et al., 2015) or personal resources (Airila et al., 2014). The findings in Study I indicate that, by enhancing ageing workers' OSE, their work ability may be improved as well. These conclusions are based on suggestions found in previous research. Workers with fewer personal resources tend to perceive job demands as more threatening (Bakker & Demerouti, 2017; Xanthopoulou et al., 2007). Perceiving a high number of threatful job demands may negatively impact work ability, since work ability is characterised by a balance between job demands and individual resources (Gould et al., 2008; Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015). Personal resources, such as self-efficacy, are suggested to help workers be more resistant to adverse job demands (Bakker & Demerouti, 2017; Xanthopoulou et al., 2007). Thus, by improving OSE, workers might better cope with job demands (Xanthopoulou et al., 2013). However, practices to support ageing workers have mainly focused on decreasing job demands and increasing job resources, and less often on improving personal resources (Cloostermans et al., 2015). Thus, the results in Study I support the benefits of strengthening the personal resources of OSE to support ageing workers' work ability. This adds vital information, since concerns about whether the work ability of ageing workers is good enough for longer working lives have been stressed (Brzykcy et al., 2019; Ilmarinen & Ilmarinen 2015; Prakash et al., 2019). The findings from the studies of this thesis also suggest that there is a reciprocal relationship between OSE for a full working life and work ability. OSE is related to work ability, as revealed in Study I, and work ability appears to improve OSE for a full working life. The specific aspects of OSE for a full working life mirror the cornerstones of work ability, as described as the floors of the Work Ability House model (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015).

As seen in Studies II and III, the meaningfulness of work appeared to be a vital aspect of OSE for a full working life. Meaningfulness was defined by the participants in two ways. Work itself and the mission of work were perceived as meaningful, and satisfaction gained from work promotes feelings of meaningfulness. This is consistent with a previous study, where two dimensions of meaningfulness of work were found; work itself was perceived as meaningful, and work seemed to improve feelings of meaningfulness as well (Söderbacka et al., 2021). Ageing workers who feel that their work matters and that it makes a difference in some way often remain longer in working life (Marvell & Cox, 2017; Söderbacka et al., 2021). Meaningful work provides ageing workers with a sense of contribution, purpose (Marvell & Cox, 2017; Söderbacka et al., 2021), and self-esteem (Marvell & Cox, 2017). Work tasks become meaningful when they match the values and purpose of the workers and fulfil their personal needs (Nikolova & Cnossen, 2020), which is also described as the state of autonomous motivation (Deci et al., 2017). Adequate autonomy, competence, and relationships at work are person-specific needs that contribute to autonomous motivation and, consequently, to self-efficacy (Nikolova & Cnossen, 2020). Competence includes having the right skills (Martela & Riekkari, 2018; Nikolova & Cnossen, 2020). The participants in Studies II and III also stressed their own competence, skills and continuous learning and development as important for their OSE for a full working life. Previous research has also found that stimulating, enjoyable, and challenging work (Carlstedt et al., 2018; Marvell & Cox, 2017; Neupane et al., 2022) that offers opportunities for using experiences and skills, as well as lifelong learning and training for further skill development, are desired by ageing workers (Carlstedt et al., 2018; Marvell & Cox, 2017; Söderbacka et al., 2021).

Hence, scholars have suggested that the meaningfulness of work can be promoted by improving workers' self-efficacy (Chaudhary, 2022; Nikolova & Cnossen, 2020). According to the findings from Studies II and III, meaningfulness of work promotes OSE for full working life as well. Furthermore, previous research has confirmed that the personal meaning of work is important for a good work ability (Punakallio et al., 2019; Pursio et al., 2021) and longer working lives (Clausen et al., 2014). Scholars have stressed that the personal meaning of work in relation to work ability is an under-investigated issue and that it should be included in work ability promotion (Punakallio et al., 2019).

## **11.2 Findings in relation to theoretical perspectives**

The overall findings presented above are generally in line with the theoretical framework presented earlier in this thesis, but with some additions. The most relevant comparisons among the theoretical frameworks are reflected in this chapter.

### **11.2.1 Findings in relation to the theory of self-efficacy**

According to Bandura (1997, 2012), people develop their self-efficacy beliefs from four sources of information: mastery experiences, vicarious experiences,

verbal persuasion and dealing with physiological and affective states. Although these sources were not especially explored in Studies II and III, and qualitative inductive analysis was used, they are found within the aspects that describe the resources for and barriers to OSE for a full working life.

### ***Mastery experiences***

The source of mastery experiences is built upon the workers' earlier experiences of success and failure (Bandura, 1997, 2012). Support for successful mastery experiences in working life was found in Studies II and III. For example, the participants were confident in their knowledge and skills, feeling that they could master different work situations. They also expressed a belief in further learning and development. Good health and health-supporting activities were other factors related to successful mastery experiences. Furthermore, adequate working conditions increased OSE for a full working life. However, the participants also addressed mastery experiences that may be seen as failures, or threats of failures, which lower their self-efficacy to continue working. Already declining health, declining personal resources, increasing challenges and demands of work, insufficient working conditions and lack of organisational resources were expressed by both home care workers and engineers as factors that threaten their self-efficacy. These aspects increased concerns about future health and future work ability. Also, expectations of costs and benefits affect a person's efforts to persevere when facing difficulties (Bandura, 2004). Even though workers have succeeded in performing challenging tasks, the great effort required to accomplish a task might decrease self-efficacy if the workers feel unsure about whether they will be able to produce the same effort again (Bandura, 1997). Thus, this will also affect ageing workers' efforts to maintain their health and work ability. Mastery experiences are the strongest source to use for building a high self-efficacy belief (Bandura, 1997, 2012). Therefore, efforts to develop self-efficacy should specifically address this source within the domain-specific context of working life.

### ***Vicarious experiences***

Vicarious experiences refer to the fact that self-efficacy tends to improve by seeing others similar to oneself succeed in a given task by perseverant effort (Bandura, 1997, 2012). Vicarious experiences were found in Studies II and III, in that the participants expressed increased OSE for full working life as a result of seeing that others had been able to continue working as well.

### ***Verbal persuasion***

Verbal persuasion is based on the concept that when people are persuaded to believe in themselves, they are likelier to persevere in the face of obstacles (Bandura 1997, 2012). Verbal persuasion that enhances ageing workers' OSE for a full working life was seen in Studies II and III as encouragement and positive feedback from leaders, colleagues, clients and customers. Conversely, a lack of encouragement was expressed to negatively affect the participants' OSE.

Furthermore, negative responses about the participants' ages also decreased OSE.

### ***Physiological and affective states***

People partly judge their self-efficacy according to their physiological and affective states and how these have influenced their earlier performance (Bandura, 1997, 2012). By correcting the misreading of physiological and affective states, self-efficacy beliefs may be enhanced. This is especially relevant in health functioning, physical accomplishments, and coping with stress. In Studies II and III, the participants expressed perceived affective stress reactions as well as physiological reactions to stress. Although the underlying causes for these reactions must be addressed, by learning to understand and cope with ones' reactions, the negative effect may decrease, and self-efficacy may be strengthened as well.

### **11.2.2 Occupational self-efficacy in relation to theoretical models of work**

The Work Ability House model was used as the theoretical model for work ability in this thesis. The knowledge disclosed through the studies was generally in line with the floors of the Work Ability House model (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015), as well as adding additional vital information to the third floor. In Study I, the relationship between higher OSE and good to excellent work ability was confirmed. The findings of Studies II and III revealed that the most often mentioned aspects of OSE for a full working life are also essential parts of the Work Ability House model. The emerged aspects were health in relation to mental and physical capacity (first floor of Work Ability House) and working conditions encompassing work content, tasks and challenges, workload, work community, leadership and organisation (fourth floor). These are further accompanied by emerged aspects such as competence (second floor) and subjective experience of work, such as values, motivation, attitudes, support, fair treatment and appreciation (third floor) (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015). Thus, the revealed aspects of OSE to continue working until the expected retirement age are the same as the cornerstones of the Work Ability House model.

Meaningfulness of work was another vital aspect of OSE for a full working life emphasised in Studies II and III. The Work Ability House model (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015) does not explicitly consider the meaningfulness of work. Punakallio et al. (2019) included the personal meaning of work as a part of the third floor of the Work Ability House model that reflects motivation, values, and attitudes. Previous research has shown a relationship between the meaningfulness of work and work values, and that the meaningfulness of work can provide work motivation (Rosso et al., 2010). A previous review revealed that people perceiving the meaningfulness of work are likelier to experience intrinsic motivation (Bailey et al., 2019). Research

has also found that meaningfulness predicts work engagement (Bailey et al., 2019; Han et al., 2021). In the theory of work engagement, dedication is characterised by work as a meaningful interest (Schaufeli et al., 2002). In a later work by Ilmarinen and Ilmarinen (2015), engagement and commitment were discussed as parts of the third floor of the model as well. As discussed in the previous chapter, the meaningfulness of work is a crucial contributor to work ability; however, it has been less studied (Punakallio et al., 2019; Pursio et al., 2021). For example, in a study by Punakallio et al. (2019), workers with low perceived meaning of work had a twofold higher risk of poor work ability compared with those who reported a high perceived meaning of work. Overall, the meaningfulness of work can be considered a valuable expansion of the Work Ability House model, closely related to the third floor. This is confirmed by the findings in Studies II and III, which revealed a closeness between the perceived meaningfulness of work, intrinsic motivational factors of work and work being in line with the worker's own deeper values.

In Studies II and III, family, relatives, and leisure impacted ageing workers' OSE to continue working as well as societal attitudes and national and political decisions. Similarly, in the Work Ability House model, there is an interaction between the floors, the worker's family and relatives and the surrounding environment (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015). The aspect of the private economy found in Studies II and III is, however, not a part of the Work Ability House model.

The findings of Studies II and III are substantially in line with the determinant areas described in the theoretical model of sustainable working life for all ages: the swAge model (Nilsson, 2020). The swAge model aims to increase the understanding of what makes working life sustainable and healthier for workers of all ages, which comprises different influence levels: societal, organisational/enterprise and individual levels. The model describes the complexity of work–life participation and factors that determine if workers are able to (can) and want to work. Factors that determine whether workers can or want to participate in working life are presented as nine determinant areas included under the four spheres of determination: 1. personal health effects of the working environment, 2. private economy, 3. support, and community and 4. execution of tasks. Determinant areas and spheres of determination are also linked to conceptualisations of ageing (see chapter 2.4). Measures should be taken in the four spheres of determination to make working life sustainable (for a comprehensive overview, see Nilsson, 2020). The findings of Studies II and III fully covered the spheres of determination and all nine determinant areas in swage: 1. self-rated health, diagnoses, and disability, 2. physical work environment, 3. mental work environment and stress, 4. working hours, work pace, and recovery, 5. private economy, 6. family situation, close relations, and leisure, 7. leadership, workplace community, attitudes, discrimination, participation, and social support, 8. meaningful and stimulating work and tasks,

and motivation, and 9. competence, knowledge, and opportunities for development (Nilsson, 2020).

The swAge model does not specifically discuss self-efficacy. However, self-efficacy is mentioned as one factor related to manageability, meaningfulness and comprehensibility (i.e. salutogenesis; see Antonovsky, 1979), which are described in the determination sphere of self-fulfillment through meaningful activities (Nilsson, 2021). According to Bandura (2012), 'I can' is a statement of self-efficacy. In the swAge model, there are several determinant areas mainly corresponding with 'I can' (Nilsson, 2021): physical and mental work environment, work time, work pace and recovery as well as knowledge, competence and development opportunities. The statement 'I want' refers in swAge to social work environment, participation social support and inclusion as well as to work motivation, stimulating and self-crediting tasks and work satisfaction. Determinant areas that are related to both 'I can' and 'I want' are self-rated health and diagnosis, personal finances, family, close relations and leisure (Nilsson, 2021). Even though the participants in Studies II and III were asked about what affected their confidence that they could continue working until the expected retirement age (i.e., occupational self-efficacy belief), the emerged aspects included all determinant areas in swAge, whether the areas represent the statement 'I can' or 'I want'. Despite different ways to approach a full working life, it seems that the same aspects are important, regardless of whether workers' occupational self-efficacy for a full working life or workers' ability or motivation to participate in working life are considered. Furthermore, similar aspects are covered by the theory of work ability, except for meaningfulness of work and private economy, which are not specifically discussed in the Work Ability House model (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015).

According to the Job Demands-Resource (JD-R) model, personal resources, such as self-efficacy, play roles similar to job resources (Bakker & Demerouti, 2017). Thus, people with greater personal resources are assumed to be more resistant to adverse job demands (Bakker & Demerouti, 2017; Xanthopoulou et al., 2007). Self-efficacy also functions as a mediator between working conditions and well-being (Schaufeli, 2017). Furthermore, personal resources have been determined to improve the positive impact of manageable challenging job demands on motivation (Bakker & Demerouti, 2017). The findings from Studies II and III are in line with these propositions. Both home care work and engineering were described as challenging professions that included many job demands. Challenging but manageable job demands were described as enhancing OSE for a full working life and improving work motivation. However, too many and adverse job demands negatively affected the participants' OSE and threatened their health. In contrast, autonomy, job control, task variety, feedback and support from others, opportunities to develop and meaningful work are all examples of job resources (Bakker & Demerouti, 2017; Bakker et al., 2003; Schaufeli, 2017; Schaufeli & Taris, 2014). Similar aspects were also mentioned

by the home care workers and engineers as improving their OSE for a full working life as well as their work motivation. Thus, the aspects affecting OSE to continue working that are described in Studies II and III are comparable to job resources.

### **11.2.3 Findings in relation to the theory of health**

The findings raise the question of whether ageing workers' health issues are met on too superficial levels. The valuable past, present and continued work to improve working conditions, including, for example, physical and mental workload, organisation of work, leadership, and work community, cannot be sufficiently appreciated. This work is extremely significant in working life since working conditions will highly impact the worker's work ability and health. However, it is important that health issues are not only a part of risk management and prevention. For working human beings, health involves being able to manage both work and daily life (Wärnå-Furu, 2014). Work is meaningful for health (Wärnå-Furu, 2014). Are there appropriate methods within the existing approaches for maintaining occupational health that consider the deeper needs of ageing workers that will impact their health? Even though risk management and improving working conditions remain highly important for a sustainable working life (Eurofound, 2022), these external issues might be perceived as insignificant by a person who faces threats and suffering because of (severe) unhealth. For this person, deeper values as well as deeper dimensions of health, of suffering due to unhealth, of meaning, and of life may be more crucial (Eriksson, 1984, 2018; Wärnå-Furu, 2014). These deeper dimensions are internal resources of the human being and should be met to reach sustainable health (Eriksson, 1984, 2018; Wärnå-Furu, 2014).

Self-efficacy is an internal health resource that is important to the inner dimension of health (Fagerström, 2012). Therefore, to reach sustainable health, the sources described in the self-efficacy theory (mastery experiences, vicarious experiences, verbal persuasion and coping with affective states) (Bandura, 2004, 2012) must be considered when health issues of the ageing worker are directed. For a sustainable working life, individual needs and abilities must be taken into account (Eurofound, 2022) to understand the worker, the context and the lifespan perspective (De Vos et al., 2020). The individual ageing workers' needs and reflections regarding their own health and unhealth should be addressed. Furthermore, since self-efficacy differs in different domains (Bandura, 2012), health should be considered in relation to the domain of working life (occupational self-efficacy). What are the key issues of working life for this particular ageing worker? What earlier experiences of success in health issues and work-related issues can be used to enhance this workers' OSE (mastery experiences)? How have other persons similar to oneself successfully faced similar kinds of issues (vicarious experiences)? What kinds of verbal encouragement and support from peers/significant others will the ageing worker find helpful in facing perceived difficulties and strengthening OSE (verbal

persuasion)? How can ageing workers learn to interpret and cope with perceived affective reactions with less unpleasant feelings and more confidence (Bandura, 2004, 2012)? By facing and processing one's own health issues to reach deeper dimensions of health in accordance with the domain-specific features of self-efficacy theory, perceived health might improve despite illness (Eriksson, 1984, 2018; Fagerström, 2021). An ageing worker can become aware of, understand, process and 'become friend with' the challenges caused by health issues. This may create new paths to progress on the continuum towards better perceived health (Antonovsky, 1987; Eriksson, 2018) and work ability (Tengland, 2011). By improving ageing workers' perceived health in relation to their OSE, hopefully, their abilities for a full working life will improve as well.

In conclusion, based on the assumption that work is meaningful for health (Wärnå-Furu, 2014) and the findings of the studies in this thesis, the theory of occupational self-efficacy may serve as an additional resource to help workers reach deeper dimensions of health in working life.

### **11.3 Methodological considerations**

The strengths and limitations of this thesis also need to be considered. The strengths and limitations specific to Studies I–III have been discussed within the published articles (Appendices 1–3) and are not reflected here. In this chapter, methodological considerations regarding the structure of the entire thesis are described and discussed.

A strength of this thesis is the use of a mixed methods design that includes both qualitative and quantitative analyses of the research data (Creswell & Plano Clark, 2018; Kyngäs et al., 2020; Polit & Beck, 2022; Regnault et al., 2018). Because the topics of working life and resources are complex and comprehensive, neither quantitative nor qualitative methods alone could address the overarching aim of this thesis. Thus, the convergent mixed methods approach was considered useful to holistically answer the research questions (Moorley & Cathala, 2019), reach a deeper understanding and obtain different but complementary information about the studied phenomenon (Creswell & Plano Clark, 2018; Moorley & Cathala, 2019; Polit & Beck, 2022). Another advantage of the mixed methods approach is being able to benefit from the strengths of both quantitative and qualitative methods. Using mixed methods research enabled to first test the hypothesis that OSE is important for the work ability of aging workers (quantitative phase, Study I). Furthermore, exploring the fundamental nature of OSE for a full working life provided valuable information about what ageing workers genuinely believe affect their OSE to continue working until the expected retirement age (qualitative phase, Studies II and III). In addition, to examine where the main points were in the qualitative data material, by transforming the qualitative categories into quantitative counts and percentages (integration, Studies II and III), we gained valuable information about what aspects tended to be most prominent among all the participants.



Merging, integrating, and interpreting all the results together enabled a deeper insight and understanding of the phenomenon under study compared with using either quantitative or qualitative methods, or only analysing them as parts (Creswell & Plano Clark, 2018). Integration and interpretation of the findings also allowed us to compare the results from Studies II and III with the work ability concept used and to search for similarities and divergence in existing models of work ability. Furthermore, it enabled a comparison between OSE and work motivation. In this thesis, quantitative and qualitative were weighted as equally important.

There are also several challenges regarding the use of a mixed methods design that need to be discussed. In this thesis, inter-dependent data collection was used (Boardman, 2022). This means that both quantitative and qualitative data were collected through one method: questionnaires. One advantage of using questionnaires to collect data is that you can reach many people at the same time (Creswell & Plano Clark, 2018). The advantage of collecting all the data from the same sample is that the sample size of both the quantitative and qualitative data is the same. A disadvantage is that the findings are not verified by others. However, the intent was to relate and compare the quantitative and qualitative data, so using the same sample was not considered a concern (Creswell & Plano Clark, 2018).

Despite the convergent design, conducting mixed methods research is time-consuming. Interviews were also in the initial plan for this doctoral thesis, which should have increased the validity, but no interviews were conducted. One main reason was the challenge of time. First, because I am a novice researcher, learning, collecting, analysing, interpreting, and reporting data took more time than expected. Second, conducting a mixed methods approach in Studies II and III also took a longer time than expected. The approach had not been decided before the analyses in Study II. However, when the data material became familiar, it became obvious that by only performing a qualitative analysis, some information might get lost, while some categories with utterances from only a few participants might have received considerable attention. Transforming the emerged categories into quantitative data by counting the number of times each category appeared in the data also provided vital information about the distribution of emerged aspects (Creswell & Plano Clark, 2018; Kyngäs et al., 2020). This does not mean that utterances mentioned only a few times were less important, but they were less prominent in the samples under study. Regarding the analyses in Study III, the decision of using a mixed methods design was decided beforehand. Another reason that the interviews were not realised was that the collected data was considered comprehensive enough for this thesis and the required publications. However, in the interviews, follow-up questions could have been asked that should have yielded further information about the four sources of self-efficacy theory (mastery experiences, vicarious experiences, verbal persuasion and physiological and affective states).

Another consideration was how best to analyse the data material. In Studies II and III, a 'mixed methods light' approach was used (Creswell & Plano Clark, 2018; Kyngäs, 2020). This refers to that information from the initial qualitative inductive analysis informed the second phase of quantitative analysis. As mentioned above, the categories from the qualitative inductive analysis were transformed into quantitative data by counting the number of times each category appeared in the data for each open-ended question and then presented as counts and percentages (Creswell & Plano Clark, 2018; Kyngäs, 2020). A qualitative deductive analysis in Study III, by using the same categorisation as in Study II, should have enabled an analysis of statistically significant differences between the aspects mentioned by home care workers and engineers. Another choice could have been to deductively analyse both Studies II and III in terms of the floors in the Work Ability House model. A strength of Studies II and III is that despite the use of qualitative inductive analyses, the same core aspects were found within the categories of both home care workers and engineers. However, even though the core aspects were quite similar between the samples, the counts and percentages should have differed if deductive analyses had been conducted. Another possible choice to analyse the qualitative data could have been to separate the data material into two groups representing data of workers with good to excellent work ability and workers with poor to moderate work ability. This might have addressed another distribution of the categories and more specific needs for each group. Furthermore, since work ability was dichotomised into these two groups in the binary logistic regression, this was a motivated possibility.

Another challenge when conducting mixed methods research is that the researcher must be skilled in both quantitative and qualitative methods as well as in mixed methods (Creswell & Plano Clark, 2018). By using several different methods, the pro is that the researcher develops broad research method skills, but the con is that perceived skills will stay at a more superficial level in all methods. As a novice doctoral student, my knowledge and skills in all methods of research and data analyses are only emerging. This has influenced all the choices made in respect to this thesis. To minimise bias, the quantitative and qualitative analyses that were used have followed well-reputed recommendations (Creswell & Plano Clark, 2018; Field, 2018; Graneheim & Lundman, 2004; Graneheim et al., 2017; Kyngäs et al., 2020). Although the strengths and limitations regarding the used quantitative and qualitative methods specific to Studies I–III are discussed within the published articles (Appendices 1–3), a few points should be discussed. The statistical analysis of binary logistic regression was found useful in Study I since it allowed to study group differences of categorial variables while controlling for covariates. Dichotomisation of work ability into good to excellent and poor to moderate seemed appropriate since workers with poor to moderate work ability are at higher risk of losing their work ability (Ilmarinen & Ilmarinen, 2015) and therefore need more support. However, some nuances might have been lost.

Using all five separate levels of the Work Ability Index might have led to the discovery of other degrees of relationship between OSE and the separate levels of work ability. In Studies II and III, the same method of qualitative inductive analysis was used, which enabled the researcher to further develop in this research method. Qualitative inductive analysis was also found appropriate since the data material was of a quite manifest nature.

The use of the different concepts of work engagement (Study I) and work motivation (Studies II and III) must also be discussed. Motivation is considered an intention to act (Ryan & Deci, 2000), an inner lust and drive (Martin et al., 2017). Engagement describes the observable factors of emotions, behaviour and involvement in activities that reflect the drive and energy of motivation. Motivation enables people to engage optimally. However, recent research has stated that motivation and engagement are considered mutually strengthening: motivation predicts engagement, and engagement provides motivation (Martin et al., 2017). Thus, motivation and engagement include both distinct and overlapping factors, and theory, research and practice seem to be intertwined. The conceptional position regarding motivation and engagement impacts a research design (Martin et al., 2017), and this is a limitation of this thesis as well. Hence, since the measure of work engagement was used in the quantitative analyses in Study I and work motivation in the open-ended questions in Studies II and III, no integration between these was undertaken.

Stepwise purposive sampling was used to reach the target groups. In Article I, the sampling method is incorrectly referred to as stepwise convenience sampling. There were both strengths and limitations regarding which participants were reached for the data collection. One strength was that the participants who participated met the inclusion criteria and were determined to have appropriate knowledge about the phenomenon under study (Polit & Beck, 2022). The different included samples also represented the requested differences regarding work context, education, and gender. This allowed to seek similarities in the core of ageing workers' OSE for a full working life. However, there are limitations that need to be noted. Despite the same inclusion criteria and the fact that a convergent method was used, the sampling methods of the participants were different because of practical matters. One strength was that all home care workers aged 45 years and older who had an active employment relationship with a municipality or city in a region of Western Finland were invited to participate. Thus, the entire target population in the selected area was invited. However, home care workers working in the private sector were not invited, and data from them might have brought about other study findings. In order to reach the engineers, discussions regarding the inclusion criteria of being a 45-year-old or older engineer and having a valid employment contract took place with the head of human resource management in six globally productive companies in a region in Western Finland. Engineers from two companies were excluded before the survey was conveyed because they did not meet the age

inclusion criterion. Eventually, engineers from four companies were invited. No engineers in municipal public sector employment were invited. Thus, although the sampling methods for home care workers and engineers were different, the main inclusion criteria of age and a valid employment contract were met for both. Despite the differences between the sample groups, the results of this thesis showed considerable similarities between the different occupations. However, some caution should be exercised regarding the transferability to other occupations.

The quite low response rate of 43% might have implied a selection bias. Furthermore, the response rate of home care workers (51%) was higher than that of engineers (34%). This difference might be attributed to the different methods of questionnaire distribution. The study information letter and the questionnaire were provided to the home care workers by their closest supervisor, but for the engineers, they were by each company's local human resource department. The distribution from the closest supervisor may have motivated the home care workers to have a higher response rate. Furthermore, the survey format also differed. Home care workers could choose either a paper-based or web-based questionnaire, whereas the engineers were only provided with a web-based questionnaire. The often low response rate is a disadvantage of using a questionnaire and may result in outcome bias (Polit & Beck, 2022). The persons who chose not to answer might have differed from those who responded. In the data collection for the studies discussed in this thesis, the period of recruitment was extended, and three reminders were sent, which provided a higher response rate.

Self-reporting measures and open-ended questions were used for data collection. However, there are potential biases in self-reported data regarding validity and accuracy that need to be addressed (Polit & Beck, 2022). Participants may, for example, answer in accordance with prevailing social views, consciously or unconsciously falsify responses or give too positive responses. Yet, most participants are expected to be honest in their answers. Self-reports are considered valuable for gathering information about what people feel and believe (Polit & Beck, 2022). However, a strength was that well-reputed, valid, and reliable measuring scales, such as Occupational Self-Efficacy Scale – Short Form (Rigotti et al., 2008), Work Ability Index (Tuomi et al., 1998), and Utrecht Work Engagement Scale (Schaufeli et al., 2006), were used. Additionally, open-ended questions were asked that allowed the participants to answer in their own words. The wording of the open-ended questions might, however, have affected the answers. The participants were asked what positively and negatively affected their confidence that they could continue working until the expected retirement age. This wording was assumed to mirror the perceived OSE. Questions to answer self-efficacy issues should be formulated using the verb 'can' (Burrell et al., 2018). Therefore, the open-ended questions were assumed to be accurately formulated to specifically examine self-efficacy. Nevertheless, the participants

might have answered differently if a brief description of the self-efficacy concept had been given. The answers to the open-ended questions did not give specific information about what, on a concrete level according to the sources of self-efficacy, ageing workers need to enhance their OSE competence for a full working life. Furthermore, by using open-ended questions, it was not possible to ask supplementary questions.

Despite the choice to use the concept of chronological age in this thesis, it should be kept in mind that ageing is an individual continuing process (Dubois et al., 2017). The individual differences in physical, psychological, and social ability as well as in knowledge, attitudes and values increase when getting older (Ilmarinen, 2005). Forty-five-year-old and older workers are more heterogeneous compared with younger ones (Ilmarinen, 2012), and they should therefore not be seen as a homogenous group without considering it (Dubois et al., 2017; European Agency for Safety and Health at Work, n.d.; Guglielmi et al., 2016). However, the concepts of ageing (45–54 years) and older (55 years and older) workers used in this thesis are widely used in research. Since the aim was to reach workers closer to retirement age, the chronological classification of age was considered useful in this thesis.

Finally, it is reasonable to conclude that my pre-understanding of the research topic based on both academic and non-academic backgrounds has influenced and guided the research from the initial plan to the final interpretations. Being rooted in the context might have been a source of bias. By being aware of the pre-understanding as a source of bias and being open and reflective, as well as distanced during the process, and by following methodological guidelines recommended, I have tried to minimise the negative influences of my pre-understanding and remain open to new meanings. The research process and analysis have been described carefully, and the findings are presented in tables and figures to maintain transparency and conformability. Furthermore, collaboration with supervisors and triangulation of findings have hopefully counterbalanced the impact of the researcher's pre-understanding and emerging skill level. However, since all pre-understandings might not be known or visible to us, there may be hidden pre-understandings that have biased the findings of the studies. On the other hand, and in a positive way, my pre-understanding also enabled a deeper understanding of the complexity of working life.

## **11.4 Practical implications**

Health, working conditions, meaningfulness of work, intrinsic motivation, competence development, and private life were the most prominent aspects of OSE for a full working life. These aspects should be focused on to support longer working lives of ageing workers. As such, these aspects are already known to be fundamental sources of a healthy working life. However, in line with the findings of this thesis, it seems beneficial to provide support in line with the self-efficacy theory. Thus, stakeholders supporting ageing workers need to be trained in the

theory of self-efficacy, including the four sources of self-efficacy belief development: mastery experiences, vicarious experiences, verbal persuasion and coping with physiological and affective states. Providers of self-efficacy support should be neutral agents whom ageing workers can trust, such as occupational health staff. Experts by experience may also be used to provide support. They are vital sources of vicarious modelling, and the value they provide is already known in social and health disciplines. However, close supervisors, and employers, as well as human resources and safety professionals, are also key supporters who need this knowledge.

Furthermore, to reach a sustainable health and working life, discussions must reflect on individual essential work-related health issues at a deeper level, and meaningfulness of work. To reach a sustainable health, deeper dimensions must be met. The four sources of self-efficacy belief development must be included in these deeper reflections. The reflections should not only be undertaken by the workers themselves, but also by close supervisors, employer, and occupational health and HR professionals. They need to understand and reflect on health processes and issues affecting them to be able to support ageing workers. It is worth noting that workers with previously high perceived self-efficacy in maintaining their health and work ability may also fail if they judge that current challenges require too much effort to overcome. Therefore, when workers with normally high self-efficacy face adverse, or frequent, demands that threaten their health, they should also be supported.

Self-efficacy beliefs are not about what resources one has; they are about what one is doing with the resources available. If an ageing worker does not believe in their own capabilities to face, cope with and process work- and health-related issues and to find meaningfulness of work, the worker might not even try to reach a full working life, despite having good work motivation. The OSE beliefs of an ageing worker must be sufficiently and particularly addressed over time. Then, the worker will be able to see the possibilities of continuing to work until the expected retirement age.

The significance of OCE for a full working life that was revealed in this thesis highlights the importance of addressing work-related issues from a salutogenic view. Instead of limiting improvement of working conditions mainly to the more traditional ways of improving health habits and preventing risks and illnesses, the findings underline the benefits of focusing on personal resources such as OSE beliefs.

## 12. Conclusions

The findings of this thesis indicate that occupational self-efficacy (OSE) is a vital resource for supporting ageing workers in achieving full working lives. A higher OSE was more often related to good-excellent work ability among the participants. Health was the most prominent resource and barrier to OSE for a full working life. Other key aspects affecting OSE were issues related to working conditions (physical, mental, social, or organisational), that eventually either improve or deteriorate health. Meaningfulness of work and intrinsic motivation were other important resources of OSE for a full working life. The work itself and the mission of the work were perceived as meaningful, and satisfaction with the work done also increased the sense of meaningfulness. For OSE, ageing workers also wanted their age to be considered positively. They wanted to use the experiences, knowledge, and skills they had gained and to continue to develop in their working lives. The significance of private life was also emphasised.

When the OSE results were integrated and compared with the model of work ability used in the thesis (the Work Ability House) and the aspects of work motivation, there were mainly similarities between them (Table 7). However, meaningfulness of work is an important expansion of the Work Ability House model as it is very rarely mentioned in relation to the existing model. Private economy and upcoming retirement are also expansions of the model. In terms of work motivation, poor health and an unhealthy workload seemed to reduce work motivation more than good health increased it. The results mostly revealed similarities between the ageing home care workers and engineers despite their differences in work content, work challenges, work context, education, and gender.

The findings of this thesis provide valuable knowledge to the under-researched topic of OSE among ageing workers and which aspects should be considered to strengthen it. The findings suggest that to support OSE for a full working life, including a movement towards perceived better health and work ability, the focus needs to be shifted to reflections and activities on what enhances individual work-related health at a deeper level, even though fundamental working conditions need to be fit for purpose. This includes a focus on sources of self-efficacy belief development and of meaningfulness of work. Not only workers themselves, but also close managers, employers and occupational health and safety professionals should engage in these deeper reflections to bring about positive change.

## 13. Suggestions for future research

Although the findings of this thesis provide valuable knowledge to the topic of occupational self-efficacy (OSE) among ageing workers, several questions remain unanswered, and further research is needed.

- Qualitative research is needed to further explore how the main finding of health and meaningfulness of work from this thesis can best be used to develop practical support for ageing workers in accordance with the theory of OSE.
- Research is needed to investigate the salient source of OSE for a full working life on which ageing workers mostly rely. Although mastery experiences are often the most powerful source of self-efficacy, individuals differ regarding which source of self-efficacy they primarily rely on.
- The OSE of ageing workers should also be investigated in occupational groups other than home care workers and engineers to evaluate the transferability of the findings of this thesis.
- Studies should also be conducted to assess the practical usefulness of OSE for a full working life.
- OSE should also be studied among young workers who have recently started their working careers to evaluate the benefits of OSE for supporting this age group.
- Given that health was a key aspect of OSE, future research should explore the usefulness of OSE in managing working life challenges among people suffering from the new complex health challenges related to post COVID-19 conditions. Digital technology could be used to collect data periodically to enhance OSE in real time and to study a larger number of participants.



## 14. Sammanfattning

### Äldre arbetstagares arbetsrelaterade self-efficacy – En resurs för att nå ett helt arbetsliv, Stina Wallin

#### 14.1 Introduktion och bakgrund

Self-efficacy, det vill säga tilltro till egen förmåga att klara av en handling (på svenska även självförmåga, egenförmåga), förklarar hur människor agerar i specifika situationer och uthärdar även när de möter hinder (Bandura, 1997, 2012). Kan self-efficacy även fungera som resurs för längre arbetsliv? Self-efficacy är en viktig personlig resurs för arbetstagare (Bakker & Demerouti, 2017, Rigotti et al., 2008) och betydelsefull för att hantera de ständigt förekommande förändringarna i dagens arbetsliv (Del Libano et al., 2012; Turgut & Neuhaus, 2020). Det ständigt föränderliga arbetslivet är speciellt utmanande för äldre arbetstagare (Ilmarinen, 2019). Försämringar i deras arbetsförmåga orsakas ofta av svårigheter med att anpassa arbetsrelaterade förändringar till förändringar i de egna resurserna (Ilmarinen, 2012). Arbetsförmåga har hög prediktiv förmåga för längre arbetsliv och är därför viktig för äldre arbetstagare (Eurofound, 2023; FIOH, 2023; Ilmarinen & Ilmarinen, 2015; Nivalainen, 2021). Arbetsförmåga handlar om balans mellan arbetets krav och individens resurser (Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015; Ilmarinen et al., 2005). Arbetsrelaterad self-efficacy är betydelsefull för att kunna möta arbetskrav (Fullemann et al., 2015). Emellertid ingår arbetsrelaterad self-efficacy sällan i stödet för äldre arbetstagare (Cloostermans et al., 2015).

För att möta det stegrande behovet av arbetstagare i Europa har åtgärder för att stödja längre arbetsliv vidtagits i många länder (Eurofound, 2023; FIOH, n.d.; OECD, 2019). I Finland nåddes målet med en högre medelpensionsålder år 2020 (Kannisto & Vidlund, 2022), men fortsättningsvis lämnar den finländska befolkningen arbetslivet tidigare än sina nordiska grannar (FIOH, 2023). Det finns ändå en tilltagande andel äldre arbetstagare som vill stanna längre i arbetslivet (Carlstedt et al., 2018; Eurofound, 2022; Nivalainen, 2021; OECD, 2019). För längre arbetsliv måste arbetstagaren ha vilja att arbeta (Nilsson, 2020). En vanlig, falsk stereotyp bild är att äldre arbetstagare är mindre motiverade (Ng & Feldman, 2012) och mindre engagerade i arbete (Bakker, Demerouti, & Sanz-Vergel, 2014). Dessa stereotyper ökar intentionen till tidigarelagd pensionering (Bal et al., 2015; Ng & Feldman, 2012; von Hippel et al., 2013; Weiss et al., 2022). För längre arbetsliv behöver arbetstagare även sätt att hantera och övervinna utmaningarna och förändringarna i arbetslivet. I den här doktorsavhandlingen är fokus på den personliga resursen self-efficacy som ett bidrag till detta pussel. Det finns få studier som har undersökt arbetsrelaterad self-efficacy hos äldre arbetstagare, även om tidigare forskning visat att self-efficacy är en viktig resurs för arbetstagare generellt (Bakker & Demerouti, 2017; Rigotti et al., 2008).

För att möta behoven i det förändrade samhället finns ett ökat behov av de till synes mycket olika (ILO, 2020) yrkesgrupperna hemvårdare (THL, 2019; Genet et al., 2012; Rest et al., 2012; Vehko et al., 2017) och ingenjörer (Cedefop, 2020). Hemvårdare är traditionellt oftare kvinnor, har lägre utbildning och utför ofta sitt arbete i klienters hemmiljö. Ingenjörsarbete är å sin sida traditionellt mansdominerat och utförs ofta i stora, internationella företag av högre utbildad personal jämfört med hemvårdare. Likheter är dock att arbetet har genomgått stora förändringar de senaste åren och blivit alltmer komplext och krävande för både hemvårdare (Kröger et al., 2018; SuPer ry, 2018, Vehko et al., 2017) och ingenjörer (Qadir et al., 2020; Miettinen, 2021). Eftersom self-efficacy är betydelsefull för att anpassa sig till förändringar (Del Libano et al., 2012) och för att möta arbetskrav (Fulleman et al., 2015), utgör dessa två till synes mycket olika yrkesgrupperna samplet av äldre arbetstagare i denna avhandling. Finns det likheter i deras arbetsrelaterade self-efficacy trots de stora skillnaderna i arbetsinnehåll, arbetskrav, arbetskontext, utbildning och genus?

Kartläggning av tidigare forskning visar att self-efficacy är en viktig personlig resurs i arbetslivet. Tidigare studier har visat statistiskt signifikanta samband mellan arbetsförmåga och personliga resurser, inklusive self-efficacy (Converso et al., 2018; Ng et al., 2015). Personliga resurser, tillsammans med arbetsresurser, antas ha en positiv långtidseffekt på arbetsförmåga (Airila et al., 2014) och minska den negativa effekten av högre ålder på arbetsförmåga (Converso et al., 2018). Self-efficacy bidrar också till tillfredsställelse (Guarnaccia et al., 2018; Yeves et al., 2019) och välmående i arbetet (Bakker & Demerouti, 2017; Salanova et al., 2011). Det finns även samband mellan self-efficacy och bättre arbetsprestation (Cetin & Askun, 2018; Hadi, 2023; Schönfeld et al., 2017), arbetsmotivation (Cetin & Askun, 2018; Hadi, 2023; Salanova et al., 2011) och arbetsengagemang (Alessandri et al., 2015; Bakker et al., 2011; Guarnaccia et al., 2018; Liu & Huang, 2019), också då arbetskraven är höga (Onyishi et al., 2018; Xanthopoulou et al., 2013). Forskning har dock konstaterat att också ett högt arbetsengagemang kan medföra sämre arbetsprestation om self-efficacy är låg (Alessandri et al., 2015). Forskare har därför rekommenderat att interventioner för att öka arbetsprestationen bör inledas med att stärka self-efficacy och först därefter eventuellt rikta sig mot arbetsengagemang och arbetsmotivation (Alessandri et al., 2015).

Det finns brist på forskning gällande arbetsrelaterad self-efficacy för såväl äldre arbetstagare generellt som för äldre hemvårdare och ingenjörer. Då övrig vårdpersonal och även yngre vårdare inkluderades i artikelsökning visade resultaten från tidigare forskning statistiskt signifikanta samband och prediktiv förmåga av högre self-efficacy på bland annat arbetsförmåga (Cotrim et al., 2021; Larsson et al., 2012), senare pensionering (De Simone et al., 2018; Van Waeyenberg et al., 2015), arbetsengagemang (Bernales-Turpo et al., 2022), arbetstillfredsställelse (Zhang et al., 2023) och utmattning (Bernales-Turpo et al., 2022; He et al., 2023; Low et al., 2022). För ingenjörer i blandade åldrar har

studier visat att self-efficacy jämnade ut den negativa effekten av arbetskrav på mental belastning (Panatik et al., 2011). Hos ingenjörstuderanden hade tidigare erfarenheter av egna framgångar och misslyckanden och att observera andras människors framgångar och misslyckanden störst inverkan på förväntat resultat (Sheu et al., 2018) och att slutföra ingenjörsuppgifter (Chen et al., 2023). Forskare har påpekat att det finns få studier som undersöker betydelsefulla källor till ingenjörers arbetsrelaterade self-efficacy (Chen et al., 2023). I studier är ingenjörer dessutom ofta inkluderade som en del av personal från områdena vetenskap, teknologi, konstruktion och matematik (förkortat som "STEM" på engelska), vilket har kritiserats eftersom de enskilda gruppernas karakteristika då anses generaliseras (Chen et al., 2023).

Forskare har också framhållit att få studier undersökt inverkan av äldre arbetstagares arbetsrelaterade self-efficacy (Chiesa et al., 2016; Paggi & Jopp, 2015) och andra personliga resurser (Converso et al., 2018) på arbetsförmåga. Likaså har det poängterats att stöd för äldre arbetstagare sällan inbegriper att förbättra personliga resurser, utan riktas mer till att minska arbetskrav och öka arbetsresurser (Cloostermans et al., 2015; Vuori et al., 2019). De få tillgängliga studierna med äldre arbetstagare har dock visat positiva samband mellan arbetsrelaterad self-efficacy och arbetsmotivation, arbetstillfredsställelse och livstillfredsställelse (Paggi & Jopp, 2015) samt mellan uthållighet när man möter svårigheter, vilket är self-efficacy, och tidigare pensionering (Plomp et al., 2019). En annan studie fann dock inte belägg för samband mellan arbetsrelaterad self-efficacy och framtida arbetsprestationer och förväntad pensionsålder (Paggi & Jopp, 2015).

Tidigare forskning har indikerat att arbetsrelaterad self-efficacy är viktig för att förstå framgångsrikt åldrande i arbetslivet (Wöhrmann et al., 2017) och som stöd för äldre arbetstagare att fortsätta arbeta (Paggi & Jopp, 2015). Ett behov av att utveckla metoder för att stärka arbetsrelaterad self-efficacy i interventioner på arbetsplatser (Chaudhary, 2014; Fullemann et al., 2015; Guarnaccia et al., 2018; Liu & Huang, 2019) och för längre arbetsliv (Sousa-Ribeiro et al., 2022) har betonats.

## **14.2 Teoretiskt perspektiv**

Det teoretiska perspektivet utgörs av teorin för self-efficacy samt den syn på arbetsförmåga och hälsa som har använts i denna avhandling. En persons self-efficacy varierar från situation till situation (Bandura, 2012). I avhandlingen används därför domänspecifik arbetsrelaterad self-efficacy, vilken definieras som arbetstagares tilltro till egen förmåga att framgångsrikt utföra uppgifter som ingår i deras arbete (Rigotti et al., 2008). Enligt teorin om self-efficacy kan människor påverka och kontrollera sina tankar, känslor, motiv och handlingar (Bandura, 1997, 2012). För att utföra en specifik uppgift bedömer människor sin förmåga att utföra den, vilken nytta utförandet medför och vilken ansträngning det kräver. Hur mycket människor anstränger sig för att utföra en uppgift och

hur länge de uthärdar när de möter hinder baserar sig på deras nivå av self-efficacy. Personer med hög self-efficacy har tillräcklig motivation, kan hantera affektiva tillstånd, underlätta tankemönster och är resilienta inför svårigheter. Upplevd self-efficacy baserar sig inte på antalet förmågor människor har, utan på vad man tror sig kunna göra med sina förmågor under olika omständigheter. Således påverkar nivån av self-efficacy hur människor använder de förmågor de har, hur de tänker, känner och agerar i sina dagliga liv (Bandura, 1997, 2012).

Enligt teorin finns det fyra källor som utvecklar self-efficacy. *Tidigare erfarenheter av egna framgångar och misslyckanden* anses ha störst inverkan på människans self-efficacy (Bandura, 1997, 2012). Tidigare erfarenheter av att överkomma hinder och att lyckas genom uthållig ansträngning stärker self-efficacy, medan upprepade misslyckanden försvagar den. *Observation av andras människors framgångar och misslyckanden* utgör den andra källan till self-efficacy (Bandura, 1997, 2012). Genom att se att andra människor som antas vara lika en själv lyckas ökar tilltron till att man själv har förmågan att utföra liknande aktiviteter, medan att se dem misslyckas gång på gång sänker self-efficacy. *Verbal övertalning*, det vill säga realistisk feedback och socialt stöd från andra att man har förmågan att lyckas stärker tilltron till att nå det som eftersträvas (Bandura, 1997, 2012). *Fysiska och psykiska reaktioner* i stressfulla och utmanande situationer påverkar människors self-efficacy (Bandura, 1997, 2012). Positiva omedelbara känslor och minnen av tidigare positiva reaktioner stärker self-efficacy, medan negativa känslor väcker minnen om tidigare misslyckanden. Upplevelsen av reaktionerna är viktigare än hur kraftiga de fysiska och psykiska reaktionerna är (Bandura, 1997, 2012).

Self-efficacy har vissa likheter med både arbetsmotivation och arbetsengagemang. Self-efficacy handlar om en "kan göra"-konstruktion medan motivation igen handlar om avsikten att agera (Ryan & Deci, 2000). Dock inverkar self-efficacy på motivation genom dess påverkan på förväntade resultat och att ställa högre mål (Bandura, 2012; Pinder, 2008). Arbetsengagemang innefattar dimensionerna energi, hängivenhet och att uppslukas av arbetet. Dimensionen energi kännetecknas av hög energinivå och mental resiliens under arbetet, villighet att spendera tid och ansträngning på arbetet och uthållighet vid motgångar (Schaufeli et al., 2002) och har därigenom likheter med self-efficacy. Likaså har dimensionen energi likheter med inre motivation (Mauno et al., 2007).

Self-efficacy ses som en värdefull personlig resurs i den välkända *Arbetskrav och -resursmodellen*, vilken fokuserar just krav och resurser i arbetet (Bakker & Demerouti, 2007, 2014, 2017; Schaufeli & Taris, 2014; Schaufeli, 2017). Arbetskrav utgörs av fysiska, psykiska, sociala eller organisatoriska arbetsbelastningar som kräver fysisk eller psykologisk ansträngning att hantera och som har samband med stress och försämrad hälsa. *Personliga resurser*, såsom self-efficacy, självkänsla och optimism, anses ha samma positiva inverkan

på arbetskrav som arbetsresurser. *Arbetsresurser* hjälper arbetstagaren att hantera arbetskrav och dess inverkan på hälsan, att nå mål i arbetet samt att främja egen utveckling (Bakker & Demerouti, 2007, 2014, 2017; Schaufeli & Taris, 2014; Schaufeli, 2017). Arbetstagare med höga personliga resurser känner tilltro till sin förmåga att hantera krav de möter (Bakker & Demerouti, 2017; Xanthopoulou et al., 2007). De upplever inte färre krav, men de är mer motståndskraftiga mot negativa arbetskrav och kan optimera den positiva effekten av hanterbara krav på motivation (Bakker & Demerouti, 2017). Arbetsrelaterad self-efficacy anses därför central för att hantera krav i arbetslivet (Fulleman et al., 2015).

I avhandlingen utgår såväl arbetsförmåga som hälsa ur ett holistiskt och multidimensionellt perspektiv. *Arbetsförmåga* definieras som balans mellan individuella resurser och arbetets krav (Gould et al., 2008; Ilmarinen, 2012; Ilmarinen & Ilmarinen, 2015) och beskrivs i avhandlingen enligt den välkända modellen *Arbetsförmågehuset*. Enligt modellen består arbetsförmåga av hälsa, fysisk, psykisk och social funktionsförmåga, kompetens, värden, attityder och motivation samt arbetet, arbetsförhållanden, arbetsgemenskapen och arbetsorganisationen. Eftersom arbetsförmåga predicerar längre arbetsliv för äldre arbetstagare (Eurofound, 2023; FIOH, 2023; Ilmarinen & Ilmarinen, 2015; Nivalainen, 2021) ses den som en valid mätare i denna avhandling. *Hälsa* ses som mer än frånvaro av sjukdom (Eriksson 1984, 2018; Fagerström, 2021) och att vara hel i kropp, själ och ande (Eriksson 1984, 2018). Enligt det salutogena perspektivet bör det som skapar hälsa stödjas, i stället för att enbart fokusera på minimerande av risker och sjukdom (Antonovsky, 1987). Hälsa ses som relativ och utgör en rörelse på ett kontinuum av hälsa-ohälsa, varför människan alltid har hälsa i någon omfattning. Arbetsförmåga kan likaså ses som ständigt varierande på ett kontinuum (Tengland, 2011) där olika grader av hälsonedsättningar utgör en normal del av arbetslivet (Lederer et al, 2014). Således har människan alltid arbetsförmåga till viss omfattning trots hälsonedsättningar.

### **14.3 Forskningslucka**

Baserad på genomgången av tidigare forskning verkar det finnas få studier som undersökt arbetsrelaterad self-efficacy hos äldre arbetstagare, och speciellt hos äldre hemvårdare och ingenjörer. Dessa forskningsluckor och potentialen hos arbetsrelaterad self-efficacy som en resurs till längre arbetsliv utgör den logiska grunden (rationale) för denna avhandling.

Utifrån det tidigare presenterade teoretiska perspektivet kan man anta att self-efficacy kan främja rörelsen mot en bättre upplevd arbetsförmåga, vilken kunde inverka positivt på arbetstagares möjligheter att stanna längre i arbetslivet. Därtill antas arbetsrelaterad self-efficacy kunna minska den negativa effekten av högre ålder på arbetsförmåga och stödja hantering av ohälsosamma arbetskrav. Eftersom det ännu finns begränsad kunskap om sambandet mellan

arbetsrelaterad self-efficacy hos äldre arbetstagare och arbetsförmåga bör detta ytterligare undersökas. För att kunna stödja äldre arbetstagares arbetsrelaterade self-efficacy bör man även utforska vad de äldre anser inverka på deras arbetsrelaterade self-efficacy till att nå ett helt arbetsliv.

Teorierna om self-efficacy, arbetsmotivation och arbetsengagemang är delvis sammanflätade. Enligt tidigare forskning finns ett positivt samband mellan self-efficacy och arbetsmotivation. Arbetsmotivation är dock kontextberoende, varför forskning om arbetsmotivation kan fördjupa kunskapen om dess förhållande till arbetsrelaterad self-efficacy i kontexten äldre arbetstagare. Enligt tidigare forskning främjar arbetsrelaterad self-efficacy arbetsengagemang, men arbetsengagemang kan även mediera effekten av arbetsrelaterad self-efficacy på till exempel arbetsförmåga. Därtill kan arbetstagare med starkt arbetsengagemang uppleva misslyckanden i arbetet om de har en låg self-efficacy. Därför är det resonabelt att undersöka förhållandet mellan arbetsrelaterad self-efficacy, arbetsförmåga och arbetsengagemang hos äldre arbetstagare.

De mycket olika kontexten hemvårdare och ingenjörer utgör samplen i denna avhandling. De är båda yrken som behövs i nuvarande och framtida arbetsliv och kraven på båda yrkesgrupperna har märkbart ökat de senaste åren, vilket hotar deras längre arbetskarriärer. Dessa mycket olika sampel möjliggör att utforska flera aspekter av arbetsrelaterad self-efficacy: Vad är positionen för arbetsrelaterad self-efficacy då äldre arbetstagare, olika utbildningsnivåer, olika arbetskontext, arbetsförmåga, arbetsmotivation, arbetsengagemang och längre arbetsliv kombineras? Finns det skillnader, eller finns det grundläggande likheter, som uttrycker en viktig kärna för arbetsrelaterad self-efficacy som en resurs för äldre arbetstagare för att nå ett helt arbetsliv, oberoende av arbetskontext, utbildning och kön?

## **14.4 Syfte och frågeställningar**

Det övergripande syftet med doktorsavhandlingen är att undersöka och fördjupa förståelsen av arbetsrelaterad self-efficacy som en resurs för äldre arbetstagare för att nå ett helt arbetsliv, dvs. att fortsätta arbeta till förväntad pensionsålder. Ytterligare mål är att utforska sambandet mellan äldre arbetstagares arbetsrelaterade self-efficacy till att nå ett helt arbetsliv, arbetsförmåga och arbetsmotivation.

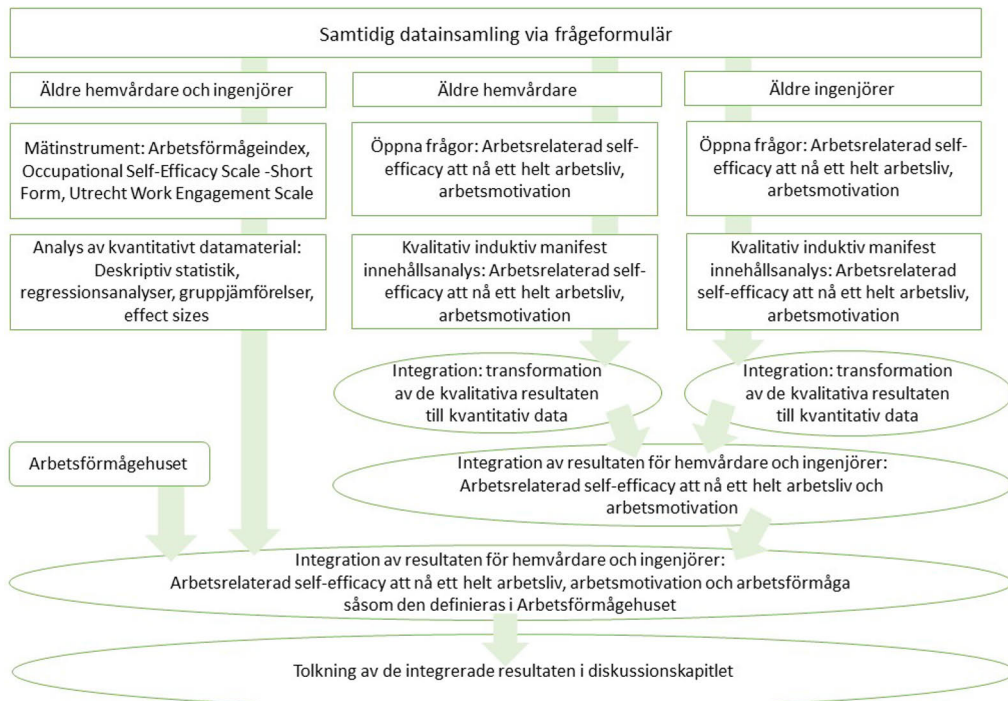
Forskningsfrågor som har guidat avhandlingen är:

1. Finns det ett samband mellan upplevd arbetsförmåga och arbetsrelaterad self-efficacy och arbetsengagemang hos äldre arbetstagare i kontexterna av hemvårdare och ingenjörer? (Studie I)
2. Finns det skillnader i arbetsförmåga, arbetsrelaterad self-efficacy och arbetsengagemang mellan 45–54 år gamla och över 55 år gamla arbetstagare samt mellan yrkesgrupper och kön? (Studie I)

3. Vad inverkar positivt och negativt på arbetsrelaterad self-efficacy att fortsätta arbeta till förväntad pensionsålder och på arbetsmotivation enligt äldre hemvårdare (Studie II) och äldre ingenjörer (Studie III)?
4. Vilka är de mest framträdande (dvs. de mest frekvent nämnda) resurserna och hindren för arbetsrelaterad self-efficacy att fortsätta arbeta till förväntad pensionsålder och för arbetsmotivation enligt äldre hemvårdare (Studie II) och äldre ingenjörer (Studie III)?
5. Finns det likheter och skillnader mellan resurserna och hindren för arbetsrelaterad self-efficacy att fortsätta arbeta till förväntad pensionsålder och för arbetsmotivation enligt äldre hemvårdare och äldre ingenjörer (Studie II och III)?

### **14.3 Metoder**

I avhandlingen tillämpades en konvergent mixad metoddesign (mixed methods), eftersom varken kvantitativ eller kvalitativ metod ensam kunde besvara avhandlingens övergripande syfte. I en konvergent mixad metoddesign är både kvantitativa och kvalitativa data av lika stor betydelse (Creswell & Plano Clark, 2018). Integration av data är en hörnsten i mixad metoddesign (Creswell & Plano Clark, 2018; Kyngäs et al., 2020; Regnault et al., 2018) och baserar sig på styrkorna hos de båda datamaterialen (Anguera et al., 2018). Integration kombinerar och sammanlänkar kvantitativa och kvalitativa data för att generera sammanfattningar av dessa separat samt av de integrerade resultaten (Creswell & Plano Clark, 2018; Moseholm & Fetters, 2017; Younas et al., 2020). Integration utvecklar resultat och tolkningar som är omfattande, validerade, och bekräftade och fördjupar således förståelsen av det undersökta fenomenet (Creswell & Plano Clark, 2018). Det kvantitativa och kvalitativa datamaterialet integrerades i syfte, dataanalys, resultat och diskussion (Creswell & Plano Clark, 2018; Kyngäs et al., 2020; Regnault et al., 2018) (Figur 1).



**Figur 1.** Flödesschema över förfarandena i den konvergenta mixade metoddesignen.

Det kvantitativa och kvalitativa datamaterialet samlades in vid samma tillfälle under maj till september 2018 genom ett anonymt och pilot-testat frågeformulär till äldre arbetstagare, vilka definierades som 45 år och äldre. De äldre arbetstagarna representerades av yrkesgrupperna hemvårdare och ingenjörer ( $n = 359$ , svarsprocent 43 %). Frågeformuläret var tillgängligt i såväl pappers- som web-format och på svenska och finska. Frågeformuläret bestod av validerade och reliabla mätskalor samt öppna frågor. Arbetsförmåga utvärderades med Arbetsförmågeindex som mäter sju aspekter av arbetsförmåga: nuvarande arbetsförmåga jämfört med när den var som bäst, arbetsförmågan i relation till fysiska och psykiska arbetskrav, antalet diagnostiserade sjukdomar, sjukdomarnas uppskattade hinder i arbetet, sjukfrånvaro under det senaste året, egen uppskattning att arbeta efter två och psykiska resurser (Tuomi et al., 1998). Svaren summeras till ett indexvärde från 7–49 poäng och klassificerar arbetsförmågan som utmärkt (44–49), god (37–43), medelmåttlig (28–36) eller dålig (7–27). Arbetsrelaterad self-efficacy utvärderades med Occupational Self Efficacy Scale - Short Form (Rigotti et al., 2008). Sex påståenden, som till exempel ”Jag är väl förberedd för de flesta krav jag kan möta i mitt arbete”, skattas på en sjugradig Likert-skala från 1 (instämmer inte alls) till 7 (instämmer helt). En högre poäng indikerar högre arbetsrelaterad self-efficacy. Arbetsengagemang utvärderades med den korta versionen av Utrecht Work Engagement Scale (UWES-9) (Schaufeli et al., 2006). Den inkluderar nio påståenden, till exempel ”Jag känner mig full av energi när jag



utför mitt arbete”, som skattas på en sjugradig Likert-skala från 0 (aldrig) till 6 (alltid). Högre värden indikerar ett högre arbetsengagemang. I frågeformuläret ingick även fyra öppna frågor om vad som inverkar positivt och negativt på arbetsrelaterad self-efficacy till att fortsätta arbeta till förväntad pensionsålder, det vill säga att nå ett helt arbetsliv, och på arbetsmotivation.

Den första studien hade en kvantitativ ansats. Studierna II och III hade en mixad metoddesign med ett kvalitativt till kvantitativt tillvägagångssätt. I studierna II och III integrerades resultaten genom att transformera de kvalitativa analysresultaten till kvantitativa data för att undersöka vilka aspekter som var de oftast framträdande (Creswell & Plano Clark, 2018; Moseholm & Fetters, 2017; Younas et al., 2020). Därefter jämfördes de integrerade resultaten från hemvårdare och ingenjörer ytterligare med varandra och sammanslogs slutligen till en ny helhet där resultaten från alla tre delstudier jämfördes med den teoretiska modellen Arbetsförmågehuset i en gemensam tabell för en slutlig tolkning (Creswell & Plano Clark, 2018; Moseholm & Fetters, 2017; Younas et al., 2020). Tabell 1 sammanfattar de olika delstudierna inklusive sampel och metoder för datainsamling och dataanalys.

**Tabell 1.** Avhandlingens delstudier.

Studie	Mål	Deltagare, datainsamling och datamaterial	Dataanalyser
<b>I</b>	Undersöka sambandet mellan arbetsförmåga, arbetsrelaterad self-efficacy och arbetsengagemang hos äldre hemvårdare och ingenjörer. Utforska skillnader och likheter gällande arbetsförmåga, arbetsrelaterad self-efficacy och arbetsengagemang för undergrupperna 45–54-åriga och 55 och äldre arbetstagare, hemvårdare och ingenjörer samt kvinnor och män. (KVANTITATIV)	Äldre arbetstagare, dvs. 45 år och äldre, kommunalt anställda hemvårdare ( $n = 234$ ) och privatanställda ingenjörer ( $n = 125$ ) i Österbotten, Finland (svarsprocent 43%). Empirisk tvärsnittsstudie. Anonymt frågeformulär i pappers- eller web-format. Mätinstrument var svenska och finska versioner av Occupational Self-efficacy Scale - short form (arbetsrelaterad self-efficacy), Arbetsförmågeindex (arbetsförmåga) och Utrecht Work Engagement Scale (arbetsengagemang).	Logistiska regressionsanalyser där oddskvoten (odds ratio) beräknades med 95 procentigt konfidensintervall. I analyserna kontrollerades för bakgrundsvariablerna yrke, kön, utbildningsnivå, åldersgrupperna 45–54 år och 55+ år. Medelvärde, median, standardavvikelse. T-test för oberoende grupper, Mann-Whitney U test, Pearsons chi-t test, Fishers exakta test, Rosenthals formula, Little's Missing Completely at Random test. Signifikansnivå $p < 0,05$ .
<b>II</b>	Utforska aspekter som inverkar positivt och negativt på äldre hemvårdares arbetsrelaterade self-efficacy att fortsätta arbeta till förväntad pensionsålder och deras arbetsmotivation. Utforska var tyngdpunkten i deras uttalanden finns. (KVALITATIV → kvantitativ)	Hemvårdare ( $n = 234$ ) i åldern 45–66 år (medelålder 55 år), 99% kvinnor, från Österbotten, Finland. Datamaterialet bestod av svar från öppna enkätfrågor om vad som inverkar positivt och negativt på arbetsrelaterad self-efficacy att fortsätta arbeta till förväntad pensionsålder (1060 yttranden) och på arbetsmotivation (1279 yttranden).	En utforskande mixad metoddesign med kvalitativ till kvantitativ procedur. Initialt gjordes manuellt en kvalitativ induktiv manifest innehållsanalys. Därefter integrerades resultaten genom att transformera de kvalitativa analysresultaten till kvantitativa data (frekvenser och procentenheter) för att undersöka vilka aspekter som var prominent framträdande.

III	Utforska aspekter som inverkar positivt och negativt på äldre ingenjörers arbetsrelaterade self-efficacy att fortsätta arbeta till förväntad pensionsålder och deras arbetsmotivation. Utforska var tyngdpunkten i deras uttalanden finns. (KVALITATIV → kvantitativ)	Ingenjörer ( $n = 125$ ), 45–65 år (medelålder 53 år), 88% män. Arbetande i globala företag verksamma i Österbotten, Finland. Datamaterialet bestod av svar från öppna enkätfrågor om vad som inverkar positivt och negativt på arbetsrelaterad self-efficacy att fortsätta arbeta till förväntad pensionsålder (574 yttranden) och på arbetsmotivation (658 yttranden).	En utforskande mixad metoddesign med kvalitativ till kvantitativ procedur. Initialt gjordes manuellt en kvalitativ induktiv manifest innehållsanalys. Därefter integrerades resultaten genom att transformera de kvalitativa analysresultaten till kvantitativa data (frekvenser och procentenheter) för att undersöka vilka aspekter som var prominent framträdande.
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KVANTITATIV: Kvantitativa forskningsfrågor. KVALITATIV → kvantitativ: Kvalitativa och kvantitativa forskningsfrågor. Kvalitativa data transformerades till kvantitativa data. (Creswell & Plano Clark, 2018)

## 14.4 Resultat

Resultaten i studie I visade signifikanta samband mellan arbetsförmåga och arbetsrelaterad self-efficacy (OR 0,66; 95% CI 0,52–0,86) och arbetsengagemang (OR 0,61; 95% CI 0,47–0,78) efter kontroll för yrke, kön, utbildningsnivå, och åldersgrupper. Högre arbetsrelaterad self-efficacy framkom i gruppen god-utmärkt arbetsförmåga (medelvärde = 6,0) jämfört med gruppen dålig-medelmåttlig arbetsförmåga (medelvärde = 5,5;  $p < 0,001$ ), liksom i gruppen med 55 år och äldre arbetstagare (medelvärde 5,9) jämfört med 45–54 åringar (medelvärde = 5,8;  $p < 0,05$ ). För arbetsengagemang hittades signifikanta skillnader mellan hemvårdare (medelvärde = 5,1) och ingenjörer (medelvärde = 4,5;  $p < 0,001$ ) samt mellan gruppen god-utmärkt arbetsförmåga (medelvärde = 5,1) och dålig-medelmåttlig arbetsförmåga (medelvärde = 4,5;  $p < 0,001$ ). För arbetsengagemang fanns ingen skillnad mellan åldersgrupperna. Hemvårdare hade fyra gånger högre odds att ha dålig-medelmåttlig arbetsförmåga jämfört med ingenjörerna. Likaså hade gruppen 55 år och äldre två gånger högre odds att ha dålig-medelmåttlig arbetsförmåga jämfört med gruppen 45–54-åriga arbetstagare.

Inga jämförelser mellan kvinnor och män gjordes inom yrkesgrupperna eftersom det fanns få män ibland hemvårdarna ( $n = 2$ ) och få kvinnor bland ingenjörerna ( $n = 15$ ). Regressionsanalyserna gjordes för hela studiesamplet eftersom Fisher's  $r$ -to- $z$  transformation inte visade signifikanta skillnader i korrelationerna varken mellan arbetsförmågeindex och arbetsrelaterad self-efficacy ( $z = -1,17$ ,  $p = 0,242$ ) eller arbetsförmåga och arbetsengagemang ( $z = -1,53$ ,  $p = 0,126$ ).

De integrerade resultaten i studierna II och III visade att de mest framträdande aspekterna för arbetsrelaterad self-efficacy till att nå ett helt arbetsliv var hälsa och därtill arbetsförhållanden (fysiska, psykiska, sociala eller organisatoriska), vilka småningom inverkar endera positivt eller negativt på hälsan. Dessutom var meningsfullhet i arbetet, inre motivation, kompetens och privatliv betydelsefulla

aspekter. Liknande aspekter påverkade också arbetsmotivationen. De mest framträdande aspekterna för arbetsmotivation var arbetsförhållanden, kompetens samt stimulerande och meningsfullt arbete. Försämrad hälsa och hög arbetsbelastning som hotar hälsan föreföll minska arbetsmotivationen i högre grad än vad en god hälsa verkade förbättra den. De mest framträdande aspekterna för arbetsrelaterad self-efficacy till att nå ett helt arbetsliv och arbetsmotivation var huvudsakligen likartade för både hemvårdare och ingenjörer, trots skillnader i arbetsuppgifter, arbetskontext, utbildning och kön. De flesta huvudsakliga resultaten från alla studierna, såsom hälsa, arbetsförhållanden, kompetens, kunskap, värderingar, attityder, motivation och privatliv, är överensstämmande och grundläggande aspekter för både arbetsrelaterad self-efficacy till att nå ett helt arbetsliv, arbetsförmåga och arbetsmotivation hos äldre arbetstagare. Meningsfullhet i arbetet, privatekonomi och förestående pensionering är frekventa aspekter i denna avhandling som utvidgar den använda modellen för arbetsförmåga, Arbetsförmågehuset.

Tabellerna 2–3 visar de integrerade resultaten för hemvårdare och ingenjörer och Tabell 4 den slutliga integrationen av samtliga resultat i avhandlingen.

**Tabell 2.** Översikt över arbetsrelaterad self-efficacy presenterad med integrerade resultat.

<b>Arbetsrelaterad self-efficacy att fortsätta arbeta till förväntad pensionsålder</b>			
<b>Aspekter som inverkar positivt</b>			
<b>Hemvårdare (n = 218, 553 yttranden)</b>		<b>Ingenjörer (n = 112, 304 yttranden)</b>	
Egen hälsa (140)	25%	Engagemang i egen hälsa (76)	25%
Arbetsplatsens resurser (118)	21%	Tilltro till egen kompetens (54)	18%
Arbetets mening (97)	18%	Hälsosam arbetsmiljö (45)	15%
Efterfrågad arbetskraft (94)	17%	Privatliv och ekonomiska förhållanden (47)	15%
Familjeliv och fritid (35)	6%	Inre arbetsmotivation och livsorientering (42)	14%
Livsglädje och visdom (32)	6%	Social inklusion och stöd från ledningen (40)	13%
Nödtvungen inkomst (18)	3%		
Uppskattning och feedback (17)	3%		
<b>Aspekter som inverkar negativt</b>			
<b>Hemvårdare (n = 202, 507 yttranden)</b>		<b>Ingenjörer (n = 107, 270 yttranden)</b>	
Nedsatt hälsa (145)	29%	Otillräcklig säkerhet och otillräckligt välbefinnande i arbetet (94)	35%
Mångfacetterat arbete (115)	23%	Avtagande hälsa (64)	24%
Organisatoriska resurser (96)	19%	Konsekvenser av arbetsbelastning (55)	20%
Arbetsrelaterad belastning (65)	13%	Avtagande drivkraft för arbetet (33)	12%
Politiska och nationella beslut (23)	5%	Lagar och attityder i samhället (18)	7%
Arbetsgemenskap (20)	4%	Fritid och ekonomisk situation (6)	2%
Finansiella orsaker (18)	4%		
Pension och familjeliv (7)	1%		
Bristande motivation (7)	1%		
Arbetslöshet (4)	1%		
Siffrorna inom parentes anger antalet yttranden.			

**Tabell 3.** Översikt över arbetsmotivation presenterad med integrerade resultat.

<b>Arbetsmotivation</b>			
<b>Aspekter som inverkar positivt</b>			
<b>Hemvårdare</b> (n = 225, 659 yttranden)		<b>Ingenjörer</b> (n = 115, 333 yttranden)	
Arbetsmiljön (234)	36%	Arbetets positiva egenskaper (83)	25%
Arbetets betydelse (161)	24%	God arbetsgemenskap (74)	22%
Stimulerande utmaningar (131)	20%	Meningsfullt och tillfredsställande arbete (64)	19%
Extern respons (77)	12%	Privatekonomi (45)	14%
Stabil inkomst (32)	5%	Positiv feedback (25)	8%
Nära relationer och fritid (18)	3%	Tillräckliga resurser i arbetet (24)	7%
Tillräcklig hälsa och ork (6)	1%	Välfungerande ledarskap (10)	3%
		Privatliv och fritid (7)	2%
		Hälsa (1)	0,3%
<b>Aspekter som inverkar negativt</b>			
<b>Hemvårdare</b> (n = 227, 620 yttranden)		<b>Ingenjörer</b> (n = 114, 325 yttranden)	
Organisatorisk arbetsmiljö (176)	28%	Missnöje med ledarskap och ledning (144)	44%
Tidsbrist (144)	23%	Ohälsosam arbetsbörda (91)	28%
Arbetets egenskaper (119)	19%	Utmanande arbetsgemenskap och klienter (39)	12%
Arbetsgemenskapen (74)	12%	Utmaningar gällande arbetets karaktär (31)	10%
Försämrad hälsa och ork (35)	6%	Missnöje med lönen (14)	4%
Feedback från klienter och anhöriga (23)	4%	Hem och fritid (3)	1%
Lönenivån (23)	4%	Åldern (3)	1%
Brist på arbetskraft (19)	3%		
Nationellt kontrollerade förordningar (6)	1%		
Åldern (1)	0,2%		
Siffrorna inom parentes anger antalet yttranden.			

**Tabell 4.** Integration av äldre arbetstagares arbetsrelaterade self-efficacy till att nå ett helt arbetsliv, Arbetsförmågehuset och arbetsmotivation.

Arbetsförmåga	↔ Signifikant relation (Studie I)	Arbetsrelaterade self-efficacy till att nå ett helt arbetsliv (Studierna II och III)		Äldre arbetstagares arbetsmotivation (Studierna II och III)
Arbetsförmågehuset (Gould et al., 2008; Ilmarinen & Ilmarinen, 2015)		Hemvårdare och ingenjörer		Hemvårdare och ingenjörer
	Kongruent/ Avvikande/ Expanderar		Kongruent/ Avvikande/ Expanderar	
Hälsa och funktionsförmåga	Kongruent	Hälsa	Kongruent	Hälsa
Arbetsuppgifter, arbetsorganisation, arbetsarrangemang, arbetstid, arbetsmiljö (fysisk, psykisk, social), arbetsgemenskap, ledarskap och arbetsledning	Kongruent	Arbetsuppgifter, arbetsorganisation, arbetsarrangemang, arbetstid, arbetsmiljö (fysisk, psykisk, social), arbetsgemenskap, ledarskap och arbetsledning	Kongruent	Arbetsuppgifter, arbetsorganisation, arbetsarrangemang, arbetstid, arbetsmiljö (fysisk, psykisk, social), arbetsgemenskap, ledarskap och arbetsledning
Kompetens, arbetserfarenhet, lärande	Kongruent	Kompetens, arbetserfarenhet, lärande	Kongruent	Kompetens, arbetserfarenhet, lärande
Värden, attityder, motivation, rättvis behandling	Kongruent	Värden, attityder, motivation, rättvis behandling	Kongruent (Huvudsakligen)	Värden, attityder, motivation <b>-Rättvis behandling inte nämnd</b>
<b>Meningsfullhet är inte tydligt uttryckt</b> - Har ibland inkluderats i värden, attityder och motivation	<b>Expanderar</b>	<b>Arbetets meningsfullhet</b>	Kongruent	Arbetets meningsfullhet
Familj, sociala nätverk, fritid <b>-Pensionering är inte inkluderad</b>	Kongruent (Huvudsakligen)	Familj, sociala nätverk, fritid, <b>kommande pensionering</b>	Kongruent (Huvudsakligen)	Familj, sociala nätverk, fritid <b>- Pensionering inte nämnd</b>
<b>-Inte inkluderad</b>	<b>Expanderar</b>	<b>Privatekonomi</b>	Kongruent	Privatekonomi
Samhället, omgivande miljö, lagstiftning, policyn	Kongruent	Samhället, politiska och nationella beslut	Kongruent	Samhället, politiska och nationella beslut

## 14.5 Slutsatser

Resultaten i denna avhandling visar att arbetsrelaterad self-efficacy är en viktig resurs för att äldre arbetstagare ska kunna arbeta ett helt arbetsliv. Högre arbetsrelaterad self-efficacy var oftare relaterad till en bättre arbetsförmåga bland de deltagande äldre arbetstagarna. Hälsa, och arbetsförhållanden som med tiden påverkar hälsan endera positivt eller negativt, var av central betydelse för

arbetsrelaterad self-efficacy till att nå ett helt arbetsliv. Därtill var arbetets meningsfullhet, kompetens, inre motivation och privatliv betydelsefulla. Arbetet och dess uppdrag upplevdes som meningsfulla och omvänt ökades känslan av meningsfullhet av tillfredsställelse av utfört arbete. För en god arbetsrelaterad self-efficacy önskar de äldre arbetstagarna att deras ålder ska betraktas som positiv. De vill använda sina förvärvade erfarenheter, kunskaper och färdigheter och också fortsätta att utvecklas i arbetslivet. Resultaten visade främst likheter mellan de inkluderade samplen av äldre hemvårdare och ingenjörer, trots olikheter gällande arbetsinnehåll, arbetsutmaningar, arbetskontext, utbildningsnivå och genus.

Då resultaten för arbetsrelaterad self-efficacy integrerades med den modell för arbetsförmåga som användes i avhandlingen (Arbetsförmågehuset) och aspekterna för arbetsmotivation framkom främst likheter. Meningsfullhet i arbetet är ett viktigt tillägg till Arbetsförmågehuset, eftersom meningsfullhet inte tydligt nämns i den befintliga modellen. Privatekonomi och förestående pensionering är också de tillägg till modellen. Gällande arbetsmotivation verkade nedsatt hälsa och ohälsosam arbetsbörda sänka arbetsmotivationen mer än vad en god hälsa ökade den.

Avhandlingens resultat ger värdefull kunskap till den tidigare kunskapsluckan om äldre arbetstagares arbetsrelaterade self-efficacy och vilka aspekter som bör beaktas för att stärka den. Likheterna mellan aspekterna för arbetsrelaterad self-efficacy och arbetsmotivation kan delvis förklaras av konceptuella likheter. Dock är det viktigt att påpeka att motivation innebär intentionen att göra något medan upplevd self-efficacy avgör om människan verkligen genomför det tilltänkta. Likheter med modellen för arbetsförmåga kan delvis förklaras av att det finns grundläggande arbetsmiljöfaktorer som fortsättningsvis är av största betydelse för ett hållbart arbetsliv.

Resultaten i denna avhandling indikerar även att för att stärka arbetsrelaterad self-efficacy till att nå ett helt arbetsliv, inklusive en rörelse mot en upplevd bättre hälsa och arbetsförmåga, behöver fokus också riktas från mer ytliga hälsoförebyggande aktiviteter till att reflektera individuella betydelsefulla hälsorelaterade frågor i arbetslivet på djupare nivåer. Detta inkluderar djupare diskussioner rörande de aspekter som specifikt främjar arbetsrelaterad self-efficacy till att nå ett helt arbetsliv, med beaktande av de fyra källor som generellt utvecklar self-efficacy. Det inkluderar även fokus mot källor till meningsfullhet i arbetet. Arbetstagarna själva bör ta sig an dessa djupare reflektioner, men även nära ledare, arbetsgivare samt personal inom företagshälsovård och arbetarskydd.

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# Appendix

## Summary of how theories and main concepts are used in this thesis

**Occupational self-efficacy** considers workers' belief in their capability to successfully perform tasks in their occupational domain (Rigotti et al., 2008). Self-efficacy is developed by earlier successes by overcoming obstacles (mastery experiences), seeing people similar to oneself succeed (vicarious experiences), sufficient feedback from significant others that one has the capabilities needed to succeed (verbal persuasion), and adequate management of physiological and affective states in stressful situations (Bandura 1997, 2012).

**Job Demands-Resources** theory considers job demands, job resources and personal resources. Personal resources, that include self-efficacy, play similar roles to job resources; workers with sufficient personal resources are confident in their capabilities to cope with upcoming demands (Bakker & Demerouti, 2017; Xanthopoulou et al., 2007).

**Work ability** is defined as a balance between individual resources and job demands (Gould et al., 2008; Ilmarinen, 2012, 2019; Ilmarinen & Ilmarinen, 2015). Work Ability House model consists of four interacting floors. First floor comprises of health and functional capacity; second of occupational competence; third of values, attitudes, and motivation; and the last of work content, job demands, work environment, work community, work organisation, and leadership. Work ability is also understood as a continuum, which means that work ability (Tengland, 2011), as well as health (Antonovsky, 1987) varies throughout the work career. Health affects work ability but does not commonly entirely determine work ability (Lederer et al, 2014).

**Work motivation** and self-efficacy are linked to each other through the influence of self-efficacy on, for example, outcome expectations and goals (Bandura, 2012; Pinder, 2008). However, self-efficacy considers 'can do', while work motivation consider the intention to act (Ryan & Deci, 2000).

**Work engagement** is characterised by vigour, dedication, and absorption (Schaufeli et al., 2002). The part vigour has similarities with self-efficacy, since it is characterised by high levels of mental resilience while working, willingness to devote effort in one's work, and persistence when facing difficulties.

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