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WORK-RELATED REHABILITATION FOR STRENGTHENING WORKING CAREERS

A MULTIPERSPECTIVE AND MIXED METHODS STUDY OF ITS MECHANISMS
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A multiperspective and mixed methods study of its mechanisms

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Abstract

Coping at work and job retention have been on the list of priorities of European countries for some decades. Vocational rehabilitation is a key measure for preventing work disability, but its possibilities have remained unused in many respects. Moreover, rehabilitation tasks are defined differently depending on the perspective taken.

The purpose of this thesis is to determine the possibilities that arise from defining work-related rehabilitation tasks in a way that combines different perspectives and interests. The research questions are: 1) What were the impacts on working career and psychosocial factors of an intervention for long-term unemployed people with disabilities? 2) What kind of processes and mechanisms promoted the working careers and other outcomes of the employed people during the interventions? 3) What forms of collaboration took place between the rehabilitees and different stakeholders, and to what extent did the rehabilitees have opportunities to choose and act during the process?

The empirical data for the study were collected from two vocational rehabilitation research projects. The research design was a multiple case study from multiple perspectives combined with mixed methods. The materials were collected through surveys, individual and group interviews, documents, and register follow-up.

We found the contextual mechanism through which the outcomes of the work-related rehabilitation emerged. The process was promoted or hindered by actions taken by all stakeholders. The promoting or hindering mechanisms were born through the actions taken by the supervisor in particular, the occupational health service and rehabilitation service provider, and the individual’s life situation factors. Similar factors promoted and hindered the re-employment and staying or returning to work outcomes. Enhancing the rehabilitees’ own agency is also important, regardless of how weak it is at the beginning. I also present a new way of assigning rehabilitation tasks, which structures the complexity of the field of work-related rehabilitation and helps manage it.

Work-related rehabilitation is a combination of societal and individual actions. The results of this study will help all actors involved in rehabilitation to improve the outcomes of work-related rehabilitation by developing opportunities for the rehabilitees’ own agency and collaboration.

Keywords: agency, case study, collaboration, evaluation research, follow-up, intervention/programme, long-term unemployment, mechanisms, mixed methods, multiperspective, outcome, process evaluation, qualitative research, rehabilitation, stakeholders, triangulation, vocational rehabilitation, work ability, work disability
Juvonen-Posti, Pirjo, Työhön kytkeytyvä kuntoutus työurien tukemisessa. Moninäkökulmainen ja monimenetelmäinen tutkimus kontekstuaalisista mekanismeista

Oulun yliopiston tutkijakoulu; Oulun yliopisto, Lääketieteellinen tiedekunta; Oulun yliopistollinen sairaala; Työterveyslaitos

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**Tiivistelmä**

Työurien jatkaminen on keskeinen eurooppalaisten yhteiskuntien selviämisen haaste. Kuntoutus on riittämättömästi hyödynnetty resurssi työurien pidentämiseksi. Lisäksi kuntoutuksen tehtävät määrittyvät eri näkökulmista eri tavalla.


Työhön kytkeytyvä kuntoutus muodostuu yhteiskuntaan ja yksilöön kohdistuvista toimista, joilla mahdollistetaan työelämään paluu ja osallistuminen. Tulosten avulla kuntoutuksen toteuttajat, tutkijat ja viranomaiset voivat parankea kuntoutuksen tulokkaiden työuravaihtoehtoja kohdistamalla kuntoutujan toimitamahdollisuuksia ja yhteistoimintaa.

**Asiasanat:** ammatillinen kuntoutus, arviointitutkimus, interventio/ohjelma, kuntoutus, laadullinen tutkimus, mekanismi, monimenetelmäinen, osallinen/osallistuva taho, pitkäaikaistyötön, prosessiarviointi, seurantatutkimus, tapaustutkimus, toimijuus, triangulaatio (moninäkökulmaisuus/-paradigmaattisuus), tulos, työkyky, työkyvyyttömyys, yhteistoiminta
To my daughter Jarna

"... te olette muuttaneet lapsen, niin että hän on pahempi kuin Pikku Myy.
Mutta pääasiaahan on, että hän näkyy."


"... you have brought up the child so that she turned to be worse than Little My.
But the most important thing is that she is visible."

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Abbreviations and definitions

ASOC-13  13-item version of Antonovsky’s SOC
CP       cerebral palsy
GHQ-12   12-item General Health Questionnaire
HR       Human resources
ICF      International Classification of Functioning
ILO      International Labour Organization
IPS      The integrated placement and supported employment – model
OH       Occupational health
OHS      Occupational health service(s)
RCT      Random control trial
RTW      Return to work
QCA      Qualitative comparison analysis
SAW      Staying at work
TBI      Traumatic brain injury
VAS      Visual analogue scale
WHO      World Health Organization
WSPS     Wallston’s Self-Performance Survey

A complex intervention (Graig et al. 2008) consists of:
– a number of interacting components within experimental and control interventions;
– a number of difficult behaviours required by those delivering or undergoing the intervention,
– a number of targeted groups or organisational levels,
– a number of and variable outcomes,
– a permitted degree of flexibility or tailoring.

The general definition of mixed methods research (Johnson et al. 2007):
A researcher or a team of researchers are combining elements of qualitative and quantitative approaches for the broad purposes of widely and deeply understanding and corroborating.
List of original publications


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1 Introduction

Coping at work and job retention have been on the list of priorities of European countries for some decades. The workforce is ageing, the dependency ratio is becoming disadvantageous, and the funding and structure of social security is facing huge changes. In Finland, a smaller amount of people is entering the labour market than the amount that is leaving it. Extending working careers is seen as a key challenge to the survival of Finnish society, and the role of work ability and work disability in this issue is significant.

Work ability and disability are complex phenomena (Järvikoski 1994, Järvikoski et al. 2001, Loisel et al. 2005, Ilmarinen et al. 2008). The factors related to individuals, work, workplaces, social security, and compensation systems; and the availability and competence of health and rehabilitation professionals are interconnected through different combinations, and they affect the outcome of the implementation of interventions in areas such as return to work (RTW) (Franche et al. 2005ab, Fassier et al. 2015). Interventions for promoting work ability and preventing disability are complex (Craig et al. 2008, Moore et al. 2015, Fletcher et al. 2016).

Vocational rehabilitation is one of the key measures in preventing prolonged or permanent work disability in western countries. The opportunities that rehabilitation provides for supporting working careers have remained unused in many respects, and vocational rehabilitation interventions often come too late (Loisel et al. 2003, Waddell & Watson 2004, Waddell et al. 2008, Kuoppala & Lamminpää 2008, Suikkanen et al. 2010, Blomgren et al. 2011, Gould et al. 2012 ab, Pensola et al. 2012, Laaksonen et al. 2014, O’Neill et al. 2015). Biased selection for vocational rehabilitation has been reported: vocational rehabilitation seems to be more accessible in permanent, full-time, middle-sized and large-scale workplaces, i.e. access to vocational rehabilitation among the unemployed, entrepreneurs and non-permanent employees is inadequate (Juvonen-Posti & Pensola 2016). Burström et al. (2011) reported that men, younger people, those on longer-term sick leave, those with lower incomes, and the employed were more likely to be selected than unemployed people and those with musculoskeletal and mental disorders or alcohol abuse. Although selection for vocational rehabilitation is perceived as important for successful outcomes, success seems to also depend on the state of the local labour market. Poor access to rehabilitation implies extended periods of sick leave, to the detriment of the individual, the employer and society (Burström et al. 2011). According to Pensola et al. (2012) and Laaksonen et al. (2014), studies on selection
for rehabilitation have been insufficient, often based on the need for rehabilitation from the work ability and disability risk perspective, or on large socio-economic differences in the selection process. Rehabilitation mostly benefits those who have underlying disease and mood symptoms, and those who are aware of their own health problems (Pasternack et al. 2015).

The vocational rehabilitation process is a complex intervention in a complex system. However, as already mentioned, little is known of the collaboration within the action networks of unemployed and employed rehabilitees’ vocational rehabilitation intervention processes, or of the role that collaboration plays in the outcome mechanisms of these interventions. The purpose of my thesis is to determine the possibilities of defining work-related rehabilitation tasks in a way that combines different perspectives and interests. I do this by studying multimodal collaboration and agencies in the implementation of vocational rehabilitation processes for both unemployed and employed people with disabilities.

This thesis consists of six main chapters. The first chapter is a short introduction to theme of the dissertation; it outlines the research problem and presents the structure of the dissertation. Chapter two presents the concepts and literature review as a theoretical background by defining terms or phenomena such as vocational rehabilitation, work-related rehabilitation, social intervention in a complex system, collaboration, and agency. The literature of the thesis consists of systematically compiled literature on each research project and their scientific publications. Only some of this literature is presented here. The choice of literature was guided by the research questions and results of the thesis. Chapter three presents a summary of the theoretical foundation, the objectives and scope of the dissertation and the three research questions. Chapter four presents the materials and methods, the methodological foundations of the research and the realisation of this research. I present my results in Chapter five: first, Research question 1 results: the impacts on working career and other factors; second, Research question 2 results: the processes or mechanisms that promote the working career and other outcomes; and third, Research question 3 results: the forms of co-operation and rehabilitees’ opportunities to choose from different options and to act. In Chapter six the results are discussed through the theoretical background and literature. This chapter also includes discussions on ethical issues, the reliability and validity of the study, theoretical and practical implications, and recommendations for further research.
2 Concepts and literature review

2.1 Complexity in vocational rehabilitation

Work ability and disability are key concepts in vocational rehabilitation. However, work (dis)ability has no single common definition. Its definitions and conceptualisations vary according to their purpose, their context of emergence, their epistemological assumptions, discipline, underlying paradigm and relationship to time. (Lederer et al. 2014). Though scientific literature does not reflect an integrated vision of the nature and dimensions of work (dis)ability there seems to be shared understanding that work (dis)ability is a relational concept that results from the interaction of multiple dimensions which influence each other through different ecological levels. Dynamism has also become part of the conceptualisations of work (dis)ability over time (Lederer et al. 2014). The important factor is the paradigm shift from a biomedical model to a disability paradigm which considers a person’s broader situation (Järvikoski 1994, Järvikoski et al. 2001, Loisel et al. 2005, Ilmarinen et al. 2008), i.e. living and working context and participation in work. By emphasising social rather than biomedical factors, Seing et al. (2012) point out that both the work ability and work disability concepts are socially constructed, and are undergoing change as their social context, i.e. society, is changing. Sustainable employability (van der Klink et al. 2016) is a parallel concept, because it defines employability as action, which is realised in a practical situation(s), i.e. in a certain context(s). Researchers describe the social contextual factors in more detail: they claim that sustainable employability means that people have working conditions that enable them to offer valuable work input while safeguarding their health and well-being. This requires certain working conditions, attitudes and motivations, through which it is possible to take advantage of these opportunities. (van der Klink et al. 2016). They strongly define the ability to work as a dynamic relationship between the individual and the working environment.

We have no common definition of vocational or occupational rehabilitation and in Finland, for example, the definition varies from one rehabilitation organiser to another (Miettinen 2011). In its Declaration of Vocational Rehabilitation and Employment (Disabled persons) in 1983, the International Labour Organization (ILO) defined vocational rehabilitation as follows: ‘The purpose of vocational rehabilitation as being to enable a disabled person to secure, retain and advance in suitable employment and thereby to further such person’s integration or reintegration
into society. The disabled person means an individual whose prospects of securing, retaining and advancing in suitable employment are substantially reduced as a result of a duly recognised physical or mental impairment. According to this definition, the target of vocational rehabilitation is to integrate or reintegrate individuals into society by placing them into the labour market despite their disabilities. One conceptual definition of vocational rehabilitation is based on the biopsychosocial approach to work ability, according to the systematic classification framework of the International Classification of Functioning (ICF), and sees a new measure as helping to build a shared global model (Escorpizo et al. 2011): ‘Vocational rehabilitation refers to a multiprofessional approach that is provided to individuals of working age with health-related impairments, limitations, or restrictions with work functioning and whose primary aim is to optimise work participation.’ Escorpizo et al. pinpointed five essential elements for this conceptual definition of vocational rehabilitation: engagement or re-engagement in work, a long work continuum, the health conditions or events leading to work disability, patient-centred, evidence-based, and multiprofessional or multidisciplinary practice (Escorpizo et al. 2011). Though the target of the action is the labour market, work and workplaces, this definition repeats the long history of the individual-based (patient), medical model of vocational rehabilitation. In Western developed countries, the model of insurance, for example, the access criteria for vocational rehabilitation through an assessment of the need for vocational rehabilitation made by a health professional, depends without exception on the medical model, and the medicalisation of the disability (Harder & Scott 2005).

Despite the theoretical development of the concept of work ability in many western countries, it is the medically-oriented model of thinking about how things change in vocational rehabilitation that guides the practice of rehabilitation. This is based on assessing an individual’s work disability to the extent required. Moreover, despite holistic and resource-based approaches, that see individuals as bio-psycho-social entities, and abilities and resources in addition to disabilities (WHO 2001, Hakanen et al. 2006), the various legal concepts of social security tend to rely on medical justification. This is clearly seen in the recent definition of work disability by Stucki et al. (2015) which states that work disability refers to a person’s inability to work due to an illness or injury and does not consider the influence of contextual factors. This assessment is the key element in assigning people with disabilities to appropriate medical and vocational rehabilitation programmes. According to this kind of theory of change, the aim of a study or evaluation is to show whether the programme was effective and whether work participation was enhanced or achieved, while ignoring the context and the underlying processes.
The starting point of the ICF-based biopsychosocial model is the individual’s need for rehabilitation, and multiprofessional rehabilitation support refers to support given by social and health care and (medical) rehabilitation professionals, even in cases of re-employment, staying at work (SAW) or returning to work (RTW). However, this leaves out the actors in the workplaces, for example.

One effort to define vocational rehabilitation in a more integrated way, and to enable the agency of working life and its actors alongside the medical expertise, is the definition of Waddell et al. (2008): ‘Vocational rehabilitation is whatever helps someone with a health problem to stay at, return to and remain in work.’ This definition also extends to the mission of vocational rehabilitation: it becomes an idea and an approach as much as an intervention or a service.

The model that has challenged traditional thinking in vocational rehabilitation since the 1990s is that of integrated placement and supported employment (IPS), the ‘place and train’ model in short (Häkäpää 2000, Bond 2004, Häkäpää & Peltola 2005, Burns et al. 2007, Spjelkavik 2012, Krupa et al. 2015). The IPS model fundamentally differs from the traditional ‘train and place’ vocational rehabilitation approaches in a few of its principles. IPS focuses on accessing, supporting, and creating real work opportunities and on making access to work possible for anyone who aspires to work. In addition, according to IPS principles, work participation should be based on individual preferences and choice. Any treatment and services needed, including employment support, should be delivered in an integrative way with vocational rehabilitation (Krupa et al. 2015). Although several studies have indicated that supported employment is a successful approach to help disabled job-seekers obtain and keep a job in the ordinary labour market, supported employment is typically provided as an ‘added-on’ service to traditional forms of vocational rehabilitation (Krupa et al. 2015).

The realisation of multiorganisational rehabilitation in practice, and the division of labour between different rehabilitation subsystems have proved to be challenging (Miettinen 2011, Rajavaara 2013, Liukko & Kuuva 2015), and the intricacy of rehabilitation systems makes it possible to drop out of the process (Ashorn et al. 2013). The complexity of the possible macro processes in vocational rehabilitation is condensed in Lindh’s (2013, 2014) description of vocational rehabilitation as a social system, action network and collaboration. This action network-based vocational rehabilitation system constitutes four entities. The first is the situated actions in [vocational] rehabilitation, i.e. the practices and processes of rehabilitation, the encounters of clients and professionals. The second entity consists of the [vocational] rehabilitation system, i.e. institutional
and organisational resources and sanctions. Individuals have working life capacity, i.e. an individual’s working capacity, professional and other competences, work ability and disability. Life situation constitutes the third entity. The fourth entity is the labour market, i.e. the structure and dynamics of labour. Each of these entities interact with each other in the action network, and the social operational system defines the implementation, through legislation and other boundary conditions such as institutions, professionals and practices. The regional and local operational system, in turn, operates under these conditions and boundaries as a network of activities in its own social and cultural context, produced from the encounters of clients’ and professionals’ activities and actions.

I will continue to use the term work-related rehabilitation instead of vocational or occupational rehabilitation in order to emphasise that work-related rehabilitation aims to intervene (1) both by preventing and by maintaining and restoring work ability and the working career, keeping work-related issues in focus (see Waddell et al. 2008) (2) at work and at the workplace, and (3) by including the required work and labour actors, the different workplace actors (managers, HR specialists, supervisors, occupational health and safety personnel, shop stewards, work colleagues), employment offices (managers, career advisors, job-seekers, other experts, fellow job-seekers) in the implementation of the rehabilitation. Moreover, in work-related rehabilitation, the concepts of work ability and work disability are socially constructed (Seing et al. 2012, Lindh 2014). The interventions take into account the contextual dynamic relationship between the individual and the work environment, aiming for sustainable working careers (see van der Klink et al. 2016).

2.2 Work-related rehabilitation as a social intervention in a complex system

According to the holistic and systemic view of work ability, a wide variety of stakeholders, i.e. employees, employers, occupational health service (OHS) providers, and insurance and rehabilitation service providers are invited to participate in and are involved in the implementation of work-disability and work-related rehabilitation processes (Loisel et al. 2005). A work-related rehabilitation process can be understood as a social intervention in a complex system (MacEachen 2013); in which the context of the intervention is of great importance. During the rehabilitation process, a rehabilitee enters discussions on health, work ability, individual needs and features (Ylilahti 2014), and especially on the relationship
with one’s own work, workplace actors, and professional and working career prospects (Seppänen-Järvelä et al. 2015b). In this sense, inter-organisational and inter-professional communication, co-operation and integration are vital components in work disability management; they are both obstacles and facilitators (Andersson et al. 2011). They are also essential in the implementation of work-related rehabilitation.

In work-related rehabilitation, social interaction takes place in a certain kind of arena or on a stage (Loisel et al. 2005), where different actors have their own roles, expectations and goals that reflect the nature of the interaction. Interaction and agency are multidirectional with multiple levels, connected to both actors and people. For example, in work-related rehabilitation, a rehabilitee is not only a private person, but also an employee, a member of a work community and a representative of the employer (Seppänen-Järvelä et al. 2015b). The contextual interaction of work-related rehabilitation creates a social activity that, on the one hand, forces operators, and on the other hand, creates opportunities for them (Mattila-Aalto 2013).

Although the clarity of the roles and tasks of those involved in the collaboration of the work-related rehabilitation process facilitates the rehabilitee’s process, it does not necessarily guarantee a successful rehabilitation process (see Chamberlain et al. 2009). The various stakeholders (employee, employer, (social) insurance, healthcare provider, society) in the RTW process have different goals, motivations, interests and types of work-related issues, but they are all interested in the person returning to work in a suitable and permanent manner. Various stakeholders are interested in the factors that support the return of an employee to work and they want to know the benefits of the RTW. Many actors want to know if the process of returning to work is followed satisfactorily. (Young et al. 2005) In complex work-related rehabilitation processes, different paths for better interaction with employees and their supervisors or employers may play a decisive role in improving work participation results (Costa-Black et al. 2013).

Various stakeholders are invited to collaborate in the work-related rehabilitation processes, and this sets special challenges to service provision and interaction during the process: how can the actors work together to achieve such complex goals when dealing with private health- and life situation-related information that cannot be shared with all the stakeholders involved, as well as public work-related issues (see Geisen 2015)? The structures and processes of vocational rehabilitation also have many factors that may become obstacles to collaboration (MacEachen 2013).
Rehabilitee’s agency, shared agency and collaboration

There are many different interpretations of human agency. One concept of agency is based on sociologist Giddens’ (1984) theoretical foundation of the dialogue between structure and action. According to Giddens, agency requires the actor to have the power and autonomy to choose from different options. In his view, agency means the power to influence the course of events (Lindström 2011, Eteläpelto et al. 2014). The relevance of Giddens’ concept of agency in vocational rehabilitation is seen, for example, in the difference of the structures of vocational rehabilitation for the employed and unemployed.

Agency is also understood as human activity in relation to situations, environments and structures. People build their own life course in relation to social environments, within the possibilities and the limits they offer (Hiltlin & Elder 2007), including their professional and working career. Work-related rehabilitation can be considered a transitional mode (Kontinen et al. 2013), which enables searching for and implementing new choices and solutions for one’s life course and working career. This building and reorienting requires agency (Hiltlin & Elder 2007). In the context of rehabilitation, discussion on the concept of agency has often been based on Bandura’s (2001) description of the four aspects of agency: intentionality, forethought, self-reactiveness (self-regulation), and self-reflectiveness (beliefs of efficacy). The individual’s beliefs about their own ability can either strengthen or limit their agency, as well as determine how they respond to challenges and failures (Bandura 2001). Moreover, in vocational rehabilitation, the rehabilitee’s motivational orientations are associated with their experiences and their perceptions of environmental factors and future possibilities; in the work-related rehabilitation process it is important to determine what factors may be hiding behind rehabilitees’ weak contextual or situational motivation, to discuss these factors in order to alleviate uncertainty regarding change, and to enhance motivation to participate in rehabilitation and re-think future prospects regarding returning to work (Härkäpää et al. 2014). This is especially important for people or rehabilitees who do not have strong working life agency and readiness or activity to change their own way of life (Seppänen-Järvelä et al. 2015b).

According to Hitlin & Johnson (2015), subjective agency involves two central components: perceived capacities and mastery on the one hand, and perceived life changes on the other. In empirical research, subjective agency has most often been operationalised by measures of self-efficacy (Bandura 2001), personal mastery (Pearlin & Schooler 1978), or personal control (Mirowsky & Ross 2007). Perceived
competence (Smith et al. 1991, Smith et al. 1995, Wallston et al. 2011), which is defined as a person’s perceived ability to accomplish things that they regard as important, is a measure of generalised self-efficacy.

In addition to the rehabilitees’ own agency, shared agency also emphasises the role and tasks of all the other stakeholders involved in the process, during which commonly planned objectives and decision-making, commitment to co-operation, shared responsibility and support should occur (Järvikoski et al. 2013, Salminen et al. 2017). Shared agency, providing knowledge, guidance and support, and rehabilitee-driven processes are not always realised in the desired way (Gould et al. 2012ab, Härkäpää et al. 2014). A genuine collaborative process emphasises the development of reciprocal interaction and partnership throughout the process, when it qualitatively differs from, for example, co-operation or acting together (Harra 2014). The rehabilitees’ active personal agency, their readiness (motivation) for work-related rehabilitation and shared agency with the stakeholders of the process is the key to a sustainable rehabilitation outcome (Hitlin & Elder 2007, Järvikoski et al. 2013).

Discussion on collaboration and the concept of shared agency involves the views of both service users, i.e. rehabilitees, and professionals. Collaboration has also been studied as part of the structure in organising and providing vocational rehabilitation services. Andersson et al. (2011) classified collaboration in vocational rehabilitation, from professional and organisational standpoints, into seven different organisational models: information exchange, case co-ordination, interagency meetings, multidisciplinary teams, partnership, co-location, and pooling of budgets. Each of these bring different degrees of complexity, intensity and formalisation, and can be seen as collaboration strategies that can be combined in different ways. However, macro-level models (e.g. pooled budget) have to be combined with actual collaboration on client-work (micro level). As mentioned above, different processes of vocational rehabilitation require different models of collaboration, and the same target group need different models in different phases of rehabilitation. Even if the organisational model of collaboration was designed after the collaborative advantages, service users may not have been aware of existing collaboration (Andersson et al. 2011). The recognised facilitators and obstacles to collaboration in vocational rehabilitation are connected to the communication and trust (Ståhl et al. 2010) between professionals and organisations involved, and territoriality and leadership (Andersson et al. 2011).
2.4 Outcomes of vocational rehabilitation for work, workplace and working career

The effectiveness of vocational rehabilitation has been measured by employability; health and work (dis)ability; reduction of disability pensions or sickness absences, from the perspective of the individual, workplace, company, or society; and economic effects from the standpoint of the workplace, company and society (Tuomala 2012), but traditionally through the reduction of sickness absence days or work disability (Kärrholm 2006). Recently, because of both the prevention of work disability and the need to extend working careers in developed countries, new earlier onset models of work-related rehabilitation for job retention have been created (Waddell et al. 2008). The timing of the work-related intervention also challenges the outcomes used to evaluate its effectiveness.

The effects of vocational rehabilitation interventions on RTW are well reported (Franche et al. 2005a, Franche et al. 2005b, MacEachen et al. 2006), whereas the different effects of early interventions on job retention are contradictory or controversial (Franche et al. 2005b, Franche et al. 2007, Saltychev 2012, van Vilsteren et al. 2015, Williams-With et al. 2016). Although well-designed effectiveness studies have shown results, it is still hard to show, for example, employment (SAW, RTW, deployment, re-employment) outcomes, what part of this outcome has been affected by the vocational rehabilitation in a complex context (Tuomala 2012).

Vocational rehabilitation measures have not been sufficiently linked to work or the workplace. They have not sufficiently supported job retention among people with work disabilities, have not been sufficiently work-oriented and have not supported the employability of unemployed job-seekers with work disabilities (Waddell et al. 2008, Ylisassi 2009, Suikkanen et al. 2010, Härkäpää et al. 2013, Lindh 2013, 2014). RTW research has found work- and workplace-related measures that can either enhance or hinder an employee’s RTW and SAW. Work accommodations, early contact with the absent employee, ergonomic worksite visits, and the possibility of an RTW co-ordinator’s services at the workplace (Franche et al. 2005b; Shaw et al. 2008) are examples of workplace-based RTW interventions that can reduce work disability duration and its related costs.

Impact studies of vocational rehabilitation in the United States show positive impacts, whereas Nordic evaluations, for example, have varying results and clearly show more negative impacts. An explanation for the differences in the impact of vocational rehabilitation has been sought through differences in systems, in
rehabilitation models and methods of implementation (Gould et al. 2012 ab). A study of vocational rehabilitation organised by the earnings-related pension-scheme in Finland showed that participation in vocational rehabilitation did to some degree increase the likelihood of continuing in employment in a one-year follow-up (Tuomala 2012). Good subjective work ability, strong self-efficacy, and a lack of orientation towards retirement predicted a successfully completed vocational rehabilitation process, as well as employment after the vocational rehabilitation. If the rehabilitee had been unemployed prior to the decision regarding vocational rehabilitation, the risk of dropping out grew and the likelihood of participation in work, and re-employment, decreased. A well-functioning vocational rehabilitation process promoted a good rehabilitation outcome. A timely start, correspondence between the rehabilitee’s own wishes and the vocational rehabilitation measures granted, the rehabilitee’s power to influence the vocational rehabilitation process at different stages, and smooth overall progress of the rehabilitation all served as predictors of job retention after the vocational rehabilitation (Gould et al. 2012 ab).

Lindström et al. (2009) in Sweden showed that for people with traumatic brain injury (TBI), factors such as believing in work and having the support of significant others were more important determinants of success in RTW than the stroke-specific deficit. Huang et al. (2013) in the United States found that among adults with cerebral palsy (CP), males aged between 26–54 with higher education were more likely to be employed and that those with disability benefits were less likely to be employed. Of 16 different rehabilitation service models studied, the following five rehabilitation services significantly predicted employment outcomes (1) on-the-job training; (2) job placement assistance; (3) on-the-job support; (4) financial support in expenses of food, shelter/accommodation, clothing etc., and (5) rehabilitation technology. The researchers underlined the importance of vocational rehabilitation services in maximising the employability of people with CP (Huang et al. 2013). In the United Kingdom, for those who were working prior to their TBI, around 41% were working one and two years later. Although evidence suggests that vocational rehabilitation may increase RTW rates, this evidence is not robust (Radford et al. 2013). These researchers also pointed out that more detailed reporting of vocational interventions is needed to inform clinicians and services (Phillips & Radford 2014).

Markussen and RØed (2014) in Norway found, on the basis of longitudinal administrative register data and using temporary disability insurance occurrence as the main outcome, that vocational rehabilitation strategies that start out quickly through placement in the regular labour market tend to be the most successful.
Campolieti et al. (2014) estimated the effects of the vocational rehabilitation programme run by the Canada Pension Plan Disability Program, also using administrative data that focused on the labour market outcomes of disability beneficiaries. They found that the programme improved the labour market outcomes of women enough to pass a cost-benefit test from the perspective of the programme. However, the result was not the same for men.

A Swedish study of early outcome predictors of vocational rehabilitation examined a sample of unemployed people with a somatic disorder as the reason for vocational rehabilitation. At two-year follow-up, 40% were working or employable. Of about 30 variables, having a relatively high belief in vocational return, a relatively high sense of coherence, and a relatively high educational level were significant predictors of a positive outcome (Melin & Fugi-Meuer, 2003).

Specific matching of vocational rehabilitation to the needs of the individual, and careful selection of individuals may increase the effectiveness of vocational rehabilitation interventions. Holding a coordination meeting with different rehabilitation actors for people on long-term sick leave has increased the probability of an active rehabilitation measure being initiated five-fold, and doubled the probability of the adaptation being initiated at the workplace (Buström et al. 2011).

As discussed earlier in Section 2.2, work-related rehabilitation is a complex social intervention, and the context of its implementation is often also complex. Tate (1992) classified the factors affecting the outcome of vocational rehabilitation into six groups: 1) the quality of the service system, 2) the conditions and attitudes of the labour market, 3) employers’ policies, 4) vocational rehabilitation services, 5) the characteristics of the employee and the rehabilitee, and 6) factors related to the community (e.g. attitudes and economics). The most studied of the factors listed above are different rehabilitees’ attributes and their significance for the rehabilitation outcome (Gould et al. 2012 ab). The issues Tate classified can also be identified in Loisel’s arena of work disability (Loisel et al. 2005). Tate did not classify collaboration during the rehabilitation process and between different stakeholders as its own entity. MacEachen (2013) challenges researchers and research for a better understanding of work (dis)ability and vocational rehabilitation systems, and intervening upstream, thereby having the potential to make a positive impact on many employees.
3 Objectives, scope and research questions

Work-related rehabilitation is a multilevel entity; first, it is an individual process of change or a chain of rehabilitation services and actions; second, it is an entity of multidisciplinary measures (work-related rehabilitation services and service activities); third, it is a national social system with action networks and collaboration across all levels (work-related rehabilitation system and its functioning in regional and local contexts). The system of work-related rehabilitation is complex and constantly undergoing changes.

Work-related rehabilitation is still structured and implemented in a system-centred and professionally-oriented manner. Professionals consider the need for rehabilitation and the benefits of rehabilitation from their own, potentially narrow point of view, and regard the rehabilitee’s and other stakeholders’ perspectives as less important. In current practice, this means that the rehabilitee’s situation is always viewed from a different perspective when they move from one system to another or from one expert to another. It can be assumed that such a method has a negative impact on the overall benefit of rehabilitation for a rehabilitee, on the support needed during the rehabilitation process, and on the working career outcomes of the rehabilitation. However, in accordance with this system- and professionally-driven mode of operation, different professions have been given significant power to identify the need for rehabilitation and to control and choose the possible service options. For this reason, work-related rehabilitation is not sufficiently contemplated from the perspective and needs of a rehabilitee, as a multidisciplinary entity of measures that require multifaceted activities and collaboration between different professionals and stakeholders. It can also be assumed that the current outline possibly weakens both the rehabilitee’s work-related rehabilitation services and the whole process (access/selection, interception/interruption, targeting), the support needed during rehabilitation, and the working career and other outcomes of work-related rehabilitation.

The purpose of this thesis is to determine the possibilities of defining the tasks of work-related rehabilitation in a way that would combine different perspectives and interests by studying the empirical data of two work-related rehabilitation research projects. Another aim is to discover the facilitators of and obstacles to work-related rehabilitation processes and the mechanisms through which working career outcomes are generated by studying multimodal collaboration and agencies in the implementation of two work-related rehabilitation processes, and the working career outcomes for both unemployed and employed people with disabilities. The
working career outcomes and the effects of vocational rehabilitation are monitored as group averages and, through return to full-time work or a reduction of sickness absence and/or permanent work disability, ignore other types of change. This study also looks more closely at the changes in work that are usually ignored.

On this basis, I formed the following three research questions:

- **Research question 1 (RQ1):**
  What were the impacts on working career and psychosocial factors of a multimodal vocational rehabilitation intervention for long-term unemployed people with disabilities?

- **Research question 2 (RQ2):**
  What kind of processes and mechanisms promoted the working careers and other outcomes of employed people during multidisciplinary collaborative vocational rehabilitation interventions?

- **Research question 3 (RQ3):**
  What forms of collaboration were realised between rehabilitees and different stakeholders, and to what extent did the rehabilitees have opportunities to choose and act during the vocational rehabilitation process?

The research questions are answered in *four sub-studies* (Articles I–IV, see Table 1). The data for the sub-studies were collected from two evaluation research projects. The *material for Sub-studies I and II* was gathered during a developmental ‘Pathway-to-Work’ project of the Oulu University Hospital (1995–1998). The project was targeted towards middle-aged long-term unemployed people (N = 140) with various disabilities, and aimed to tailor RTW plans for all participants, and get half of them into work or training. The material for *Sub-studies III and IV* was gathered during a developmental project called ‘Work-related rehabilitation II’ conducted in 2012–2014 by The Social Insurance Institution of Finland. This project developed a new collaborative way of conducting vocational rehabilitation for employees with disabilities. Close collaboration with employers, employees, OHS and rehabilitation service providers was one of the key elements in this concept. In addition, the rehabilitation had to be flexible and correctly timed in terms of both the individual’s and employer organisation’s needs.

Research question 1 is answered by Sub-studies I and II (Journal article I and II, later referred as article) and research question 2 is answered by Sub-studies III and IV (article III–IV). Research question 3 is answered with the sub-study I, II, III, and IV. Table 1 illustrates how the research questions are answered by the sub-studies.
Table 1. Research questions 1–3 and how they are answered by the Journal sub-studies.

<table>
<thead>
<tr>
<th>Research question</th>
<th>Sub-study I</th>
<th>Sub-study II</th>
<th>Sub-study III</th>
<th>Sub-study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1</td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>RQ2</td>
<td></td>
<td></td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>RQ3</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

The aims of Sub-studies I–IV are summarised in Table 2.
4 Material and methods

4.1 Research settings

Sub-studies I and II. The Pathway-to-Work developmental project was targeted towards middle-aged, long-term unemployed people with various disabilities. These job-seekers’ need for vocational rehabilitation of was recognised and defined at the employment office. The multistage intervention was composed of a multidisciplinary work ability assessment at the Rehabilitation Unit of the University Hospital, training, work try-outs and subsidised jobs, which altogether required 10 months of full-time attendance per participant on average. Sub-study I concentrated on evaluating the employment and psychosocial outcomes of the intervention during the two-year follow-up. Sub-study II focused on examining the rehabilitation paths of eight participants and the changes in the psychosocial quality of life among the subgroups that took paths to work, training, work try-outs, or further work (dis)ability assessments.

The ethical review of Sub-studies I and II was carried out by the ethical board of the Regional Ethics Committee of the Northern Ostrobothnia Hospital District (The statement of the Ethics Committee 10/2001, 25th January 2001.). All the procedures in the studies that involved human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from the study participants.

Sub-studies III and IV were part of the Work-related rehabilitation II development project (Seppänen-Järvelä et. al. 2015a), which developed a new way of conducting vocational rehabilitation for employees with disabilities. This work-related multidisciplinary rehabilitation intervention aimed for close collaboration among all stakeholders. The focus of each of the rehabilitation processes was defined at the workplaces; first the employer representatives defined the need for rehabilitation, then the employer’s OHS carried out a work ability assessment of the selected target population. The multistage intervention comprised 10–15 group session days and 3–8 individual visits or collaborative meetings over 10–12 months. (See also Fig. 2).

Sub-study III concentrated on analysing what kind of co-operation took place between the 10 workplaces and their OHS, how multiagency co-operation succeeded, and what consequences this had for rehabilitation. Sub-study IV focused
on determining the mechanisms and pathways that promoted job retention among 11 rehabilitees.

The ethical review of Sub-studies III and IV was carried out by the ethical board of The Social Insurance Institution of Finland: the statement of the Ethics Committee was made on the 11th June 2012. All the procedures in the studies that involved human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study participants gave their informed consent.

Table 2 presents a summary of Sub-studies I–IV.
Table 2. Focus, study-design, research participants, matched controls and informants of the cases in Sub-studies I–IV.

<table>
<thead>
<tr>
<th>List of content</th>
<th>Pathway-to-Work project for long-term unemployed people</th>
<th>Work-related vocational rehabilitation for employees with disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main focus</strong></td>
<td>Re-employment outcomes of long-term unemployed people with disabilities.</td>
<td>Multiagency cooperation between workplaces and OHS.</td>
</tr>
<tr>
<td></td>
<td>Measures required and used during rehabilitation process.</td>
<td>Consequences of co-operation attending work-related vocational rehabilitation.</td>
</tr>
<tr>
<td></td>
<td>Factors promoting and hindering rehabilitation and re-employment process.</td>
<td></td>
</tr>
<tr>
<td><strong>Research participants/informants of case studies</strong></td>
<td>Long-term unemployed people (N = 140) and their matched controls (N = 140).</td>
<td>Representatives of ten employers and their OHS units.</td>
</tr>
<tr>
<td></td>
<td>Long-term unemployed individuals.</td>
<td>Eleven rehabilitees and stakeholders</td>
</tr>
<tr>
<td></td>
<td>Long-term unemployed people (N = 140).</td>
<td>of their rehabilitation.</td>
</tr>
<tr>
<td><strong>Research design</strong></td>
<td>Quantitative, quasi-experimental with matched control group.</td>
<td>Multiple case study, mixed methods.</td>
</tr>
<tr>
<td></td>
<td>Process evaluation using mixed methods.</td>
<td>Multi-perspective multiple case study, mixed methods, Qualitative comparative analysis (QCA).</td>
</tr>
<tr>
<td><strong>Data collection</strong></td>
<td>Questionnaires, register data, interviews of project staff, project documents.</td>
<td>Interviews of human resource (HR) managers, focus group interviews of occupational health (OH) professionals, questionnaires, case descriptions.</td>
</tr>
<tr>
<td></td>
<td>In-depth interviews, questionnaires, register data.</td>
<td>Interviews of rehabilitees, supervisors and OH professionals.</td>
</tr>
</tbody>
</table>
4.2 Participants, informants and data collection

Participants, informants and data collection of Sub-studies I and II

Sub-study I involved all the participants (N = 140) and their matched controls (N = 140) (Table 2). The background profile of the participants’ and matched control groups in Sub-study I is summarised in Table 3 (Juvonen-Posti et al. 2002).

Table 3. Background profile of participant and matched control groups. From Juvonen-Posti et al. (2002) Table 3.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Participant group</th>
<th>Matched control group</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in years)</td>
<td>mean = 44</td>
<td>mean = 46</td>
<td>0.1021</td>
</tr>
<tr>
<td></td>
<td>min–max = 32–54</td>
<td>min–max = 36–55</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>55 male</td>
<td>55 male</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>33 female</td>
<td>33 female</td>
<td></td>
</tr>
<tr>
<td>Length of work history (in years)</td>
<td>mean = 18</td>
<td>mean = 20</td>
<td>0.1563</td>
</tr>
<tr>
<td></td>
<td>min–max = 0.5–35</td>
<td>min–max = 1–40</td>
<td></td>
</tr>
<tr>
<td>Uninterrupted unemployment (months)</td>
<td>mean = 39</td>
<td>mean = 50</td>
<td>0.0006</td>
</tr>
<tr>
<td></td>
<td>min– max= 9–132</td>
<td>min– max = 5–120</td>
<td></td>
</tr>
<tr>
<td>Mean frequency of diagnoses</td>
<td>5.3</td>
<td>4.4</td>
<td>0.2721</td>
</tr>
<tr>
<td>Self-estimation of health (mean, VAS)</td>
<td>5.5</td>
<td>2.8</td>
<td>0.0001</td>
</tr>
<tr>
<td>Self-estimation of work ability (mean, VAS)</td>
<td>5.9</td>
<td>5.8</td>
<td>0.9285</td>
</tr>
<tr>
<td>Distress (GHQ-12 mean)</td>
<td>4.26</td>
<td>3.77</td>
<td>0.4682</td>
</tr>
<tr>
<td>Perceived competence (WSPS mean)</td>
<td>33.7</td>
<td>33.4</td>
<td>0.7920</td>
</tr>
<tr>
<td>Sense of coherence (ASOC-13 mean)</td>
<td>45.34</td>
<td>45.52</td>
<td>0.9276</td>
</tr>
</tbody>
</table>

VAS = Visual analogues scale; GHQ-12 = 12-item version of the General Health Questionnaire; WSPS= Wallston’s Self Performance Survey; ASOC-13 =13-item version of Antonockys’s SOC

We selected the matched controls from among unemployed people in the same geographical area, using the register of the regional employment office. The following criteria were used in the selection: age, gender, long-term unemployment, occupational status, and possible disabilities or known special needs regarding employment. We were able to control the matching of the 88 pairs who answered the questionnaires by 36 variables. The rehabilitation participants and matched controls did not differ statistically significantly from each other in terms of age, gender, work history, work ability after VAS (Visual analogue scale) and psychosocial distress, but duration of unemployment was longer and health after VAS was weaker in the matched control group (Table 3).
Of all the participants (N = 140) in Sub-study II (Juvonen-Posti et al. 2004), eight (n = 8) rehabilitation clients participated voluntarily in semi-structured interviews. At the beginning of the project, we informed all clients of the possibility to participate. Four of the interviewees had entered the project among the first 30 clients and the other four interviewees were among the next 30 clients.

In Sub-studies I and II, data were gathered from all the participants via three structured questionnaires (QI, QII, QIII; see Table 4), which were conducted at the beginning of the rehabilitation (QI), at six-month intermediate follow-up (QII) and at the end of the rehabilitation (QIII). In addition, the project staff collected structured data on the tailored activities and their length, and labour market status at the end of the project. We used the official project documents to describe the activities, context and project process, and these were expanded by one group and individual theme interview of the staff, on which notes were taken (Patton 1990, Kruger & Casey 2000, Bloor et al. 2001). We elicited the changes in the labour market situation at the end via the interview and 6, 12, and 24 months after rehabilitation from the register of the Ministry of Labour. Data from the matched controls were gathered via two postal questionnaires (QIMC, QIIIMC; see Table 4). The data on their participation in the local employment office measures and their labour market situation were also gathered from the register of the Ministry of Labour.

The questionnaires included three measures of psychosocial quality of life. Psychological distress was measured using the General Health Questionnaire-12 (GHQ-12; see Goldberg, 1972, Härkäpää 1992, Järvikoski et al. 1999), perceived competence by the Finnish eight-item version of Wallston’s Self-performance Survey (WSPS; see Smith et al. 1991, Wallston 1992, Härkäpää 1995) and sense of coherence by Antonovsky’s SOC (ASOC-13; see Antonovsky 1987, 1993, Järvikoski et al. 1999, Feldt 2000) (Table 7).

The participants’ response rate (see Table 4) was good, and that of the matched controls was satisfactory. The response rate of the questionnaires on the psychosocial quality of life was also good, although it decreased from an average of 89% to 82%, and only 73% of the respondents underwent the matched-pair tests. The missing data were marginal in the participants’ responses, but increased as the follow-up proceeded. Although the matched controls’ response activity was satisfactory on the whole, their responses included a great deal of missing data, and because of this we were not able to analyse the changes in their psychosocial quality of life, for example.

Sub-study II, also gathered data from eight in-depth interviews of the participants before they started their rehabilitation. The themes of the semi-
structured interview were life situation and life course, life resources, selection for the project, and expectations of the project. We recorded and transcribed the interviews verbatim. Table 4 summarises the data and the data collection methods that were used in Sub-studies I and II.

Table 4. Summary of data and data collection methods used in Sub-study I and II.

<table>
<thead>
<tr>
<th>Data collection method</th>
<th>Participants (N = 140)</th>
<th>Matched controls (N = 140)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n/N Data</td>
<td>n/N Data</td>
</tr>
<tr>
<td>Questionnaire I (QI) at beginning of project</td>
<td>140/140 (100%)</td>
<td>88/140 (63%) Background data, perceived health and work ability, GHQ12, WSPS, ASOC-13</td>
</tr>
<tr>
<td>In-depth interview</td>
<td>8/8 Littered interviews</td>
<td>-</td>
</tr>
<tr>
<td>Questionnaire II (QII) six months after beginning</td>
<td>121/140 (86%)</td>
<td>-</td>
</tr>
<tr>
<td>Questionnaire III (QIII) at end of project.*</td>
<td>122/140 (87%)</td>
<td>88/140 (63%) GHQ12, WSPS, ASOC-13</td>
</tr>
<tr>
<td>Project documents</td>
<td>140/140 (100%)</td>
<td>-</td>
</tr>
<tr>
<td>Employment office's customer register</td>
<td>-</td>
<td>140/140</td>
</tr>
<tr>
<td>Register follow-up 6, and 24 months after project from Ministry of Labour</td>
<td>140/140</td>
<td>-</td>
</tr>
</tbody>
</table>

Range of duration was 2–18 months, on average 10 months.*
Participants, informants and data collection of Sub-studies III and IV

The participants of the study that evaluated the implementation of work-related rehabilitation consisted of 27 employers (N = 27), 233 employees/rehabilitees (N = 233), 27 OHS providers (N = 27), and five rehabilitation service providers (N = 5) (Seppänen-Järvelä et al. 2015a). The informants in Sub-study III were the ten employers (n = 10) of the 27 employees who participated in the rehabilitation project, and their OHS providers (n = 10). These ten employers were selected with the aim of incorporating a wide variety of employer organisations in the study. Half of these represented municipalities and half represented the private sector. All these organisations employed more than 1000 people, and some of them operated in several localities. The HR managers of these employers acted as contact persons for the employees who participated in the vocational rehabilitation. None of them refused to participate in the interviews. Nine of them were female and one was male. Prior to the interviews, the informants received written information about the study. The OHS representatives (n = 105) were from fourteen of the ten OHS providers’ units (n = 10), and were contracted by the employers concerned.

The informants of Sub-study IV were eleven employees/rehabilitees and the stakeholders of their rehabilitation processes. The 11 rehabilitees, who gave their informed consent, were recruited from the 233 employees who attended the work-related rehabilitation intervention (Seppänen-Järvelä et al. 2015a, Juvonen-Posti et al. (manuscript)). The method of selection for the cases was information oriented, for maximum variation (Flyvbjerg 2006). The aim of selection was to incorporate a variety of the employees in terms of age, sex, occupational status, and sector of employer and to select rehabilitees from all the five rehabilitation service providers who delivered this rehabilitation concept. Two rehabilitees declined to participate; in these cases, we invited another rehabilitee of the same gender from the same rehabilitation group to the interview. Seven of the participants were women and seven had white-collar jobs. Most of the participants were over 45 years old.

The next step was to recruit the stakeholders involved in each participant’s rehabilitation process. None refused. The total number of interviewees was eleven supervisors (n = 11), one or two OHS unit representatives (n = 14) and rehabilitation service professionals (n = 20).

The data of Sub-study III were gathered from the 10 workplaces taking part in the project. The thematic interviews of the HR managers focused on their experiences of the work-related rehabilitation implemented in the project and their perceptions of job retention and work disability management. The HR interview
data comprised 80 single-spaced pages of transcribed text. We collected the data from their OH professionals via two questionnaires and five focus group interviews (Seppänen-Järvelä et al. 2015a). From these units, 54 professionals answered the first questionnaire, 49 the second, 10 took part in the focus group interviews (171 single-spaced pages of coded transcribed text) and five in the case study interview (Seppänen-Järvelä et al. 2015a). We also included data from the multiple case study (Seppänen-Järvelä et al. 2015b, Sub-study IV), and data from five cases on the outcomes of this collaboration in terms of the rehabilitees’ processes.

The data of Sub-study IV consisted of the interviews of 11 rehabilitees (about 170 pages) and the stakeholders of their rehabilitation processes (Patton 1990, 1997, Kruger & Casey 2000, Bloor et al. 2001, Ruusuvuori et al. 2010). The rehabilitation professionals were interviewed in six focus group interviews, all the other interviews were individual and conducted via the phone. The HR interview data comprised 80 single-spaced pages of transcribed text, and the total OHS interview data comprised 81 single-spaced pages of transcribed text. The questionnaire answered before the intervention revealed the participants’ expectations of the rehabilitation, and the questionnaire answered after the intervention described their thoughts on the rehabilitation process (Seppänen-Järvelä et al. 2015a). The rehabilitation documents revealed the need for and the goals set for rehabilitation. All the interviews in Sub-studies III and IV were transcribed by a professional transcriptionist.

4.3 Research methodology and data analysis

Mixed methods research and the multiperspective approach

The theoretical foundations of the methodology of these studies lay in the developmental evaluation research of outcomes and processes (Patton 1990, 1997, 2011, Seppänen-Järvelä 1999, Moore et al. 2015), multiple case study (Stake 1995, Merriam 1998, Yin 2003, 2013, Byrne & Ragin 2009, Powell et al. 2013) and realistic evaluation (Pawson & Tilley, 1997, Weiss 1998, Befani et al. 2007), in which the key issue was to determine to whom, in what context and through which mechanism(s) the outcomes were realised. Vocational or work-related rehabilitation interventions are complex. They are made up of various components, which may interact. Moreover, various or new, possibly difficult behaviours (such as co-ordination, collaboration) are required by those delivering or undergoing the intervention. The complexity is also due to the interventions being targeted towards
multiple groups or organisational levels, and multiple processes and outcomes. The implementation of a complex intervention has a permitted degree of flexibility or tailoring (Craig et al. 2008).

All the sub-studies, from I to IV had a mixed methods study design and can be classified into different types of mixed methods research according to the categories of Johnson et al. (2007). The design of Sub-study I could be viewed as a quantitative dominant, in which the study relies on a quantitative postpositivist view of the research process, at the same time recognising the benefit of including qualitative approaches. The design of Sub-studies II and IV can be described as a qualitative dominant, in which one relies on the constructivist-poststructuralist-critical view of the research process (Johnson et al. 2007). The design of Sub-study III on the other hand can be described as equal, in which the starting point is the logic and philosophy of mixed methods research: all the data were gathered together to answer the research questions. Table 5 summarises these types of mixed methods designs.

Sub-studies I–IV can also be projected according to Fetters et al. (2013) in order to determine the levels of integration in the mixed methods research. Mixed methods research involves using and mixing qualitative and quantitative methods in ways that have been defined in advance on the basis of a certain justification (Johnson & Turner 2003, Fetters et al. 2013, Creswell et al. 2011, Teddlie & Tashakkori 2009). According to the research questions and the subject, the chosen methods are placed in the research setting and procedure in different ways and at different times (Fetters et al. 2013). Fetters et al. (2013) classify the levels of integration according to design (seven categories; exploratory and explanatory sequential, convergent, multistage, intervention, case study, and participatory), methods (four categories; connecting, building, merging, and embedding) and interpretation and reporting (three categories; narrative, data transformation and joint display). The aims, study designs and types of mixed methods according to Johnson et al. (2007), and the levels of integration in mixed methods according to Fetters et al. (2013) for Sub-studies I–IV, are summarised in Table 5.
Table 5. Levels of integration in mixed methods of Sub-studies I–IV

<table>
<thead>
<tr>
<th>Types of studies</th>
<th>Sub-study I</th>
<th>Sub-study II</th>
<th>Sub-study III</th>
<th>Sub-study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed method type according to Johnson <em>et al.</em> (2007)</td>
<td>Mixed method</td>
<td>Quantitative dominant</td>
<td>Qualitative dominant</td>
<td>Equal</td>
</tr>
<tr>
<td>Levels of integration according to Fetters <em>et al.</em> (2013)</td>
<td>Design</td>
<td>Explanatory sequential</td>
<td>Explanatory sequential</td>
<td>Case study</td>
</tr>
<tr>
<td>Methods</td>
<td>Connecting</td>
<td>Connecting</td>
<td>Connecting (merging)</td>
<td>Merging</td>
</tr>
<tr>
<td>Interpretation and reporting</td>
<td>Integration through narrative: weaving approach</td>
<td>Integration through narrative: weaving approach</td>
<td>Integration through data transformation (Joint display)</td>
<td>Integration through data transformation (Joint display)</td>
</tr>
</tbody>
</table>

The integration level of the design in Sub-studies I and II, that is a quasi-experimental setting with a matched control group to study the impacts of the rehabilitation, can be classified as explanatory sequential basic designs: the quantitative and qualitative data were collected first as planned, via the same stages simultaneously, and neither party informed the other of the analyses of the process or outcomes. But for a better understanding of the process of the complex intervention of the integrated rehabilitation concept, we included the collection of qualitative data (analysis of the project documents and personnel interviews) in the last phase. This data collection phase was informed by the earlier collected quantitative data. First, in Sub-study II, we finalised the qualitative analyses based on grounded theory using comparative content analysis (Strauss 1990, Seale 1999). Second, we connected the quantitative data to the qualitative data when answering the next research question, that of whether any predictors of employment could be found. In both Sub-studies I and II, quantitative and qualitative methods were connected, especially in the evaluations of the processes. The integration in the interpretation and reporting was narrative, on a theme-by-theme basis, and published in two different sub-studies (Fetters *et al.* 2013, Moore *et al.* 2015).

The integration level of the design in Sub-studies III and IV was a case study, in both cases a multiple case study. The integration level of the method was
connecting in Sub-study III and merging in Sub-study IV, and the integration level of interpretation and reporting was integration through data transformation in both studies. I describe the latter in more detail below under Data analysis.

**Data analysis**

Table 6 summarises the statistical methods used in Sub-studies I and II.

<table>
<thead>
<tr>
<th>Statistical method</th>
<th>Sub-study</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAS programme 6.06</td>
<td>I, II</td>
</tr>
<tr>
<td>Results as crude frequencies, proportions, crude rations and means, changes in groups in cross-tabulation</td>
<td>I, II</td>
</tr>
<tr>
<td>Statistical significance of changes calculated by the mean of the Pearson X2 test, and when appropriate, Fisher’s exact test</td>
<td>I, II</td>
</tr>
<tr>
<td>Statistical significance of continuous variables of GHQ-12, WSPS and ASOC-13, and when only two groups were compared, we used the Wilcoxon matched pairs test</td>
<td>I, II</td>
</tr>
<tr>
<td>Statistical significance of changes in the means of the continuous variables of GHQ-12 and WSPS, and when more than two groups were compared, we used the two-way analysis of variance, repeated variance analysis and Welch variance analysis</td>
<td>I, II</td>
</tr>
<tr>
<td>For analysing the changes in the means of continuous variables in the subgroups, we used the Kruskal-Wallis one-way test</td>
<td>II</td>
</tr>
</tbody>
</table>

Sub-study II concentrated on analysing the paths of eight interviewed participants until the end of follow-up, and the changes in the psychosocial quality of life of the subgroups, which took paths to (1) work, (2) training, (3) work try-outs, or (4) further assessment of work (dis)ability. We took the participants’ cases from qualitative and quantitative data, their interviews, and from background and follow-up data.

We used the multiperspective approach in Sub-studies III and IV, and this followed the evaluation research design and methods chosen for the evaluation research of the new concept of work-related rehabilitation (Seppänen-Järvelä et al. 2015a). The case in Sub-study III represented co-operation between workplaces and their OHS; the data consisted of multiple perspectives: HR managers (interviews), OHS professionals (two questionnaires, five focus group interviews) and the rehabilitees’ rehabilitation processes (five case descriptions, see below). During the analysis phase, the data were reduced to 0 (meaning no
data), + (meaning agreed) or – (meaning disagreed) outcomes. We transformed the data from qualitative to semi-quantitative data, and then merged this to joint display. (Fetters et al. 2013).

Sub-study IV concentrated on determining the mechanisms and pathways that promoted job retention among the rehabilitees. The data consisted of multiple perspectives, which meant that rehabilitation processes and outcomes were examined from the employee’s, i.e. the rehabilitee’s, point of view (interview, two questionnaires, documents: 80–120 pages for each rehabilitee) as well as from the perspectives of their supervisors (interview), OHS professionals (one to two interviewed professionals per rehabilitee) and rehabilitation service providers (focus group interviews). The within-case content analysis was driven by the research questions, and each case description was structured into six themes: 1) education and occupational background, 2) need for rehabilitation, 3) rehabilitation process, 4) work-relatedness of rehabilitation process, 5) attainment of rehabilitation goals, and 6) mechanisms that promoted or hindered rehabilitation. The content analysis of the interview data was carried out according to the question-originated method, based on the systematic multiperspective study design, which helped merge or embed the data. Hence the data were made into case descriptions of the rehabilitee’s rehabilitation processes. The quantitative data were transformed into qualitative data during this process. For the across-case analysis we applied the QCA (Ragin 1987, 1994, Berg-Schlosser et al. 2009, Schneider & Wagemann 2012, Befani 2013) in order to distinguish the promoting or hindering factors, and mechanisms of the rehabilitation process. In this phase, the data were transformed from qualitative to quantitative. The multidisciplinary research team used multiple data jointly during the different steps of analysis (see O’Cathain et al. 2010).

The analytical process in Sub-study IV was based on case-by-case analysis and multiperspective descriptions of the cases, and we looked at each case in its own context (Ayres et al. 2003, Craig et al. 2008, Moore et al. 2015). The qualitative features of the cases were structured (Stake 1995) so that the features of the phenomenon could be detected and identified at the exact level (see Ayres et al. 2003). QCA was added to the across-case phase analysis (Rihoux & Ragin 2009, Cress & Snow 2000, Schatz & Welle 2016). An important element in this analysis was identifying the ‘sufficient’ and ‘necessary’ conditions that occur in conjunction with an outcome (Schneider & Wagemann 2012). Conditions interact and combine to produce an effect. This understanding is consistent with complexity and the realistic view of the realistic evaluation theory (Pawson & Tilley 1997).
The complete multiperspective dataset of each case was available in the case descriptions, which provided the in-depth qualitative knowledge of each case required by QCA. The research team had further analysed the changes that took place during each rehabilitation process and the job retention outcomes of the eleven employees. This was summarised as a table. At this stage, we added QCA to find the mechanisms (Schatz & Welle, 2016). The conditions, and the types of conditions (one background, eight processes and two outcomes), were derived from the theoretical background of the research and from the research questions. These were (1) an increased risk of job loss due to work disability, (2) rehabilitation enabled the rehabilitee to exercise active personal agency, (3) the process was conducted at the right time in terms of the rehabilitee’s readiness for rehabilitation, (4) all stakeholders had a common and shared view of the goals of rehabilitation, (5) the supervisor was ready to make adjustments to the employee’s job, (6) OHS actively supported the rehabilitee in achieving the goals of rehabilitation, (7) the workplace representatives collaborated with OHS to promote rehabilitation, (8) peer support played a vital role in achieving the goals, (9) the rehabilitation service was adjusted to the needs of the rehabilitee, (10) the process supported the rehabilitee in reaching work-related and vocational goals, and (11) the process promoted the functional capacity and work ability of the rehabilitee. The realisation or non-realisation of the aforementioned two outcome conditions or variables, of which the causes or the causal link between other variables, were looked for. Given that the evaluation targeted a work-related rehabilitation model, the ability of the model to promote job retention among rehabilitees was chosen as the main outcome variable.

After choosing the cases and creating the conditions, the team of researchers scored the conditions and outcome achievements of all cases according to the crisp set QCA, 0 meaning that the condition was not fulfilled or was absent, 1 meaning that the condition was fulfilled or was present, and they transformed the data from qualitative to quantitative. The scores were adopted in two phases to the truth table values of each case in every condition: first each researcher did their own scoring, after which the scores were negotiated in the multidisciplinary team, especially those on which the researchers did not agree. The team worked (see O’Cathain et al. 2010) and continued analysing, and reviewed the multiple data again. When the data showed evidence of both scores, the third score of, 0.5, was chosen. The cases were compared according to the scores in the truth table, based on both data and theory, that is, according to abductive and retroductive reasoning (Meyer & Lunnay 2013).
5 Results

5.1 Research question 1 results: Impacts on working career and other factors

Research question 1 is answered by Sub-studies I and II (Articles I and II).

Work-related rehabilitation’s impacts on working career

Forty eight percent of participants obtained a job at the end of their rehabilitation process, on average 10 months after beginning the project, and 14% of them were still working at the time of the two-year follow-up (Table 7). Table 7 summarises the participants’ labour market changes during the project and the follow-up.

Participation in work gradually decreased during the follow-up period. At 24-month follow up, 83 people (59%) were unemployed, 22 (16%) were on sick leave or retired, 20 (14%) were at work, 11 (8%) were in training, and 4 (8%) fell into the other/unknown category. The workplace seemed to be subsidised for 6–12 months, because there was a significant return to unemployment after six months ($p = 0.0150$) and a very significant change after 12 months ($p = 0.0000$).

The participants took part in project activities for on average 10 months, whereas the matched controls received normal service from the local employment office. The follow-up periods of the matched pairs were of the same length as the participants’ project, and varied from 2 to 18 months. Table 8 summarises the project participants’ and matched controls’ labour market situation at the end of the project.
Table 7. Changes in participants’ labour market situation from the end of the project to 24 months after the project, and significance of these changes. Edited from Juvonen-Posti et al. 2002 Table 7 (Article I).

<table>
<thead>
<tr>
<th>Labour market status</th>
<th>A. At end of project</th>
<th>B. Follow-up at 6 months</th>
<th>C. Follow-up at 12 months</th>
<th>D. Follow-up at 24 months</th>
<th>Significance of changes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency/Column %</td>
<td>Frequency/Column %</td>
<td>Frequency/Column %</td>
<td>Frequency/Column %</td>
<td>( P ) A B C A A</td>
</tr>
<tr>
<td>Employed</td>
<td>67/48</td>
<td>50/36</td>
<td>44/31</td>
<td>20/14</td>
<td>0.0394 0.4477 0.0006</td>
</tr>
<tr>
<td>In training</td>
<td>21/15</td>
<td>21/15</td>
<td>15/11</td>
<td>11/8</td>
<td>1.0000 0.2841 0.4191</td>
</tr>
<tr>
<td>On sick leave/retired</td>
<td>29/21</td>
<td>27/19</td>
<td>24/17</td>
<td>22/16</td>
<td>0.7651 0.6423 0.7470</td>
</tr>
<tr>
<td>Unemployed</td>
<td>23/16</td>
<td>40/29</td>
<td>52/37</td>
<td>83/59</td>
<td>0.0150 0.1268 0.0000</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>0/-</td>
<td>5/4</td>
<td>5/4</td>
<td>4/3</td>
<td>*0.4982 *0.4472 *1.0000</td>
</tr>
<tr>
<td>Total</td>
<td>140/100</td>
<td>140/100</td>
<td>140/100</td>
<td>140/100</td>
<td>*0.0603 *0.1223</td>
</tr>
</tbody>
</table>

Statistical significance was calculated by means of Pearson’s X2-test or, when market with *, Fisher’s Exact test (two-tailed).
Table 8. Labour market situation of participants and matched control group at end of project. Edited from Juvonen-Posti et al. 2002, Table 8 (Article I).

<table>
<thead>
<tr>
<th>Labour market status</th>
<th>Participants Frequency</th>
<th>Participants Column %</th>
<th>Matched control participants Frequency</th>
<th>Matched control participants Column %</th>
<th>P/p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>67</td>
<td>48</td>
<td>12</td>
<td>9</td>
<td>0.0000</td>
</tr>
<tr>
<td>In training</td>
<td>21</td>
<td>15</td>
<td>4</td>
<td>3</td>
<td>0.0004</td>
</tr>
<tr>
<td>On sick leave/ retired</td>
<td>29</td>
<td>21</td>
<td>3</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>Unemployed</td>
<td>23</td>
<td>16</td>
<td>120</td>
<td>86</td>
<td>0.0000</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>0</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>*1.0000</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>100</td>
<td>140</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Statistical significance was calculated by the means of Pearson’s Χ2-test or, when marked with *, Fisher’s Exact test (two-tailed).

At the end of the project, a significantly higher rate of the project participants were at work than the matched control participants who were still unemployed (48 % vs 9 %, p = 0.000). Of the project participants, 11 were employed throughout the follow-up period and 10 were in training after one year, two of whom obtained a job after training. Of the participants who were on sick leave at the end of their intervention (n = 29), 72% (n = 24) and 59% (n = 22) were on sick leave or retired after one year and after two years, respectively. Of the participants who were unemployed at the end of the intervention, 61% were unemployed throughout the follow-up period. In Sub-study II (Article II) the participants were grouped into four subgroups according to the main path they took during the project: 45% took paths to employment, 37.1% took paths to training, 14.3% took paths to work trials, and 3.6% took paths to work(dis)ability assessment.

According to Sub-study II, crossing the job threshold was often temporary. Of the eight interviewed participants, all but one were employed or in training at 12-month follow up, but at 24-month follow-up, four were unemployed, two employed, one in training, and one was on sick leave or retired.

The impacts on the working careers of the participants in Sub-study II showed that their labour market situation underwent many unpredictable changes. Most of these sporadic changes happened to those participants whose paths resulted in training. One set of participants in this subgroup continued in training for one year, one participant was on sick leave until the end of the follow-up period, and 10 participants were unemployed at the end of the project as well as throughout the two-year follow-up period. The long period of unemployment ended for four, of the interviewed participants, whereas the 6–12-month break in unemployment
was only temporary for the other four. Four of the participants fulfilled the main expectation of the all interviewed participants, which was to have a clearer life situation. Although the participants estimated their employment and training opportunities realistically at the beginning, no estimates of their situation in the labour market could be made on the basis of the path analysis.

**Other impacts of work-related rehabilitation**

Sub-study I (Article I) showed that in addition to the effects on the participants’ working careers, their distress decreased. The participants’ distress as measured by the GHQ-12 decreased statistically significantly \((p < 0.001)\) during the first six months. Though it increased later, the level of distress remained statistically significantly \((p < 0.002)\) lower at the end of the project than at the beginning. The perceived competence, as measured by the WSPS, increased but did not reach statistical significance \((p < 0.062)\) at the end of the project. The change in the sense of coherence, as measured by the ASOC-13, was not statistically significant \((p < 0.442)\).

Sub-study II (Article II) showed that the changes indicated better psychosocial quality of life among those who obtained work during the project. This became evident when compared with the means values of the whole group and each of the two other subgroups, the members of which had taken paths to training and paths to work trials. The difference was particularly clear in perceived competence, for which the trend for those who took paths to work was increasing, but in the other two subgroups, decreasing. According to the means of the GHQ-12, WSPS, and the ASOC-13, the participants whose paths resulted in work or work trials benefited more from the project than the participants whose paths resulted in training. The participants whose paths resulted in training showed higher and slightly increased levels of distress, and their perceived competence was poorer than the participants’ mean (Juvonen-Posti et al. 2004 Table 5, Fig. 3, Fig. 4).
5.2 Research question 2 results: Processes or mechanisms that promoted working career and other outcomes

Research question 2 is answered by Sub-studies III and IV (Articles III and IV).

**Working career outcomes, the processes and mechanisms through which results were achieved**

The QCA of these 11 rehabiliteees enabled us to discover mechanisms and pathways that consisted of different facilitators of or obstacles to rehabilitation. Based on these, the processes were divided into three main groups. The five rehabiliteees in Group 1 were at the beginning of the risk of work disability process. They strengthened their agency through partnership with multiple actors. One rehabilitee, of her own choice, collaborated with only the rehabilitation service provider when going through her working career change options and obtained confidential support from this source in making decisions regarding her future career path. The rehabilitation of the four rehabiliteees in Group 2 focused on personal goals, aiming to develop their work ability. In one case, the process strongly focused on achieving changes at the workplace on the whole, and thus at least partly neglecting the required individual changes. The work-related rehabilitation of the two rehabiliteees in Group 3 did not promote job retention. Their expectations regarding rehabilitation were only associated with improving their own general health, and did not concern work-related issues. Moreover, the supervisors failed to support these rehabiliteees. OHS professionals collaborated with one rehabilitee, but efforts to collaborate with other stakeholders, such as the supervisor or other representatives at the workplace, were not successful.

Sub-study IV (Article IV) showed how different factors of the discovered mechanism either promoted or hindered the impacts on the participants’ working careers and the other impacts, in each of the eleven cases’ processes. In nine cases, the rehabilitation promoted job retention whereas in two cases it did not. Figure 1 illustrates and summarises the impacts of the new work-related concept of rehabilitation on working careers on working careers.
Sub-study IV discovered interwoven, dynamic mechanisms in the process. The outcomes and impacts of rehabilitation were due to the interaction between facilitators or obstacles to the rehabilitation process, the intervention, and other components and subsystems of the complex system. The rehabilitees’ process was shaped by their expectations of the rehabilitation service, and their needs and goals for rehabilitation through their own agency. The rehabilitation service process itself, the identified changes and the outcomes, were promoted or hindered by the actions taken by all the stakeholders at the workplace, especially the employee’s supervisor, OHS, the rehabilitation service provider, and the rehabilitee’s life situation factors.

The work-related rehabilitation programme promoted job retention, if, 1.) the process was conducted at the right time in terms of the rehabilitee’s readiness for a work-related rehabilitation programme, 2.) the rehabilitee exercised active personal agency, and 3.) the rehabilitee’s supervisor had the capacity and readiness to make workplace adjustments. If the rehabilitee was at risk of permanent disability, OHS had to play an active role and a collaborative relationship between all stakeholders was needed. Sometimes, if a rehabilitee’s strong personal agency was supported by the rehabilitation service provider, a good result emerged even without shared agency or collaboration with other stakeholders. If the process focused mainly
on making changes at the workplace on the whole, active personal agency was more difficult to achieve, which in turn might have had a negative effect on the individual-level results. Peer support from other rehabilitees and co-workers was important in most cases. Job retention also increased if the rehabilitee’s supervisor had the capacity and readiness to make workplace adjustments. From the perspective of the impacts of rehabilitation, the critical mechanism was that the supervisor was committed and followed a management style that supported work ability. On the other hand, if the target of rehabilitation was to change one’s job, the supervisor’s role could be very small, and diverse co-operation may have been dismissed without the rehabilitation suffering for this. In this kind of situation, the rehabilitation required active personal agency on the part of the rehabilitee, and support from the rehabilitation service provider.

The rehabilitation could not support the rehabilitee’s job retention if the rehabilitee had no active personal agency, if the rehabilitee’s readiness for the new model of work-related rehabilitation was poor, if the supervisor was not ready to develop work, if diverse co-operation between the stakeholders had not begun, or if the stakeholders had no common view regarding the goals and means of rehabilitation.

5.3 Research question 3 results: Forms of co-operation and rehabilitees’ opportunities to choose from different options and act

Research question 3 is answered by Sub-studies I, II, III and IV (Articles I, II, III and IV). Sub-studies I and II answer Research question 3 from the perspective of the work-related rehabilitation process of long-term unemployed people with disabilities, and Sub-studies III and IV answer it from the perspective of the work-related rehabilitation process of employed people with disabilities.

Forms of Co-operation

Sub-study I (Article I) showed the forms of co-operation during the participant’s rehabilitation in both individual client work and between agencies. The main means of the client work were case management, the multidisciplinary assessment of each participant’s work ability, group training, work trials, and subsidised placements. The multidisciplinary assessment of work ability visits, a routine outpatient service at the rehabilitation unit of the University Hospital, took on average 4–6 weeks.
The one exception to the routine service was that the vocational rehabilitation counsellor from the project took part in their client’s summary meeting. The aim of this was to avoid information gaps in the transfer of the medical rehabilitation expert’s conclusions to the vocational rehabilitation process.

On the basis of the recommendations from the work ability assessments, the vocational rehabilitation counsellor assigned the participants to different kinds of training, work trials and subsidised jobs. First, 108 of the 140 participants took part in the six-week training and rehabilitation course organised by the project according to the group support method. This course can also be considered as a peer group support. After the course, the counsellor looked for work trial places, mainly in public organisations. According to the staff, these plans were made co-operatively with the clients. The mean duration of the first work trials was 64 days, and the second 49 days. Work trials could continue as subsidised jobs. The vocational training courses offered by the local employment office usually lasted 15 weeks.

Table 9 summarises the outcome of the tailored rehabilitation services according to the main paths the participants took during their project. The table describes in detail how the same outcome, for example training, was achieved through tailor-made services based on the rehabilitee’s needs. This was realised as different paths to training. The main means of co-operation with agencies was that between the rehabilitation unit at the hospital, the local employment office and public-sector organisations, employers, and organisers of the work trials. The vocational rehabilitation counsellors searched for subsidised employment or work trials, mainly by phone, and in public organisations.
Table 9. Outcome of tailoring different services during the project. Edited from Juvonen-Posti et al. 2002 Table 4 (Article I).

<table>
<thead>
<tr>
<th>n</th>
<th>%</th>
<th>Work ability assessment</th>
<th>Group training</th>
<th>First work trial</th>
<th>First vocational training</th>
<th>First employment</th>
<th>Second work trial</th>
<th>Second vocational training</th>
<th>Second employment</th>
</tr>
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<tbody>
<tr>
<td>22</td>
<td>15.7</td>
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<td>1</td>
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<tr>
<td>12</td>
<td>7.9</td>
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<td>0</td>
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</tr>
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<td>1</td>
<td>1</td>
<td>0</td>
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</tr>
</tbody>
</table>

1. Alternative paths to work with employment as endpoints (n = 63, 45%)

<table>
<thead>
<tr>
<th>n</th>
<th>%</th>
<th>Work ability assessment</th>
<th>Group training</th>
<th>First work trial</th>
<th>First vocational training</th>
<th>First employment</th>
<th>Second work trial</th>
<th>Second vocational training</th>
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<td>19</td>
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<td>2</td>
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</table>

2. Alternative paths to training with training as endpoints (n = 52, 37.1%)

<table>
<thead>
<tr>
<th>n</th>
<th>%</th>
<th>Work ability assessment</th>
<th>Group training</th>
<th>First work trial</th>
<th>First vocational training</th>
<th>First employment</th>
<th>Second work trial</th>
<th>Second vocational training</th>
<th>Second employment</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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<tr>
<td>4</td>
<td>2.9</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>2.9</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
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<td>1.4</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>1.4</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>1</td>
<td>0.7</td>
<td>1</td>
<td>0</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
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</tr>
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</table>

3. Alternative paths to work trial with work trials as endpoints (n = 20, 14.3%)

<table>
<thead>
<tr>
<th>n</th>
<th>%</th>
<th>Work ability assessment</th>
<th>Group training</th>
<th>First work trial</th>
<th>First vocational training</th>
<th>First employment</th>
<th>Second work trial</th>
<th>Second vocational training</th>
<th>Second employment</th>
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<td>0</td>
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<td>0</td>
<td>0</td>
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</tr>
</tbody>
</table>

4. Alternative paths of work ability assessment (n = 5, 3.6%)
The case management in this project was understood to be individual re-employment-oriented guidance, counselling and co-operation within the service system. The case manager, i.e. the vocational rehabilitation counsellor gathered the information on the participant’s work disability and on training, work and work trial opportunities. The case manager was in co-operation with agencies and workplaces and combined the negotiated outcomes with the client’s vocational rehabilitation processes in accordance with their rehabilitation goals and plan.

Sub-study II (Article II) showed that the forms of co-operation were facilitated by the case managers taking on an active role. The participants expected the case managers to carry out the co-ordination. It seemed hard for these long-term unemployed people, on their own at least, to find solutions to their life situation. The participants had gained considerable experience from different training, rehabilitation and attempts at employment, so that at the beginning of the project they did not want to seem too eager or to risk failure. At the time they entered the project, they did not actively define their new possibilities from their own standpoints and left the decision to the professionals. They were unable to form a clear picture of their possibilities; for example, they had not yet decided whether to return to work. Interpreting their special needs for returning to work was also difficult.

Sub-study III (Article III) showed that the new concept of work-related rehabilitation was implemented through a variety of forms of co-operation at workplaces and in OHS. The level of recognition of the different needs for support and rehabilitation, and the methods of co-operation varied greatly. Figure 2 illustrates the model of the new work-related rehabilitation concept.
The new concept of work-related rehabilitation included co-operation and collaboration in several phases. The rehabilitation service provider was responsible for co-ordinating the group and the individual rehabilitation service process from the planning phase onwards. The model was based on the assumption that the OHS provider co-ordinated the employee’s/rehabilitee’s process and progress. The intervention started with a collaborative meeting between all the stakeholders. The main aim of the meeting was to set up the main goal and workplace’s target group for rehabilitation. These were, for example, work community-based early intervention...
of distress, supporting the RTW and deployment of employees with disabilities, or mixed, according to the needs of the workplace. The groups of rehabilitation clients were mainly selected from one employer.

The planning phase continued so that each employee interested in attending the rehabilitation process went through a semi-structured discussion with their supervisor to determine their work-related needs for rehabilitation. Next, employees attended an OHS appointment, at which the need and goals for the vocational rehabilitation were addressed from a work disability prevention point of view. This planning phase was concluded by the decision made by the rehabilitation organiser making the decision based on the data documented by the OHS physician.

The planning phase was followed by the rehabilitation service provider’s multiprofessional team compiling an individual rehabilitation plan and objectives for each rehabilitee. This phase started with an individual assessment of each client: the rehabilitee, together with their employer, pinpointed the work-related problems in a discussion. The rehabilitees participated in planning the amount and content of these sessions in their individual rehabilitation paths, together with the employer and the rehabilitation service provider and occasionally also with OHS.

The rehabilitation programme was modified for each group of clients. During the group rehabilitation periods, one co-operative meeting day for all the stakeholders was arranged. The meetings could be held at the rehabilitation institution or at some other location. At least one of the individual sessions was arranged at work or workplace. The summing up phase of the intervention consisted of a meeting which brought together the outcomes of the group and individual parts of the rehabilitation and follow-up procedures were planned, for example for work, the workplace, OHS or the rehabilitee her/himself, together with the rehabilitee and their stakeholders.

The rehabilitation intervention contained procedures that aimed to improve the rehabilitee’s work ability and functional capacity, and the rehabilitation service was also intertwined with the rehabilitee’s work, work surroundings and life situation. The rehabilitation was aimed to support both the setting and achieving of realistic goals. The rehabilitation intervention was implemented by a systematic interprofessional case by case collaboration between organisations. Table 10 summarises the realised collaboration between OHS and workplace actors in the new work-related multidisciplinary rehabilitation concept per rehabilitee group.
Table 10. Realised collaboration between OHS and workplace actors in new work-related multidisciplinary rehabilitation concept per rehabilitee group. Translated from Juvonen-Posti et al. (2015) Table 2. [Taulukko 2. TK2-hankkeessa toteutunut työterveysyhteistyö kuntoutujaryhmätäin.]

<table>
<thead>
<tr>
<th>Actor leading collaboration between workplace and OHS</th>
<th>Jointly-driven collaboration</th>
<th>Employer (HR)-driven collaboration</th>
<th>OHS-driven collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehabilitees groups</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Estimated by HR: together</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Estimated by OHS: together</td>
<td>0</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>Estimated by HR: HR</td>
<td></td>
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<tr>
<td>Estimated by OHS: HR</td>
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<tr>
<td>Estimated by HR: OHS</td>
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<td></td>
<td></td>
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<tr>
<td>Estimated by OHS: OHS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realised rehabilitee-driven collaboration</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

0 = data missing, (+) weak positive

Depending on which actor led the joint work during the implementation of the new concept of work related rehabilitation, the collaboration between workplaces and their OHS could be classified into three types: jointly driven, employer-driven and OHS-driven. The co-operation between HR and OHS was realised in four rehabilitee groups processes (1, 2, 6, 7; see Table 10). Employer-driven collaboration was led by HR in particular, and was realised in three groups (3, 4, 10; see Table 10). The OHS provider led three of the co-operation processes during the rehabilitation (5, 8, 9; see Table 10).

Sub-study III data showed that the ten HR professionals interviewed were aware of the personnel situation in terms of work disability. The participating organisations had different information and management systems to keep track of their personnel. In order to define the target group and select the participants for the rehabilitation course, the interviewed HR professionals either worked actively in close co-operation with OHS service providers or co-operated dynamically within the work organisation, especially with middle managers. Although HR was active in multiagency co-operation, the supervisors were not necessarily ready for the co-operation needed at the workplace or with the employees. From the HR professionals’ perspective, this kind of rehabilitation was ‘one tool in the toolbox’ for managing personnel’s work ability. Usually, the HR professionals took part in the first planning phases of rehabilitation, but not in the other phases of
collaboration after rehabilitation had started. Collaboration with the workplace occurred mostly through the supervisors. The model included a co-operative day (see Fig. 2.), during which HR professionals could also find a meaningful role, if they were invited. Some of the HR professionals expected feedback on the whole rehabilitee group from the rehabilitation service providers in order to better connect the rehabilitation intervention to the workplace’s support for job retention or its work disability management procedures.

In order to prevent work disability, OHS should also monitor employees’ work ability, job retention and needs for rehabilitation; collaborate with workplaces on work disability prevention and integration issues; and when needed, co-ordinate and collaborate in the rehabilitation action network, case by case. According to the OH professionals, the most important functions of OHS were to recognise employees’ needs for rehabilitation and to select rehabilitees. The OHS professionals participated actively in the collaboration during the rehabilitation process, the most common way of collaboration being the three to four meetings of the new model (see Fig. 2.). The co-operation between the OHS professionals and service providers required by the concept varied a great deal. The differences between the intensity of the follow-up of the employees’ rehabilitation processes and the collaboration between workplaces and rehabilitation professionals were noteworthy.

The OHS nurse was most commonly responsible for co-operation in the rehabilitation process. Only one team divided the responsibility among all the members of the multidisciplinary OHS team. According to the interviewed OH professionals, the most successful work-related outcomes were achieved when supervisors were involved. The OH professionals also wanted to co-operate more with all the workplace’s stakeholders, including occupational safety professionals, but especially with supervisors and managers, with regard to the work- and workplace-related issues that the rehabilitation process raised, and of the practical solutions with which the impacts of rehabilitation could be maintained. The whole range of roles and tasks of the work disability case management of Finnish occupational health were not fully recognised or implemented in OHS during the developmental project, although the complex collaboration had many new impacts on both employees and OH processes.

All the stakeholders worried about the continuity and integration of the impacts of the rehabilitation process, but in their own stakeholder role and from their own perspective. Sub-study III showed that in the multiagency collaboration of the new work-related multidisciplinary rehabilitation, the clarity of roles and tasks promoted the rehabilitation processes regardless of whether the workplace or
OHS was responsible for leading the joint work (see Fig. 2.). However, the quality of collaboration seemed to be fundamentally important. In addition, the individual customer-level co-operation between OHS and the rehabilitation service providers’ professionals still seemed to work, regardless of which stakeholder entity was active in organising the co-operation.

In Sub-study IV (Article IV), the collaboration arenas enabled all stakeholders to be part of the co-planning of common goals and shared decision-making, and to show their commitment, responsibility and common provision of support. In practice, the different stakeholders recognised the new opportunities for co-operation, and used them in different ways. Some stakeholders used the network actively. The elements of effective co-operation were supervisor activity, a co-operative approach, good knowledge of the rehabilitee’s work, and deliberative interaction. Some of the rehabilitation service providers, OH professionals and supervisors did not know how to take advantage of the co-operation opportunities offered by the new rehabilitation concept. Guaranteed genuine co-operation was not necessarily the common goal of all the stakeholders, as long as every stakeholder maintained their own traditional role.

The prerequisite of rehabilitation was usually that all stakeholders’ co-operation was open and diverse, and that the different stakeholders had an almost common and shared view of the goals and means of rehabilitation. However, this common view was not the absolute prerequisite for rehabilitation. Personnel changes in OHS and among the rehabilitation service providers and supervisors complicated co-operation. Usually, but not in all cases, peer support had a significant effect on the rehabilitation process, helping it progress in a positive direction.

_**Rehabilitees’ opportunities to choose from different options and act**_

Sub-studies I and II (Articles I and II) showed that in this expert-led process, co-ordinated by the case manager, the participants had several opportunities to make choices. The case manager, the vocational rehabilitation counsellor, interviewed all those who were interested in participating in the project. The interviews took place at the local employment office and later at the project’s premises. Job-seekers could decide whether or not to participate in the project and were guaranteed no negative consequences to their income or otherwise. The staff reported that very few chose not to participate. One of the promoting factors we found was the freedom of choice regarding whether to take part in the project and the promise of no negative consequences, especially for their unemployment allowance.
In Sub-study II (Article II), the participants did not actively define their new possibilities from their own standpoints in any detail, but made it clear that they had high expectations of the project. At the beginning of the project, the participants had not yet decided whether to return to work, but had left this decision to the professional(s) working on the project. Although the participants were free to participate in the project, Sub-study II showed that a third obstacle was how, at least at the beginning, the participants’ own agency in their working career goals was weak. The personal meaning attached to their disability and their special needs also came out weakly. They described in detail the obstacles their disabilities caused at work and their need for practical adjustments at work. At the time the participants entered the project, their life situations were marked by uncertainty, they were unable to form a clear picture of their possibilities, and they were hoping that the project would define their opportunities and help them take action to realise these opportunities. The relevancy of RTW or training influenced their high hopes for the project. It comprised their experiences of employment opportunities, the duration of unemployment and how they experienced their work ability or disability. However, during the project, the eight interviewed participants took active paths towards work and training, as did most of the project participants.

Sub-study I (Article I) showed how the participants’ project process proceeded to the expert-led assessment phase. The work ability assessment was organised as a routine out-patient service at the rehabilitation unit of a hospital. In addition to the interview, this was the only other phase in which all participants took part. On the basis of the conclusions and recommendations from the work ability assessments, the vocational rehabilitation counsellor assigned the participants to different kinds of training, work trials and subsidised jobs. According to the job-seekers, the fact that the decisions regarding their vocational rehabilitation and re-employment were made co-operatively, was the second promoting factor. In addition, good collaboration between the unit of rehabilitation and the local employment office promoted the participant-driven tailoring of the rehabilitation process. The latter in particular enabled the vocational rehabilitation counsellor to look for suitable vocational training and work trial opportunities for their clients. An obstacle to rehabilitation was that jobs were only searched for in public organisations, especially municipalities, which could not continue employment after the subsidised period. A second obstacle was that the workplaces were contacted by phone. We have no data on how and to what extent the workplaces were tailored to the needs of the participants.
The third promoting factor was that through case management, the participants were given several options to choose from different opportunities for their own vocational rehabilitation path. This was also shown in the variation of the length of the participants’ projects, which varied individually from 2 to 18 months, the average being 10 months. The options for vocational rehabilitation paths were group training, first and second work trials, first and second vocational training, and first and second employment, the combinations of which are summarised in Table 9. In Sub-study II, we were unable to specify the possible contextual mechanism with promoting factors or obstacles at this level. The variations between the situations of the subgroups might have enabled some predictions about the subgroups’ outcomes. However, we could not make predictions regarding individual participants’ outcomes, because the changes were so sporadic.

Sub-study III described how the rehabilitees’ opportunities to choose and act depended on the different actors’ agency in the workplace, OHS and rehabilitation services, as well as on the rehabilitees’ own agency. For example, the non-commitment of a supervisor, the limited interpretation of the role of OHS during the rehabilitation, or rehabilitation expert-led decision-making in the individual sessions could weaken or prevent rehabilitees’ opportunities to choose and act in different situations during the rehabilitation process.

Sub-study III revealed the promoting and hindering factors of the process, and that the knowledge of the employees’ work ability and their need for rehabilitation varied greatly from one workplace-OHS pair to the other. The obstacles to the process, and the particularly critical phases in the distribution of information seemed to be changes in HR personnel or the reversal of the whole OHS provider. Moreover, personnel changes in OHS and rehabilitation service providers and in supervisors complicated co-operation. In many large workplaces, HR was responsible for the practical process control of work disability management. Although HR was active and willing to co-operate, this did not mean that all managers and supervisors in the same organisation were ready to co-operate in the job and per worker co-operative rehabilitation processes. In addition, although HR was active in work disability management, it may have understood the work-related rehabilitation model to be traditional, exclusively promoting only employees’ health and functional capacity, and because of this, it may have withdrawn from co-operation, leaving the responsibility solely to the OHS provider. On the other hand, the rehabilitee’s own strong agency or the supervisor’s nonalignment could also prevent real co-operation. Sub-study III discovered that the individual customer-level co-operation between OHS and rehabilitation service provider
professionals could be successful, regardless of which stakeholder entity was active in organising the co-operation.

*Sub-study IV* showed that by giving the rehabilitees opportunities to choose and act, the work-related rehabilitation concept supported their job retention. This impact on job retention was achieved when a rehabilitee had active personal agency and the rehabilitation was conducted at the right time in terms of the rehabilitee’s readiness. It was also critical that the rehabilitees’ process was shaped by their expectations of the rehabilitation service, their needs and goals for rehabilitation, and their own agency. The facilitators of or obstacles to the rehabilitation process were interwoven, and formed dynamic mechanisms in each case.
6 Discussion

The purpose of this thesis has been to contribute to the present dialogue on the possibilities of defining work-related rehabilitation tasks in a way that combines different perspectives and interests. Another aim was to discover the facilitators of and obstacles to work-related rehabilitation processes and the mechanisms through which working career outcomes are generated. First I presented an overview of two vocational rehabilitation research projects, and from multiple perspectives, the impacts on working career and psychosocial factors. Next I provided an overview of the processes and mechanisms that promoted the working career and other outcomes of employed people with disabilities. The following overview was of multiactor collaboration and the rehabilitees’ opportunities to choose and act during the work-related rehabilitation processes. I pointed out that through the tailored intervention, unemployed people with disabilities temporarily crossed the job threshold. I revealed that for employed people with disabilities, work-related rehabilitation promoted job retention through a dynamic contextual mechanism, where interwoven factors such as the rehabilitee’s own agency, their life situation factors, and shared agency and multiactor collaboration at the workplace in particular either facilitated or hindered working career outcomes. I showed how in two vocational rehabilitation research projects, the co-ordination of multiactor collaboration and shared agency supported the rehabilitee’s agency, when needed or wanted, although this co-ordination was challenging. I recommend that in order to improve the implementation and effectiveness of work-related rehabilitation, for rehabilitees and all the other stakeholders, we must look for the contextual mechanisms along the description of the processes, obstacles, and facilitating factors. I briefly summarised how, when the research interest is not only the outcome but also in the intervention, this enables us to better understand the outcome data.

6.1 Discussion of the results: Opening the ‘black box’ of work-related rehabilitation by multiperspective data and mixed methods analyses

Impacts on working career and psychosocial factors

In the Pathway-to-Work project, re-employment and work-related rehabilitation for unemployed people with disabilities and, the impacts on working career were measured by the employability (see Tuomala 2012) of unemployed individuals
with disabilities. The findings were as follows: (1) a long period of unemployment ended for 68–44% of participants, (2) the difference between the participation in work of the participants and their matched controls was statistically significant at the end of the project, and (3) the 6–15 months break in unemployment was often temporary. These findings of further, although temporary, impacts of vocational rehabilitation intervention on the working career organised after the ‘train and place- model’ are also supported by the previous literature (Melin & Fugi-Meuer 2003, Jakobsson et al. 2005) and suggest to a new operational paradigm the ‘place and train- model’ (Spelkavik 2012, Härkäpää et al. 2013, Markussen & RØed 2014). Although employment support was based on individual choice, real long-term work opportunities were not created (Spjelkavik 2012, Krupa et al. 2015). One obstacle was that jobs were only searched for in public organisations, especially municipalities, which could not continue employment after the subsidised period. The findings of this research complement earlier research (Melin & Fugi-Meyer 2003) by emphasising that socio- and psychological aspects were more predictive of the employability outcome than work disability. However, the effective components of the interventions on participation outcome, also outside work, need to be examined (Engen et al. 2016)

The need for rehabilitation was defined at the local employment office. The difficulty faced by the labour officials in this task was due to the small amount of services offered to the matched controls, despite their need. Still, this study cannot answer the question of whether job-seekers with disabilities express their needs to the officials. They may not do so for fear of encountering negative economic consequences, for example. Moreover, suitable tailored services, such as the project intervention or the collaboration required between different actors, are lacking. In addition, a discussion on the access criteria for work-related rehabilitation is needed: what weight should be given to the working career and (local) labour market factors, how and by whom should they be assessed, and would these criteria enable the earlier or timely onset of work-related rehabilitation for unemployed people with disabilities?

The unemployed matched controls, who were even more in a need of support than the participants, were offered only a few vocational rehabilitation services to support their re-employment. These results are from the end of the 1990s, but still in the 2010s in Finland, despite our good general understanding of the vocational rehabilitation needs of unemployed people (Pensola et al. 2008, Heponiemi et al. 2008, Blomgren et al. 2011), their access to rehabilitation does not yet correspond to their needs (Pensola et al. 2012, Saikku 2016). This result highlights
the importance of the fact that although unemployment is one of the known social determinants of health (Aromaa et al. 2005, Marmot 2005), vocational rehabilitation has not been used in Finland for this target group to its full extent to reduce inequalities in health. The reverse, i.e. preventing ill-health and improving working conditions and possibilities, especially among the lower socioeconomic classes, would help reduce socioeconomic differences in disability retirement and unemployment (Polvinen et al. 2013, Reeuwijk et al. 2017). The research results of this study highlight how important it would be for the authorities and work-related rehabilitation experts to give more consideration to understanding people’s behaviour, and become more familiar with the social and cultural context of rehabilitees’ everyday lives (see Koskela et al. 2016), especially when working with and implementing service models for long-term unemployed people with disabilities.

In this multiple case study of eleven pathways in the work-related rehabilitation of employed people, rehabilitation promoted job retention in nine cases, whereas in two cases it did not. This indicates that the changes in employability that can be seen as an effect of the intervention process of earlier than traditionally implemented work-related rehabilitation, may be different. The effects we found were changes of varying quality in rehabilitees’ as well as their supervisors’ or colleagues’ attitudes and actions, interaction, work processes, job functions, and job modifications in comparison to the effects of, for example, a decrease in sickness absences. This contradicts earlier research results of a lack of employability evidence in early interventions compared to usual rehabilitation (Suoyrjö et al. 2009, Saltychev 2012, Vargas-Prada et al. 2016). The qualitative methodology used in the study of the effects of vocational rehabilitation interventions described in detail changes at work that supported SAW. Looking for these kinds of changes may be important in the future when evaluating the impacts and effects of early intervention on job retention, when reduction of sickness absences or disability pensions cannot always be seen. The study lacks evidence on the sustainability of these outcomes. However, the evaluation research of the implementation of work-related rehabilitation for employed people with disabilities found (Seppänen-Järvelä et al. 2015a) that positive changes at work and the workplace were especially manifested in those work and workplace factors in which the rehabilitees’ situation was worse than that of the other staff, and among the rehabilitees who felt the need for support in terms of working conditions and their own working careers. The new model of work-related rehabilitation has the capacity to promote staying at work but long term effects are yet to be seen.
The bias of selection and selection criteria of the work-related rehabilitation impacts the working career outcomes of these interventions. Specific matching of vocational rehabilitation to the needs of the individual, and careful selection of individuals for different interventions may increase effectiveness (Buström et al. 2011). The assumption regarding the implementation of this work-related rehabilitation of employed people with disabilities, was that workplaces, together with their OHS provider, were aware of their personnel’s need for rehabilitation. This is the norm in Finland. The rehabilitation was allocated in accordance with this well-known need, but the knowledge of the personnel’s needs for rehabilitation varied greatly from one workplace-OHS pair to another (Seppänen-Järvelä et al. 2015a, Juvonen-Posti et al. 2015). The result that the personnel’s need for rehabilitation at the workplace was inadequate in terms of targeting rehabilitation has also been found in earlier studies (Suoyrjö et al. 2009, Saltychev 2012).

This work-related rehabilitation was targeted at the workplace, and the need for rehabilitation was also defined at the workplace, which is not always the focus of the tasks of supervisors or HR specialists. This brings again access criteria for work-related rehabilitation to the discussion (see Harder & Scott 2005, Fassier et al. 2015): how should work-related factors be weighted, and how and by whom should they be assessed (see Geisen 2015)? Would these criteria enable earlier or timely onset of work-related rehabilitation, because an early enough start has been shown to link closely to a successful rehabilitation process and RTW after rehabilitation (see Gould et al. 2012ab, Fassier et al. 2015)?

Still, the need for rehabilitation that consists of several factors, possibly a long-term need developed over time, was observed in both the interventions studied outside the healthcare sector and the actors: among those who were unemployed in the local employment office, and among those employed at the workplace. The outcomes for work and the working career are generated elsewhere or otherwise than through treatment and medical rehabilitation, which earlier research has also pointed out. In order for medical rehabilitation to achieve good RTW results, the workplace should also be involved in the rehabilitation process, and changes should be made both at work and at the workplace (Kuoppala & Lamminpää 2008). This strongly diverges from the traditional medical model, which regards (acute) illness or operative care treatment and (medical) rehabilitation as a sufficient measure.
Processes and mechanisms that promoted working career and other outcomes

We discovered interwoven, dynamic mechanisms in the work-related rehabilitation process. The outcomes and impacts of rehabilitation were due to the interaction between the facilitators of or obstacles to the rehabilitation process, the intervention, and other components and subsystems of the complex system. The overall results of these two research projects highlight the importance of the discovered contextual mechanism, and the factors through which the outcomes of the work-related rehabilitation were generated. This contextual mechanism is formed of two key interwoven entities. First, the rehabilitees’ process was shaped by their expectations of the rehabilitation service, their needs, and their goals for the rehabilitation through their own agency. Secondly, the rehabilitation service process itself, the identified changes and the outcomes, were promoted or hindered by actions taken by all the stakeholders. The promoting or hindering mechanisms came through the actions taken by the workplace and especially the rehabilitee’s supervisor, the OHS and rehabilitation service providers and the rehabilitees’ life situation factors. Although we found no contextual mechanism of the work-related rehabilitation intervention for unemployed people with disabilities, we did find similar factors that promoted and hindered the outcomes of this work-related rehabilitation.

The results of these two rehabilitation projects complement earlier research findings in that they emphasise that it is essential to recognise and understand the complexity of a social intervention (Finch et al. 2012, Moore et al. 2015, Fletcher et al. 2016) such as work-related rehabilitation. In complex social interventions, the outcomes and impacts are due to the interaction between the intervention and other components and subsystems (e.g. local employment office, workplace, health care) of the complex system (Westhorp 2013, Byrne 2013). These outcomes emerge through dynamic contextual mechanisms (Pawson & Tilley 1997, MacEachen et al. 2006). To better understand the outcomes of social interventions such as work-related rehabilitation in the complex system, it is essential to determine the promoting and hindering factors of the processes. Both the complexity of the implementation of the social intervention and unpredictable changes in individual life situations cause challenges in coping.

Various promoting and hindering factors of work-related rehabilitation processes for both employed and unemployed people with disabilities have previously been discovered. Our results show that these factors are key elements of the contextual mechanisms revealed. When found in earlier studies to be promoting
factors, they have also influenced positive working career outcomes (Wynne & MacAnaney 2004, Kuoppala & Lamminpää 2008, Gould et al. 2012ab). These promoting and hindering factors are, for example, the person’s own active agency, shared agency (Gould et al. 2012ab, Härkäpää et al. 2014), collaboration and communication (Ståhl et al. 2010, Andersson et al. 2011, Liukko & Kuuva 2015), and the role of the workplace (Bond 2004, Franche et al. 2005b, Burns et al. 2007, Waddell et al. 2008, Kuoppala & Lamminpää 2008, Haafkens et al. 2011, Lysaght et al. 2012, Geisen 2015). Next, I will discuss this entity theme by theme.

In order to improve the implementation and effectiveness of work-related rehabilitation for rehabilitees and all the other stakeholders, it is not enough to merely describe processes and, discover facilitating and hindering factors. We must also look for the contextual mechanisms. When the research interest is not only the outcome but also the intervention and what is actually happening during the intervention, we can understand the outcome data (Weiss 1998): the routes, processes or mechanisms through which job retention, RTW or re-employment was achieved. It is essential to assess the implementation process to guarantee that the implemented complex social intervention is sustainable before attempting to assess its effectiveness (Fassier et al. 2015).

Multiperspective (Magasi et al. 2009) and mixed methods analyses (Craig et al. 2008, Teddie & Tashakkori 2009, 2011, Creswell & Plano Clark 2011, Byrne 2013, Fetters et al. 2013) enables research to observe what has happened during the rehabilitation process. This is essential for generating insights into what works, in what context and to whom. When investigating the outcome of social interventions in a complex system, we must analyse both the mechanisms and the effects. This enables us to more carefully open the black box of work-related rehabilitation interventions and their work-related outcomes.

**Multi-actor collaboration and the rehabilitees’ opportunities to choose and act during work-related rehabilitation processes**

There were opportunities to choose from different options and act during the work-related rehabilitation processes for both unemployed and employed people with disabilities, which the multi-actor collaboration, or actions taken by a single stakeholder, promoted or hindered.

The studied work-related rehabilitation model for employed people enabled the rehabilitee to exercise active personal agency in all cases in which the rehabilitation promoted job retention, and different kinds of collaboration advantages were
fulfilled in these cases. The rehabilitee’s own agency, together with the shared agency of other participating stakeholders, were both parts of the mechanisms through which the outcomes of the work-related rehabilitation emerged in each case. The results of this study highlight the importance of enabling the rehabilitee’s own active agency for the job retention efficacy of this rehabilitation, although this sometimes meant withdrawing from the multifaceted collaboration. These processes need to be handled discreetly if all the stakeholders’ confidence is to be gained.

In addition, the participants of the Pathway-to-Work project who obtained work during the project could exercise active personal agency: the difference was particularly clear in perceived competence: the trend for those who took paths to work increased whereas in the other two subgroups it decreased. The successful support of the rehabilitees’ own agency was also seen as actions; most of the rehabilitees took active paths towards work, training and work trials despite their own evaluations of their work ability being realistic and fairly low.

As shown in earlier research (Buström et al. 2011), multiactor collaboration can improve, for example, working career impacts: holding a co-ordination meeting with different rehabilitation actors about people on long-term sick leave increased the probability of an active rehabilitation measure being initiated five-fold, and doubled the probability that adaptations would be made at the workplace. The findings of this research complement earlier studies in that they highlight that even in an expert-led process co-ordinated by a case manager, the participant’s own, initially even weak, agency can be supported by sharing the decision-making between the rehabilitee and their case manager (Järvikoski et al. 2013, Härkäpää et al. 2014, Salminen et al. 2017). The findings of this research are also in line with earlier research by Gould et al. (2012ab) and Härkäpää et al. (2014), which emphasised that the rehabilitee’s active participation in the planning process, and the support obtained from various stakeholders are essential factors in the rehabilitation process, and increase the probability of a good rehabilitation outcome. Another common finding was that empowerment of the rehabilitee was strongly connected to the rehabilitee’s motivation to follow through their work-related rehabilitation process.

Good collaboration between strategic partners supported the rehabilitee’s own agency and shared agency, and encouraged participant-driven tailoring of the rehabilitation process. This has also been seen in earlier research (Kärrholm et al. 2006, Andersson et al. 2011, Gould et al. 2012ab). In the case of the Pathway-to-Work project, the strategic partners were the unit of rehabilitation and the local
employment office, and in the case of the Work-related Rehabilitation II project, the employer, its OHS provider and the rehabilitation service. Stakeholders’ interests have a high impact on the prerequisites for co-operation in RTW, but by referring to organisational goals, stakeholders may engage in non-co-operative behaviour, which threatens to spoil collaboration and to develop distrust in the action network in question (Ståhl et al. 2010). Especially from the collaboration perspective of implementing a work-related rehabilitation intervention, we should consider this a process with a high risk of failure, requiring a strategy adapted in detail to the facilitators and obstacles identified in each context (Fassier et al. 2015), and not only good co-ordination of a single process but also well-managed collaboration processes for each stakeholder needed in the process.

My finding that the need for tailoring also concerns the collaboration needed in the action networks and processes of work-related rehabilitation is also supported by the previous literature (Andersson et al. 2011). Both the studied development and research projects were based on temporary collaborative action networks. The ‘Pathway-to-Work’ project was based on a regional network, and the ‘Work-related rehabilitation II’ project was based on the one hand on a nationwide network, as the organiser was The Social Insurance Institution of Finland, and on the other hand on a local network, as it targeted single organisations (see Lindh 2014). Earlier research (Chamberlain et al. 2009) points out that although the clarity of the roles and tasks of those involved in the collaboration on the work-related rehabilitation process facilitates the rehabilitee’s process, it does not necessarily guarantee a successful rehabilitation process. Thus, contradicting earlier research (Young et al. 2005, Andersson et al. 2011), this study indicates that the common view was not the absolute prerequisite for the rehabilitation. Multiactor collaboration itself was more essential; collaboration on both the individual level and between the agencies and actors. The different paths to better interaction between the actors, especially the workplace actors, may play a crucial role in these complex systems that aim to support work ability and increase job retention outcomes (Costa-Black et al. 2013). According to the results, when designing and implementing work-related rehabilitation concepts, it is also necessary to build arenas for collaboration, so that all the stakeholders needed can collaborate in each phase.

Vocational or work-related rehabilitation is generated in local or regional action networks (Lindh 2014). Coping with these processes poses a challenge to individuals, other agencies and actors, and to the flexibility of the service system. This kind of collaboration requires a highly developed understanding of at least the interaction of the co-ordinators of these processes that involve rehabilitees and a
multiactor network (Fassier et al. 2015). The first model was based on the assumption that the vocational counsellor co-ordinated the unemployed rehabilitee’s process, but this was only done during the intervention. The second model was based on the assumption that the OHS provider co-ordinated the employed rehabilitee’s process and progress, but only a few of the studied OHS service providers or professionals did this systematically (Seppänen-Järvelä et al. 2015a). Both these new concepts included co-ordination, one focused more on the rehabilitee’s process and the other tried to co-ordinate both the rehabilitee group and the individual processes. Both co-ordination models lacked a systematically conducted, long-term case-by-case follow-up. In the field of work-related rehabilitation there is a great deal of discussion on how rehabilitation services should be tailored to the rehabilitee’s need for rehabilitation. Based on our findings, I recommend that the more multistaged the processes are, the better the co-ordination is, although it is uncertain how effective RTW co-ordination is (Vogel et al. 2015). However, alone it is not enough.

These results emphasise that when promoting job retention and preventing work disability through work-related rehabilitation, the focus of the rehabilitation should be on the work and the workplace, which is in line with previous findings (Kuoppala & Lamminpää 2008, Waddell et al. 2008). But when pursuing the effects of job retention and sustainable RTW, focusing on the workplace is not enough, participation must be active (Williams-With et al. 2016). The participation of supervisors in particular is crucial when aiming for sustainable working career solutions (Haafkens et al. 2011, Lysaght et al. 2012), and the required work modifications should be made via the supervisor (Fassier et al. 2015). This study also indicates that the commitment of supervisors was one of the factors that contributed to the success of the rehabilitation. The effects were also visible at the workplace level, and were assessed as more permanent. The employer can obtain disability cost savings through active implementation of workplace disability management programmes (Reiman et al. 2017). However, so far, the effectiveness of workplace disability management programmes for sustainable working careers is unclear (Gensby et al. 2014). According to the findings of this study, successful workplace- or work community-based collaboration with OHS actors improved the targeting of the work-related rehabilitation. In addition, successful employee case-based collaboration with OHS was central to the impact on work and working careers, especially among employees with disabilities.
New assignments of rehabilitation tasks with co-ordinated collaboration

The importance of work ability and disability for entering and maintaining employment, demands considerably more attention within social and health care and rehabilitation organisations, within labour administration and employment offices, and at workplaces and work organisations. Treatment and rehabilitation regimes, employment regimes and management regimes should equally support the sustainable employability of persons with temporary or permanent work disability and promote rehabilitee-/job-seeker-/employee-driven active collaboration in the action network of the work-related rehabilitation network in question. The multiperspective, tailored, systematically conducted assessment of people’s needs for work-related rehabilitation and re-employment should be prioritised. Proper long-term support and co-ordination for individuals and management of institutional multiactor collaboration during the process are essential.

The transformation of working life requires that vocational rehabilitation practices are developed in a more network-oriented way. Today, rehabilitation tasks are defined differently from the perspective of different branches of administration, organisations, sciences, professions, and clients. Thus, in order to improve their effects on extending working careers, rehabilitation processes and service packages should be integrated with the rehabilitee’s needs, the approach to work must be networked, and co-operation should be co-ordinated and cross institutional boundary fences. A model developed by a researcher offers a solution to this. This model aims to commonly define the role of the rehabilitation of working-age people from different perspectives and for different stakeholders. The model helps in setting the target, selecting partners and rehabilitation methods, structuring the co-operation arenas, and co-ordinating the points of the processes. The model is shown in Figure 3.
The model describes the tasks and the main goal of the rehabilitation of working-age people as well as the traditional medical-oriented or clinical point of view, but also does so from other perspectives. The need for rehabilitation is described on the vertical axis ranging from needs in terms of work or the working career and rehabilitation to needs in terms of coping in life or general managing in life. The rehabilitation approach is described on the horizontal axis ranging from an individual approach to a community-based approach. These two axes help formulate four-part rehabilitation tasks or assignments: work community-based rehabilitation, working career rehabilitation, community-based rehabilitation, and functioning and coping in life-focused rehabilitation.

This expands the traditional individual-based definition of the rehabilitation. In this model, work-related rehabilitation is a combination of those actions targeted at society and the individual to enable RTW and participation in working life. As in the
findings of Seing et al. (2012) and Seing (2014), here the work-related rehabilitation measures and solutions are based on the contextual negotiation process of different levels of society. An example of this kind of action-network policy and practice guidelines based on this approach is that for people with mental disorders, in this case the launcher of the network is psychiatry unit at a hospital is (Tuisku et al. 2013). When applied to the workplace context, the work (dis)ability and, working capacity of an individual is promoted in co-operation with the general development and well-being of the work organisation, and is not necessarily linked to a medical condition or disabilities. In the workplace-based model work-related rehabilitation, process would not be a separate activity, but the ability to work would increase along with the development of work. The conditions under which employers are willing to take on this type of collaborative task should also be considered.

The implementation of the model requires a highly developed understanding of interaction between a rehabilitee and a multiactor network, good co-ordination of individual processes and well-managed, tailored and co-ordinated collaboration in each stakeholder affiliation needed in the process. Systemic change simultaneously requires several things. The co-ordination of the collaboration in work-related rehabilitation should enable simultaneous monitoring of several issues from different perspectives.

6.2 Discussion on materials and methods

This study has several strengths and limitations. In the debate on the degree of strength of the research display, a RCT is considered a golden rule. Alongside the legitimization, validity and the quality of qualitative research (Patton 1990, 1999, Seale 1999, Denzin and Lincoln 2005), case study research (Yin 2013) and mixed methods (Teddlie and Tashakkori 2003, 2006, Creswell & Plano Clark 2018) have been defined. Mixed-methods research, combining quantitative and qualitative approaches in research design and data collection, should be considered in research of complex phenomenon whenever possible, because it improves the validity and reliability of the resulting data and strengthens causal inferences by providing the opportunity to observe data convergence or divergence in hypothesis testing (Teddlie & Tashakkori 2009, Moore et al. 2015, Creswell & Plano Clark 2018). The objective in Sub-studies I-IV was to analyse both quantitative and qualitative findings together, this concept of a joint display (Fetters et al. 2013) varied in each sub-study. The integration of the data has been used in order to gain a more complete understanding (O’Cathain et al. 2010). We have no common good-quality mixed
methods study criteria. As a summary of the discussion in the literature, Creswell and Plano Clark (2018) listed the four issues for the core set of the minimum criteria. In conducting and evaluating a mixed method study, the researcher, ‘(1) collects and analyses both qualitative and quantitative data rigorously in response to research questions and hypotheses, (2) intentionally integrates (or mixes or combines) the two forms of data and their results, (3) organises these procedures into specific research designs that provide the logic for conducting the study, and (4) frames these procedures within theory and philosophy’ (Creswell & Plano Clark 2018).

**Strengths and limitations of the study**

The research design in Sub-study I was quasi-experimental with a control group, and was followed by two questionnaires and a register follow-up. In the others, the design was a multiple case study combined with the qualitative content analysis of Sub-study II, and the mixed methods of Sub-study III and IV (see Table 2). When the complexity of the studied social interventions are taken into account, the degree of the success of the research designs were good. The qualitative (Patton 1990, 1997, 1999, Seale 1999, Denzin & Lincoln 2005, Ruusuvuori et al. 2010) and mixed methodology (Johnson & Turner 2003, Teddlie & Tashakkori 2003, 2006, 2011) was used in a versatile way, and the research phenomenon and research questions guided the methodological choices (Seale 1999).

The generalisation of the intervention effects is weakened in Sub-study I by the lack of follow-up of the matched controls, by the lack of private sector work opportunities during the intervention, and by partial failure in the selection of the matched controls. The matched controls had poorer health ($p = 0.0001$) and longer unemployment periods ($p = 0.0006$) than the participants, although there was no difference in their work ability, which both of the groups considered to be low (Table 3). The comparison of the two interventions, the evaluation of the effectiveness of the needs-tailored intervention to ‘usual rehabilitation’ was also problematic. The matched controls’ ‘usual rehabilitation’ was only a few random services, in comparison to the participants’ intervention, which provided an integrated service package. In Sub-study II, participant interviews after participation in the project could have improved the outcome. The study design could have been improved in Sub-studies III and IV by including follow-up.

During the operationalisation of the setting and design of the case study, it was essential (Stake 1995, Yin 2003, Flyberg 2011) to decide which research design of the mixed methods (Teddlie & Tashakkori 2009, 2011, Creswell 2011, Creswell
Plano Clark 2011, Creswell et al. 2011) were needed from the point of view of research subject and questions. The phenomenon to be studied and the research questions also defined, which tools were to be necessary (see Seale, 1999). In research processes that use the mixed method, the stages of multiple triangulation (Denzin 2009; Denzin and Lincoln, 2005) always occur when multiple data are brought together during data collection, and in several phases during the analysis, interpretation and reporting (Fetters et al. 2013). In the case study research tradition (Flyberg, 2011), mixed methods are understood mainly as a reliability-enhancing data triangulation (Ragin 1994), whereas in the case of mixed methods research, a case study is considered one alternative for the study design, in which data are merged on a case-by-case basis (Cresswell & Plano Clark 2011).

In this study, the designs of the case studies were based on the triangulation of both the data sources and methods, as well as on analyst triangulation, which strengthened validity (Patton 1999) and provided stronger inferences (Teddlie & Tashakkori 2009). Method triangulation and inter-method mixing was adopted to gain an in-depth understanding of the complex and multifaceted nature of the rehabilitation processes.

Mixed methods research is, according to Johnson et al.’s (2007) general definition, when a researcher or team of researchers combine elements of qualitative and quantitative approaches for the broad purpose of wider, deeper understanding and corroboration. Although all Sub-studies I–IV used the mixed methods study design, they can be classified as different types of mixed methods research such as quantitative dominant, qualitative dominant and equal or ‘pure’ mixed methods research (Johnson et al. 2007, Table 5).

The rehabilitees’ and rehabilitation professionals’ perspectives were included in all the sub-studies, but in Sub-studies I and II, the perspectives of other stakeholders were not systematically included as they were in Sub-studies III and IV. For improving research of complex interventions, the multiperspective (Magasi et al., 2009; Finch et al., 2012; Seppänen-Järvelä et al., 2015a, 2015b) approach is recommended. Multiperspective data also enable systematic study design-based merging or embedding of data (Fetters et al., 2013), which was not possible to the same extent in Sub-studies I and II, in which the interpretation and reporting was conducted as integration through the narrative (see Table 5)(Fetters et al. 2013).

The strength of Sub-study IV is its QCA, as this accepts diversity of the data, and every case matters. QCA is also a method that can strengthen validity (Yin 2013). In accordance with the main principles of qualitative research, results derived from QCA analysis have only a limited level of generalisation. In this study, the truth
tables from the data matrix were qualitatively composed. A limitation of this study was that we did not use the Boolean expression (Schneider & Wagemann 2012), which could have revealed some other combinations of conditions, and also analysed outcomes other than job retention. Another limitation of this study is that the data collection included no follow-up: the new model of work-related rehabilitation has the capacity to promote SAW, but its long-term effects are yet to be seen.

The routes, mechanisms and effects are the results of a complex review, which the study design and analysis methods (multiperspective, multiple case study, comparative analysis with QCA) enabled. This opened the black box of early-onset work-related rehabilitation interventions (Hararchi et al. 1999) and its work-related outcomes in a detailed way. The outcomes that promoted job retention are also described as a change in the attitude or action of the rehabilitee or other actors, or as a collaborative action or process of actions. When discussing effectiveness, we had no data on whether these discovered changes can lead to avoided or decreased sickness absences and permanent work disability rates, on the effects of early-onset work-related rehabilitation from the work community perspective, or on which of them mainly concern individuals.

The use of a mixed-methods approach and QCA in the evaluation of a work-related rehabilitation concept was a novelty. QCA techniques aim to integrate the case-oriented approach with the variable-oriented approach. This method enabled a systematic comparison of the researchers, and highlighted differences in interpretations of details in the common discussion. The lessons learned support earlier methodological findings: both in-depth qualitative knowledge of each case and the theory of change are essential (Schatz & Welle 2016). However, despite this, our multidisciplinary research team faced various conflicting phases during data merging.

The across-case phase analysis was conducted in Sub-studies II and III using content analysis (Strauss 1990, Patton 1990, Ruusuvuori et al. 2010) and in Sub-study IV, QCA was added to the other qualitative method approaches (Schatz & Welle 2016). The purpose of this was to refine the knowledge regarding the determinants of the outcomes by looking at the cases’ similarities and differences in terms of causal factors and the outcome obtained (Cress & Snow 2000). In the impact evaluation field, QCA helps to explore why some interventions can achieve outcomes and others cannot. QCA is located between the qualitative case-oriented and quantitative variable oriented approaches (Rihoux & Ragin 2009). An important element in this analysis was the identification of the ‘sufficient’ and ‘necessary’ conditions that occur in conjunction with an outcome (Schnedider & Wagemann
Conditions interact and combine to produce an effect. This understanding is consistent with the complexity and realistic view of the realistic evaluation theory (Pawson & Tilley 1997).

In Sub-study IV, the analytical process was based on case-by-case and multiperspective descriptions of cases, and then the analysis of the cases in parallel. It was essential to look at each case in its own context (Ayres et al. 2003, Craig et al. 2008, Moore et al. 2015). The qualitative features of the cases were structured (Stake 1995) so that the features of the phenomenon could be detected and identified at the exact level (see Ayres et al. 2003). In this study, the multiperspective data contained many multilevel interpretative features such as interpersonal interaction and social structures. The challenge was to construct a new, constructive entity from single cases on a generalised level. The preliminary results of the same evaluation, targeted from different perspectives in a multidisciplinary team of researchers, may at first appear to be conflicting, but the analysis process did not end here; it continued and we reviewed the multiple data again. In this way, with the help of multidisciplinary competence it was possible to create a new, more justified interpretation. When the interpretation and reporting of materials was resumed, different types of data were analysed together and merged. When mixed method and multiperspective research is merged, that is, preliminary results are discussed at an early stage of analysis, the iteration procedure interferes with the interpretation throughout the process. In addition, the confirmation of validity is a result of comparing the results of different data and the findings in this critical view. The result therefore not only shows the separate results of qualitative or quantitative results, but is a joint display (see Fetters et al. 2013).

As a conclusion, the design of the case studies was based on triangulation; triangulation of the data sources and methods as well as analyst triangulation, and strengthened validity (Patton 1999, Yin 2013) and provided stronger inferences (Teddlie & Tashakkori 2009). Method triangulation and inter-method mixing was adopted to gain an in-depth understanding of the complex and multifaceted nature of the rehabilitation processes. Another strength of QCA is that it accepts diversity of the data and every case matters. QCA is also a method that can strengthen validity (Yin 2013). In accordance with the main principles of qualitative research, results derived from QCA analysis have only a limited level of generalisation. In Sub-study IV the truth tables were qualitatively composed from the data matrix. The limitation of this study was that we did not use the Boolean expression (Schneider & Wagemann 2012), which could have helped us find some other combinations of conditions and analyse outcomes other than job retention. The limitation of this study was also that the data collection did not include any follow-up.
6.3 Ethical considerations

Both the research projects went through the ethical preliminary examination of the study: the statement by the Regional Ethics Committee of the Northern Ostrobothnia Hospital District was given on the 25th January 2001 (10/2001), and by the ethical board of The Social Insurance Institution of Finland on the 11th of June 2012. The implementation of the research followed a good scientific approach. We carefully addressed voluntary and informed consent, participation, privacy, confidentiality, as well as and the preservation of anonymity at all stages of the research.

From an ethical point of view this was important research in two ways. First, a great deal of public funds are used in projects and in the development of social activities in European countries today, and it is important to evaluate and also study the outcomes and effects of these activities by scientifically valid methods to get the most utility out of them. As also shown here, the evaluation and the study of these activities for various reasons is not always easy to implement, but with the appropriate methods, is nonetheless feasible. The data that can be gathered from a single developmental and research project may be small, important issues can still be discovered. Another ethically important issue in this study was that the perspective of people in vulnerable labour market situations was focused on as much as the others.

6.4 Practical implications: Improving rehabilitees' involvement in shared decision-making, and a concept for better working career impacts

The results will help all actors, researchers and authorities involved in rehabilitation to improve the outcomes of work-related rehabilitation by developing opportunities for the rehabilitees’ own agency, their own activities and collaboration. Next, I discuss the implications for practice more detail.

Rehabilitees’ involvement in shared decision-making

The finding of the importance of one’s own agency and shared agency highlights the following issues. First, it is important for the individual to be heard when describing how complicated the situation may be: all the possible barriers and the facilitators for the process of one’s life and work situation should be carefully discussed. Second, rehabilitees should receive help in designing own goals: in
work-related rehabilitation, sometimes it takes time to understand what these goals should be, and sustainable working career options, for example, are sometimes hard to determine. Third, rehabilitees should also ask and obtain information on, for example, optional services for their knowledge-based opportunities to choose and act. In addition to support, rehabilitees should have opportunities to be involved in shared decision-making throughout the rehabilitation process.

Work-related rehabilitation concept for better working career impacts

The study shows that the collaboration and process concept through which better working career impacts could be achieved should include five crucial items. As a starting point, it should include the knowledge of people’s needs for rehabilitation and an understanding of individuals’ job retention and RTW behaviour, and the reasons for these behaviours. The professionals should also be familiar with the social and cultural context of people’s everyday lives. Second, the quality of the interaction in the counselling process, rehabilitees’ true opportunities to choose and act, and empowerment of rehabilitees’ own agency in a goal-oriented process based on their individual needs with long and sufficiently intensive co-ordination and follow-up. Third, the quality of the tailored multiactor collaboration itself, collaboration between the agencies and the individual, integrated holistic service for multiagency clients, enhancing the tailoring of processes by identifying indicators for recognising individuals who have greater needs for support, and the different stakeholders’ sufficiently shared view of the goals and means of rehabilitation. Fourth, involvement of representatives from the workplace, employment office and health service or OHS provider, searching for jobs from both private and public employers, and good communication regarding the work and work-place modifications required. Fifth, regionally agreed, and managed collaboration procedures between agencies, in addition to the co-ordination of the multistage process of the work-related rehabilitation practices, should include arenas for collaboration, in which rehabilitees and all the stakeholders needed can equally participate, accumulate regional information, combine information on projects from both individual and system-centric approaches, and improve the procedures and services regionally implementing the results. Table 11 summarises the key factors of the collaboration and process concepts through which better working career impacts can be achieved.
Table 11. Make room for the rehabilitee's empowerment and collaborate: five key factors for success in multidisciplinary work-related rehabilitation

<table>
<thead>
<tr>
<th>Number</th>
<th>Key Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Early recognition of the need for rehabilitation.</td>
</tr>
<tr>
<td>2</td>
<td>Goal-setting and planning of the rehabilitation process with the rehabilitee.</td>
</tr>
<tr>
<td>3</td>
<td>Collaboration: sufficient multidiciplinary know-how and resources in 'scanning', planning and carrying out the rehabilitation.</td>
</tr>
<tr>
<td>4</td>
<td>Agreed (sufficiently) long-term follow-up, and if change is needed, agreement on new solutions.</td>
</tr>
<tr>
<td>5</td>
<td>Regionally agreed and managed collaboration procedures in the work-related rehabilitation.</td>
</tr>
</tbody>
</table>

6.5 Recommendations for further research

Further research is needed for better understanding the outcomes of social interventions such as work-related rehabilitation in a complex system. Determining the facilitators of and obstacles to the processes is essential, but also, in order to determine the mechanisms, multiperspective data and mixed method approaches are needed. The mechanisms should also be studied from the perspective of the complexity of the macro processes in vocational rehabilitation; for example, what is the role of the ‘shareowners’? The research interests should be in both the outcome and the intervention, in what actually happens during the intervention. This enables us to understand the outcome data (Weiss 1998): the routes, processes and mechanisms through which re-employment, job retention or RTW outcomes are achieved. In addition, when using RCTs, assessment of the effectiveness of the rehabilitation must also take into account the implementation process of the rehabilitation, and the examination and description of the mechanisms of the possible outcome.

Topics emerging from this research that could require further study are: How can we enhance proper interaction and collaboration, what kind of forums are needed? What about digital based communication, what should be recognised in the interaction? What kind of interaction could support multiagency collaboration for positive outcomes of the required collaboration? More research is also needed on the formation and scope of the shared agency in these kinds of complex work-related intervention processes.
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List of original publications


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Original publications are not included in the electronic version of the dissertation.
1452. Capra, Janne (2018) Differentiation and malignant transformation of epithelial cells : 3D cell culture models
1453. Panjan, Peter (2018) Innovative microbioreactors and microfluidic integrated biosensors for biopharmaceutical process control
1454. Saarela, Ulla (2018) Novel culture and organoid technologies to study mammalian kidney development
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