

From DEPARTMENT OF PUBLIC HEALTH SCIENCES
Karolinska Institutet, Stockholm, Sweden

DEVELOPING WORKING CONDITIONS

Peter N. Bergman



**Karolinska
Institutet**

Stockholm 2011

All previously published papers were reproduced with permission from the publisher.

Published by Karolinska Institutet. Printed by [name of printer]

© Peter N. Bergman, 2011
ISBN 978-91-7457-306-0

ABSTRACT

The overall aim of this thesis was to investigate working conditions and organizational strategies providing conditions for job resources with potential for development, positive well-being and health. The aim was formed on the assumption that the organization affects working conditions, working conditions affects employees' development, well-being, health and sickness absence. Both a qualitative case study design and a longitudinal epidemiologic design were used in this thesis. These two different approaches are complementary in enhancing scientific knowledge as well as providing implementable tools for development and reduced absenteeism. Study I was a qualitative study aiming at identifying manageable organizational factors affecting working conditions and sickness absence. Interviews primarily with managers were analyzed with a qualitative thematic approach. This was made to distinguish organizational features characterizing companies with low compared to average levels of sickness absence. The results revealed strategies and procedures in leadership, employee development, communication, employee participation and involvement, corporate values and visions and strategies for employee health, as characterizing companies with low levels of sickness absence. In study II the organizational conditions and strategies for creating job resources in companies with low levels of sickness absence was explored and described by using the same qualitative method as in study I. Organizational conditions for following job resources were found: Authority, Autonomy, Support, Skill utilization, Feedback, Role clarity, Predictability, and Learning possibilities. A main finding was that strategies and conditions for job resources were found to be provided for both leaders and employees through the active use of teams. Another main finding was that the companies were providing different kinds of learning opportunities, regulated by personal development plans. The third study, a study of the active learning hypothesis conducted with a longitudinal and population based design, scrutinizes demands and control as antecedents for learning according to the Job Demand Control model. Logistic regression analyses were used to estimate the associations. Results showed positive main effects of skill discretion, task authority, and control, as well as a positive effect of active and low strain working conditions on developing problem-solving skills, indicating that working conditions including high levels of control may positively affect coping skills and behavior also in the non-work domain. However, levels of non-participation were high in this study. Therefore, an extensive analysis of non-participation was made in study IV. Multivariate logistic regressions revealed that the rates of non-response were higher among males, younger persons, singles, those with lower income, lower education and those born outside the Nordic countries. This led to an overrepresentation of Nordic, older, married women with high education and income, in the sample used in study III. The overall conclusion of this thesis is that working conditions and organizational strategies to provide job resources have effect on levels of sickness absence and development.

Keywords: Development, Job Demand Control, Job Demands-Resources, Learning, Non-participation, Organization, Sickness absence, Working conditions

Det övergripande syftet med denna avhandling var att undersöka arbetsvillkor och organisatoriska strategier för att skapa jobb resurser för utveckling, välbefinnande och hälsa. Syftet bygger på hypotesen att organisationen påverkar arbetsvillkor och att arbetsvillkoren påverkar medarbetarnas utveckling, välbefinnande, hälsa och sjukfrånvaro. Både en kvalitativ case-study design och en longitudinell epidemiologisk design har använts i denna avhandling. Det är kompletterande metoder i att nå kunskap samt ger verktyg för utveckling och för att minska frånvaro. Studie I är en kvalitativ studie med syfte att kartlägga organisatoriska faktorer som påverkar arbetsvillkor och sjukfrånvaro. Intervjuer främst med chefer i företag med låg respektive genomsnittlig sjukfrånvaro analyserades med tematisk metod för att finna organisatoriska egenskaper som kännetecknar företag med låg sjukfrånvaro. Resultaten visade att strategier gällande ledarskap, medarbetarutveckling, kommunikation, anställdas delaktighet och engagemang, värderingar och visioner, samt strategier för medarbetarnas hälsa, var betecknande för företag med låg sjukfrånvaro. I studie II användes samma kvalitativa metod för att undersöka organisatoriska villkor och strategier för att skapa jobb resurser i företag med låg sjukfrånvaro. Organisatoriska förutsättningar för följande jobb resurser hittades: Inflytande, Autonomi, Support, Stimulans, Feedback, Roll tydlighet, Förutsägbarhet och Inlärnings möjligheter. Huvudsakligen användes team och utbildningsmöjligheter mot både medarbetare och ledare som strategier för att skapa jobb resurser. Företagen tillhandahöll utvecklingsmöjligheter reglerade i personliga utvecklingsplaner. Den tredje studien, den första att testa den aktiva inlärnings hypotesen i ett longitudinellt och populationsbaserat material, undersökte krav och kontrolls betydelse för lärande enligt krav kontroll modellen. Logistiska regressions analyser användes för att beräkna sambanden. Resultaten visade positiva effekter av stimulans, inflytande och kontroll på utveckling av problemlösningsförmåga, samt positiva effekter av aktiva och avspända arbetsvillkor. Detta innebär att arbetsvillkor med höga nivåer av kontroll kan påverka coping och det även utanför arbetet. Dock var bortfallet stort till denna studie. Därför gjordes en omfattande analys av bortfallet i studie IV. Multivariata logistiska regressionsanalyser visade att andelen svarande var lägre bland dem med låg inkomst, låg utbildning, yngre, icke-nordiskt ursprung, och ogifta. Detta ledde till en överrepresentation av nordiska äldre gifta kvinnor med hög utbildning och hög inkomst i populationen som användes för studie III.

Den övergripande slutsatsen i denna avhandling är att arbetsvillkor och organisatoriska strategier för att skapa jobb resurser påverkar nivån av sjukfrånvaro och de anställdas utveckling.

Nyckelord: Arbetsvillkor, Bortfall, Krav-Kontroll, Krav-Resurs, Jobb resurser, Organisation, Sjukfrånvaro, Utveckling, Inläring

LIST OF PUBLICATIONS

- I. Bergman P, Stoetzer U, Åborg C, Johansson G, Ahlberg G, Parmasund M, Svartengren M. Managing organizational factors towards low levels of sickness absence. *Submitted*.
- II. Bergman P, Åborg C, Johansson G, Svartengren M. Developing working conditions to manage sickness absence. *Manuscript*.
- III. Bergman P, Ahlberg G, Johansson G, Stoetzer S, Åborg C, Hallsten L, Lundberg I. Do job demands and job control affect problem-solving? *Work (In Press)*.
- IV. Bergman P, Ahlberg G, Forsell Y, Lundberg I. Non-participation in the second wave of the PART study on mental disorder and its effects on risk estimates. *International Journal of Social Psychiatry*, 2010; 56(2): 119 – 132.

CONTENTS

1	INTRODUCTION.....	7
2	BACKGROUND.....	9
2.1	THE ORGANIZED INDIVIDUAL.....	9
2.2	THE PSYCHOSOCIAL WORK ENVIRONMENT.....	10
2.2.1	Research models of psychosocial work characteristics.....	10
2.2.2	Sickness Absence.....	15
2.2.3	Learning and development.....	16
2.2.4	Non-response.....	16
3	AIMS.....	18
3.1	OVERALL AIM.....	18
3.2	SPECIFIC AIMS.....	18
	Study I.....	18
	Study II.....	18
	Study III.....	18
	Study IV.....	18
4	MATERIAL AND METHODS.....	19
4.1	THE HEALTH, ORGANIZATION AND FUTURE STUDY.....	19
4.1.1	STUDIES I AND II.....	19
4.2	STUDIES III AND IV – THE PART STUDY.....	21
4.2.1	Non-response.....	22
4.3	SUBJECTS.....	22
4.3.1	Study I.....	22
4.3.2	Study II.....	23
4.3.3	Study III.....	23
4.3.4	Study IV.....	24
4.4	MEASURES AND VARIABLES.....	24
4.4.1	Study I.....	24
4.4.2	Study II.....	24
4.4.3	Study III.....	25
4.4.4	Study IV.....	26
4.5	ANALYSES.....	27
4.5.1	Study I and II, the qualitative studies.....	27
4.5.2	Study II.....	29
4.5.3	Study III.....	30
4.5.4	Study IV.....	30
4.6	ETHICAL APPROVALS.....	31
5	RESULTS.....	32
5.1	STUDY I.....	32
5.1.1	Leadership.....	32
5.1.2	Employee development.....	32
5.1.3	Communication.....	33
5.1.4	Employee participation and involvement.....	33
5.1.5	Corporate values and visions.....	33
5.1.6	Strategies for employee health.....	33
5.2	STUDY II.....	34

5.2.1	The strategic role of the leader	34
5.2.2	The strategic use of teams	34
5.2.3	Strategies for planning development of employees....	35
5.3	STUDY III	35
5.3.1	Effects of skill discretion, task authority, control and demands on problem-solving	36
5.3.2	Effects of the JDC combinations on problem-solving.	36
5.4	STUDY IV	37
5.4.1	Questionnaire participation	37
6	DISCUSSION	38
6.1	ORGANIZATIONAL FACTORS RELATED TO LOW SICKNESS ABSENCE	38
6.2	CONDITIONS AND STRATEGIES FOR JOB RESOURCES	40
6.2.1	Methodological issues in study I and II.....	42
6.3	THE IMPACT OF WORKING CONDITIONS ON LEARNING PROBLEM-SOLVING STRATEGIES.....	44
6.3.1	Methodological issues in study III.....	46
7	CONCLUSIONS.....	49
7.1	FUTURE RESEARCH	50
8	Acknowledgements	52
9	References.....	53

LIST OF ABBREVIATIONS

CEO	Chief executive officer
CI 95%	Confidence interval of 95%
ERI	Effort Reward Imbalance model
HOF	Health, Organization and Future study
HRM	Human Resource Management
JCQ	Job Content Questionnaire
JDC	Job Demand Control model
JDCS	Job Demand Control Support model
JD-R	Job Demands-Resources model
OR	Odds Ratio
PART	Psychiatric diagnoses, Work and Relations study (Swedish acronym)
SCAN	Schedule for Clinical Assessment in Neuropsychiatry

1 INTRODUCTION

Working conditions are potential determinants of employee well-being, health and development, and, there is evidence that work has a major impact on the non-work domain, including family life and leisure time activities [1]. These consequences also affect companies and society. The majority of the research of working conditions has focused on risk factors of strain and ill-health, but there is a desire for more attention on the possible positive consequences of work [2], such as the development of new capacities and skills. The latter, employee development, is of interest to Human Resources Management (HRM). Here is the focus of employee development mainly on enhancing productivity, innovation and competitiveness. However, Gilbreath and Montesino [3] argues that HR professionals should be concerned with work factors that affect well-being to improve employee health and contribute to organizational effectiveness.

One of the potentially most important positive consequences of work is the acquisition of skills and the possible outcomes thereof [4]. The active learning hypothesis included in the Job Demand Control model (JDC) [5] and the Job Demand Control Support model (JDCS) [6] presents how various combinations of working conditions may facilitate learning. Although the JDC(S) is a dominating model in the research of working conditions, the active learning hypothesis is scarcely researched [7]. The active learning process is assumed to lead to learning, self-efficacy and mastery, which inhibits strain. A more recent model, the Job Demands- Resources model (JD-R) [8, 9], tries to synthesize the theoretical insights and empirical findings of JDC(S), the Effort-Reward Imbalance model (ERI; [10]) and the Conservation of Resources model [11]. The basic premise of the JD-R model is that two groups of work characteristics, job demands and job resources, evoke a health impairment process or a motivational process respectively. Job resources are functional in achieving goals, reducing job demands, stimulate personal growth and development [9].

Sickness absence causes considerable costs for the society, for companies and has adverse consequences on e.g. finances, health, and development of salaries and career for individuals. The reasons for sickness absence are numerous and complex. A number of factors associated with specific workplace and working environment

conditions have been considered, such as psychological work load, decision authority and support [12-17]. Most studies focused on explanations for sickness absence in risk factors on an individual level sometimes aggregated to group levels.

Although, positive work outcomes have been suggested to be included in the concept of occupational health and well-being, there is a deficit in studies dealing with positive work consequences[4]. The studies forming this thesis are focused on positive development. The first study investigated organizational factors in companies with low and average levels of long term sickness absence, the second, the presence of job resources and strategies to provide employees with job resources in companies with low sickness absenteeism, the third study examined the impact of working conditions on problem-solving skills, important for coping and a prerequisite for learning, and the fourth study the impact of non-participation in the collection of data for study III.

2 BACKGROUND

2.1 THE ORGANIZED INDIVIDUAL

There are several ways to define an organization and its levels [18]. In this thesis the company, with employees in different occupations and leaders at different levels, affected by the company strategies, procedures and policies, is addressed.

The primary context of working conditions is the organization but the dominant paradigm in occupational health research remains largely to study risk factors at the individual level. This has contributed much to our understanding of the association between work and worker health and safety. The importance of the organization for health effects such as sickness absence has been highlighted [19], though the use of information from traditional occupational risk factors research and to convey knowledge into prevention and health promotion requires insight into the organizational context that shapes working conditions and affects health [20, 21]. It has been recognized that people and their performance is the key to an organization's effectiveness, and there is a need to describe the links between organizational influence and staff performance [22, 23]. Leadership practices and strategies have been found to influence the psychosocial working conditions and health for both leaders and employees [24-27] and to have effects on workplace health promotion [28].

Organizational factors are interacting in creating psychosocial working conditions but the workplace context may also affect health directly [29]. Research of organizational factors in relation to health and subsequent sickness absence is still rather sparse [23, 30, 31], though organizational justice [32-35], organizational climate [34, 36] and recurrent organizational changes and down-sizing [37-39] [39] as well as 'high customer adaptation' [40] have been found to have an impact on sickness absence.

In studies of management and HRM focus has mainly been on personality and attitudes such as job-satisfaction and organizational commitment [41, 42], decision latitude and social context like local cultures [43-45]. According to Gilbreath and Montesino [3] HRM professionals should be concerned with work factors that affect well-being to improve employee health and contribute to organizational effectiveness. Knowledge about the impact of organizations on working conditions and employee health is crucial

for promoting health and for effective interventions to improve health [19]. Useful theories and models concerning how organizational aspects are linked to working conditions and health are needed.

2.2 THE PSYCHOSOCIAL WORK ENVIRONMENT

Work plays a central role in the everyday life for most people and the effects of the psychosocial work environment on employee health and well-being has attracted a lot of attention. Workplace characteristics ranging from health and safety practices by the organization to work design issues associated with basic ergonomics are potential determinants of employee well-being and health with possible major consequences for employees [46]. Many of the studies focus on work characteristics associated with stress and its negative consequences strain and ill-health. Psychosocial stressors cause considerable suffering to those individuals whose health or well-being has been ravaged by an inability to cope with the effects of job-stress. In a newly published review strong evidence was found that high job demands, low job control, low co-worker support, low supervisor support, low procedural justice, low relational justice and a high effort-reward imbalance predicted the incidence of stress-related disorders [47]. Work characteristics also have potential to prevent strain and ill-health, to promote health, well-being and personal development. The number of studies concentrating on positive consequences of the psychosocial work environment is small. This is noteworthy because present theorizing holds that the concept of occupational health and well-being should also include positive work outcomes [4].

2.2.1 Research models of psychosocial work characteristics

2.2.1.1 The Job Demand-Control-(Support) Model

Research on occupational stress and the possible stress-moderating effects of control has, over the three last decades, been dominated by the JDC model. The stress and learning model based upon psychological demands, skill use and task authority was originally presented by Karasek in 1979 [5], Johnson and Hall [48] added support to the model, JDCS. The JDC model proposes that work environment can be described in terms of the combination of the psychological demands of the work situation and the amount of decision latitude (control) workers have to meet this demands.

The JDC model predicts how strain and learning varies as a function of job characteristics and it poses that these job characteristics have an effect on employee learning and strain, and that learning and strain affect each other. It predicts that high psychological demands combined with low decision latitude (control) have detrimental effects on health and well-being, the psychological strain mechanism, or that high demands balanced by high levels of decision latitude gives raise to learning and increased motivation, the active behavior mechanism. Strain reduces the effectiveness of information processing, provokes non-task activities and inhibits understanding and experimenting with new ideas, thus reducing learning. Conversely, greater knowledge, skill and self-efficacy should enable the worker to cope more effectively with work demands, thus reducing strain. Karasek and Theorell [6] describes the components of psychological demands in terms of having to work very hard, very fast, excessively, under time constraint, and under conflicting demands. Decision latitude (control) is a combination of skill discretion (learning new things, developing skills, creativity and variation of work tasks) and decision authority or autonomy (taking part of decision, and freedom as to how the work gets done). The level of job demands and job control forms four psychosocial work characteristics with different implications for learning and strain:

- Jobs high in demands in conjunction with high levels of control, Active working conditions, make a positive context, optimal for an effective learning process. The high demands are balanced with the proper amount of control, which makes the demands be seen as challenges.
- High demands in combination with low control, High Strain jobs, will produce high levels of strain to the extent that it prevents people taking challenges, reduces their capacity to learn and use their knowledge, and undermines their feelings of self-efficacy.
- Working conditions characterized by low demands but high in control, Low Strain jobs, make a fairly positive context for learning.
- Jobs low in demands and with low control, Passive jobs, makes the most negative context for learning.

Social support in the JDCS model refers to the social climate at work, and the possibility to get help from colleagues and supervisors when needed. Karasek and

Theorell [6] suggest divers mechanisms by which social support will affect well-being. Social support assumes to have a buffering affect between stressors and adverse health outcomes. It affects psychological processes important to maintain long-term health and acquisition of new knowledge, it facilitates active coping, and is important in the development of a positive sense of identity. The combination of job strain and lack of social support (isolation) is often, in the DCS model, referred to as iso-strain.

2.2.1.1.1 The strain hypothesis

The most adverse reactions of psychological strain (fatigue, anxiety, depression, and physical illness) occur when the psychological demands of the job are high and the decision latitude is low (high strain jobs). The Strain hypothesis focusing on strain and ill-health outcomes from High-Strain Jobs has generated an impressive body of research with somewhat ambiguous results [49-51]. The result of research that has tested the strain hypothesis is somewhat ambiguous. In a review of van der Doef and Maes [49] only 28 of 41 studies (JDC) and 9 out of 19 (JDCS) which examined the relationship between job characteristics and psychological distress supported the strain hypothesis. An important reason could be shortcomings in the methodological quality of the studies which were primarily based on cross-sectional designs. In a review of 45 longitudinal studies examining JDC/S, Lange et al. [50]found that 84% of the high-quality studies supported causal relationships of working conditions on job strain, well-being and health across time.

2.2.1.1.2 The active learning hypothesis

Karasek & Theorell [6] argued that high-control opportunities would alter demands to challenges and thus facilitate learning and the development of new behavior patterns. The motivation to learn is triggered by demands, but demands may also contribute to strain, which is detrimental to learning.

Karasek & Theorell [6]described the acquisition and development of effective problem-solving as a consequence of active working conditions. They stated the occurrence of fairly complex learning, where problem-solving strategies are seen as fundamental in the learning process, and in finding solutions for anticipated future problems. Active jobs creates an up-ward spiral of capacity leading to even more learning and personality change, effects extending beyond the work place. This is in line with findings saying that learned behavior will gradually be refined through feedback from one's actions and

these improvements will transfer also to substantially different situations [52]. Moreover, it is in line with the thoughts expressed within the action theory where workplace learning may improve the overall intellectual functioning [4, 53]. The active learning hypothesis has only produced very few studies [51, 54]. On the whole, in organizational health psychology, there is a deficit in studies dealing with positive work consequences [4].

The active learning hypothesis was found to be tested in 18 studies with the results mostly consistent with the learning hypothesis [4]. However, only four of the studies were of longitudinal design [7, 51, 55, 56]. Support for the hypothesis was delivered by Cunningham et al. [56]. They found that active jobs contributed to self-efficacy, an active approach to problem-solving and a sense of mastery. A study by Holman and Wall [7] revealed that learning reduces strain and strain reduces learning according to the hypothesis, and that control is core to the promotion of learning and the reduction of strain, furthermore, Taris and Feij [55] reported high levels of learning in active jobs and that strain inhibits learning. Although, contrary to the hypothesis, workers in low strain reported more learning across time, compared to other working conditions, and learning did not seem to inhibit strain [55], which confirmed earlier result that the best work characteristics for learning was low strain [51]. Opposing the hypothesis was also the finding of demands as negative for learning by Taris et al. [51], though, control was found to be positive for learning. All the above mentioned studies were conducted on rather specific occupational groups, which may explain divergent findings. So far, research indicates that active and low strain working conditions are positive to learning; the strongest support is found for control, while for demands the support is quite weak.

2.2.1.2 The effort-Reward Imbalance Model.

The effort-reward imbalance model [10] emphasizes the reward, rather than the control structure of work. The ERI-model assumes that job strain is a result of an imbalance between effort (extrinsic job demands and intrinsic motivation to meet these demands) and reward (in terms of salary, esteem reward, and security/career opportunities – i.e. promotion prospects, job security and status consistency). The basic assumption is that the experienced lack of reciprocity between the effort put in at work and the rewards received will lead to arousal and stress, which in turn, may lead to cardiovascular risks and other strain reactions. Besides the efforts and rewards, overcommitment

(personality characteristic) is a crucial aspect of the model. Essentially, the ERI model contains three main assumptions: 1) the extrinsic hypothesis; high efforts in combination with low rewards increase the risk for poor health, 2) the intrinsic overcommitment hypothesis; a high level of overcommitment may increase the risk of poor health; 3) the interaction hypothesis; employees reporting an extrinsic ERI and a high level of overcommitment have an even higher risk of poor health. A review by van Vegchel, de Jonge, Bosma and Schaufeli [57] of 45 studies on the ERI model showed that the extrinsic hypothesis gained considerable support.

2.2.1.3 The Job Demands-Resources Model

The Job Demands-Resources model propose that every occupation has its own set of job demands and job resources associated with well-being, that several specific job demands and several specific job resources interact in generating employee well-being, and that these two general categories of work characteristics may be applied to various occupational settings [9, 58]. The model includes dual psychological processes. Job demands are assumed to activate a health impairment process whereas job resources are assumed to activate a motivational process and are emphasized as the most crucial predictors of motivation/learning-related outcomes [59]. Job demands are, according to the Job Demand-Resource model: physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological effort or skills. Job resources are physical, psychological, social, or organizational aspects of the job that are functional in achieving goals, reduce job demands and/or stimulating personal growth, learning and development [8].

Job resources are assumed to have motivational potential, thus leading to well-being, high work engagement and excellent performance. In addition, job resources may interact with and buffer the impact of job demands on job strain [60, 61]. Bakker et al. [58] found that the job resources: social support, supervisory coaching, performance feedback, and time control, predicted dedication and organizational commitment among call center employees. Job resources in a nutrition production were found to be unique predictors of organizational commitment [62], and the job resources autonomy and social support were found to be predictors of extra-role performance (i.e. actions to go beyond what is stated in formal job descriptions) in a study of employees in different sectors [61]. Colleague support was revealed to have positive effects on work engagement and self-efficacy [63] although, self-efficacy was found to be highly

fluctuant, and day-to-day variation in job and personal resources was found as a result of day-level coaching [64]. Organizational interventions, training programs and strategies to empower job resources were suggested.

The buffering effects of autonomy, feedback, social support and high-quality relationship with the supervisor were shown in a study of employees in an institute for higher education [65]. Autonomy may have facilitate coping with demands, instrumental support as well as feedback may have provided the employees with necessary information need for goal accomplishment and emotional support may have buffered the effects of demands on strain [66]. Skill utilization, learning opportunities, autonomy, colleague support, supervisor support, performance feedback, participating in decision making, and career opportunities were job resources found to predict task enjoyment and organizational commitment particularly when job demands were high among employees in 148 organizations [59].

2.2.2 Sickness Absence

The process surrounding sickness absence and sickness presence is complex and multi factorial [67]. The majority of studies concerning sickness absenteeism have focused on loss of productivity and the identification of organizational or individual risk factors [67, 68]. Attendance requirements, negative consequences of absence, and adjustment latitude, opportunities to work despite illness, are seen as important factors in the presence/absence process in the illness flexibility model [69].

Apart from demands, work characteristics such as control, decision authority, skill discretion [32, 70-72], job autonomy, job complexity, co-worker support [73], role clarity [34], and supervisor support [72, 73] have been associated with sickness absence. Bakker et al. [62] found job resources among production employees to be unique predictors of organizational commitment and indirectly of absence spell. Another study using the JD-R model found that work engagement, as a result of increased job resources, predicted registered sickness duration and frequency negatively, and it is suggested that additional job resources will reduce frequency and a reduction of job demands and increase of job resources impacts on the duration of sickness absence [74].

2.2.3 Learning and development

Work related learning may be used to enhance productivity, innovations and competitiveness. Another line of reasoning is emphasizing that those working conditions that facilitate learning are also involved in reducing stress and promoting healthier working conditions [6]. Knowledge-creation and learning are potential outcomes of work experiences and interaction at work and the importance of active management support and encouragement in order to promote learning at work has to be emphasized [75]. Four main types of work activity have been found to give raise to learning: 1) Participation in group activities, like team-working and groups set up for a special purpose. 2) Working alongside others. Allows people to observe and listen to others at work and to participate in activities. 3) Tackling challenging tasks. On-the-job learning, leads to increased motivation and self-efficacy if well-supported and successful. 4) Working with clients. Entails learning about the client, from aspects of each client's problems or request and from new ideas arising from the joint consultation. The success of these four processes depended on the quality of relationship in the workplace. Further, it was found that informal support was more important than were formally designated helpers, that problem solving could occur in either an individual or group context, learning from mistakes is possible in most working contexts, getting information and asking questions as well as giving and receiving feedback were important modes of learning[75].

How much the group members learn from each other, to what extent individuals of the whole group respond to the challenges of their work and support each other, and the development of additional learning opportunities for the group explains each individual's learning career. The management has a responsibility to create, sustain and re-created at regular intervals an organizational climate for learning [75].

2.2.4 Non-response

Most epidemiological surveys suffer from non-response and there is a tendency of declining response rates [76]. To infer from a longitudinal study the completeness of follow-up is crucial [77] and to enhance the methodological quality of a longitudinal study, an investigation of possible selective participation, and the associations between potential determinant and outcome variables among responders and non-responders at

first measurement and follow-up is recommended [50]. Attrition not only causes loss of power because of diminishing numbers of participants, but the loss may be selective, which may reduce the internal and external validity of the findings. Information on the types and possible correlates of attrition is important for a proper interpretation of the results of longitudinal analysis. To avoid biased estimates of population characteristics non-response must be analyzed [78]. Response bias can alter both the relative risk and the odds ratio [79, 80] and, it is important that researchers are aware of the effects of the non-response on the study's findings. [77].

3 AIMS

3.1 OVERALL AIM

The overall aim of this thesis was to study working conditions with a potential to be positive for well-being, health and development.

3.2 SPECIFIC AIMS

Study I

The aim of this qualitative study was to identify manageable organizational factors that can explain why some companies have low levels of sickness absence.

Study II

The aim of this study was to explore and describe conditions for job resources and organizational strategies for creating job resources in companies with low levels of sickness absence.

Study III

The aim of the study was to test the active learning hypothesis [6] in analyzing the impact of enduring working conditions on learning effective general problem-solving strategies.

Study IV

The aim of this study was to analyze non-response in the data collection used for study III.

4 MATERIAL AND METHODS

4.1 THE HEALTH, ORGANIZATION AND FUTURE STUDY

Study I and II in this thesis uses data from the HOF study (acronym for Health, Organization & Future), a multi method project to study organizational health-promoting factors in private Swedish companies. It was a collaboration between researchers from Karolinska Institutet and the University of Uppsala, together with the major insurance company for blue collar worker (AFA insurance), the major insurance company for white collar worker (Alecta) and Stockholm County Council. Involved were also the major employer organization and the employee unions.

The registers held by the insurance companies were used to build a database containing of sickness absence figures for both white- and blue collar workers at the same companies. Four studies have been completed within HOF; a register study, an interview study, a survey study, and a study of rehabilitation, using both interviews and questionnaires.

4.1.1 STUDIES I AND II

2,036 companies with more than 74 employees were assigned to one out of four quartiles according to the overall incidence of more than 90 days (long-term) sickness absence. To the first quartile the companies with the lowest incidence of long-term sickness absence were assigned, to the fourth those 25% with the highest incidence were assigned. Quartile 2 and 3 were combined to contain the 50 % companies with average levels of long-term sickness absence.

From the quartile with the lowest incidence of long-term sickness absence in the register study, 20 companies were selected. They were matched with 20 companies with average levels of long-term sickness absence according to the line of business, number of employees, gender composition and geographical location. This procedure was made to reach a representative distribution according to fields of business and regional contextual conditions. Thus, the two groups of companies differed in level of sickness absence but were similar in context and business cycle (the year 2004), and they were selected to represent the overall Swedish trade and industry [81]. The

average number of employees in the studied companies was 550. Forty-five percent of the employees were women and fifty-five percent were men (figures from 2004). Due to late cancellations, two companies were not matched, which left a total of 38 companies, 20 with low levels and 18 with average levels of long-term sickness absence. These companies were used in the first study.

For the second study eight companies out of the group of companies with low levels of long term sickness absence mentioned above were selected for a deeper analysis. The intention of this selection was to select companies from different branches and different geographical locations. The selected companies were (Number of employees/ per cent men): A metal producing company (2132/ 87%) located in the north of Sweden, a food producing company (350/ 56%) and a publishing company (355/ 59%) from the Stockholm region; medical-technical industry (357/ 92%) on the west coast; an automotive industry company (798/ 79%) from the south of Sweden; a clothing retail and sales company (923/ 12%) with branches all over Sweden; a car repair and sales company (295/ in middle Sweden), and a real estate company from the east coast (110/ 39%). Interviews with 3 representatives for the workers, 5 low managers, 13 middle managers and 4 top managers were analyzed.

The collection of data for study I and II was carried out by 10 interviewers experienced in occupational and organizational health psychology, corporate finance, business administration and human relations, during the period 2005-2006.

The semi-structured interviews were based on empirically derived knowledge and theoretical models such as the JDC model [6], the Vitamin model [82] and the ERI model [10] about work characteristics related to employee health. The interviews were conducted at the companies by two interviewers and they were recorded and transcribed. Following areas were covered:

- Demography, employment terms and work content
- Recruitment and development of employees and leaders
- Work organization, management strategies and policies
- Work environment, both physical and psychosocial
- Strategies for employee health and corporate health care

- Strategies for change
- Open questions about causes and promotion of health

The data could not be traced to a certain company and all interviewees were granted anonymity. The interviews lasted between 1 and 1 1/2 hours and were discussed with the whole research group afterwards. To assure impartiality, the structure of the interview was the same for all companies and an interview technique stressing descriptions and the course of action was used. Further, the research group discussed topics until consensus was reached and a scientific board of independent senior researcher was supervising the study.

4.2 STUDIES III AND IV – THE PART STUDY

The studies III and IV were conducted within the **PART**-study, (**P**sykisk hälsa, **A**rbete, **R**elaTioner. In English: **P**sychiAtric disorder, **W**oRk and **R**elaTions). The PART-study is a population based longitudinal study of mental health in Stockholm County with the main goal to identify conditions associated with the onset and prognosis of non-psychotic mental illness and psychological distress as well as the social consequences of such. PART comprises two waves of postal questionnaire data collection, the first in 1998 – 2000, PART I, and the second during 2001 – 2003, PART II. The original study group was a random sample of the Stockholm County population aged 20 – 64 (19,742 persons). In the first wave, replies were obtained from 10,441 individuals, a response rate of 53 %, 58 % among women and 47 % among men. Those individuals were sent a second survey, largely identical to the first. A response rate of 84% was reached. The both surveys were answered by 8,613 persons with a time lag of approximately three years. The surveys questions were asked about different areas such as: Work and working conditions, occupational events, employment, coping strategies, sickness absence, health, well-being, education, demographics, and life events. A database was created containing, besides the questionnaire data, also information from income and tax registers, demographic information, causes and duration for sick spells and hospital treatment from national registers.

4.2.1 Non-response

A subsequent analysis of non-response in PART I was performed using several population registers. Participation was higher among females, older persons, those married, with higher income, higher education, and born in the Nordic countries; and lower among those with a psychiatric diagnosis in in-patient care or at early retirement [83].

Non-response analyses were conducted for baseline and the three-year follow-up. The response rate at baseline was 53 %. In the three-year follow-up the response rate was 82%: 78 % among males and 86 % among women.

So far, the PART study has been used to investigate psychiatric symptoms, health care contact and the need for psychiatric treatment [84-88], dysfunctions and recovery associated with depression or anxiety [89-92], saliva cortisol variations associated with psychiatric diagnoses or the demand control model [93, 94], factors and self-care strategies associated with wellbeing [95, 96] depression inventories for population use [97], explanations of differences in mental health between native Swedes and immigrants [98], and work characteristics in relation to diagnoses of depression and anxiety [99].

4.3 SUBJECTS

4.3.1 Study I

A total of 204 interviews, 76 with women and 128 with men, in the positions as managers on a middle or high level, and with employee representatives were performed in the 38 companies.

Number of interviewed and positions:

Managing directors	26
Production managers	33
HR Managers	30
Line Managers	37

Union representatives	36
Employees	42
Total	204

4.3.2 Study II

For the study II eight companies were strategically selected from the companies with low levels of sickness absence from study I, representing companies from different branches and different geographical location of the Swedish business life. As job resources could be described in various manners as a result of position, first line leaders and managers on the department, production and top levels, as well as employee representatives, were selected for individual interviews out of the companies. Altogether, 3 representatives for the workers, 5 lower managers, 13 from middle management and 4 top managers were interviewed individually.

4.3.3 Study III

The third study used data from the 8613 individuals participating in the both waves of the PART study. Participants with either full-time or part-time work and with the same psychosocial working conditions at both measurements were analyzed. Analyses of main effects of the psychosocial working conditions and of the combined model were conducted.

4.3.3.1 Analysis of main effects of skill discretion, task authority, the combination control and demands.

After deletion of missing values and exclusion of participants whose levels of job demands or job control differed between the two phases 3,431 individuals (55% women,) reported the same level of skill discretion at both times; 3,369 (55% women) reported the same level of task authority; 3,499 (55% women) reported the same level of control; and 3,133 (54% women) reported the same level of demands.

4.3.3.2 Analysis of the JDC model

A JDC model was shaped in which individuals with the same combinations of work characteristics (e.g. high demands and high control) at both T1 and T2 were included. 2,385 (55% women, 45% men) reported the same work characteristics according to the JDC model.

4.3.4 Study IV

To analyze non-participation in the second wave of the PART study, used for study III, the participants in the first wave was compared to the non-participants of the second wave according to potential determinants for non-participation. A total of 10,441 (5,798 women and 4,643 men) answered the first PART questionnaire. The 10, 303 still available three years later (126 were deceased or had emigrated and 12 persons were deleted out of the registers) got the second questionnaire. Out of those, 8613 answered.

4.4 MEASURES AND VARIABLES

4.4.1 Study I

4.4.1.1 Organizational factors

An organization is an arrangement of elements. These elements and their actions are determined by rules aiming at fulfilling certain tasks through a system of coordinated division of labor. It may be more loosely understood as the planned, coordinated and purposeful action of human beings working through collective action to reach a common goal. The human beings in the organization have different roles mostly hierarchically ordered at different levels. Those roles are structured and controlled through communication, policies, strategies and values.

In this study the focus was on management, leadership and HR practices, as well as structures, strategies and procedures that affect the employees at different levels.

4.4.1.2 Sickness absence

The definition of long-term sickness absence used in this study was a registered sick spell of over 90 days.

4.4.2 Study II

4.4.2.1 Job resources

Job resources are defined according to the JD-R model as physical, psychological, social, or organizational aspects of the job that are functional in achieving goals, reduce job demands and/or stimulating personal growth, learning and development [8]. In this thesis job resources are limited to psychosocial work characteristics based in the

organizational context, i.e. they are not personal or solely interpersonal, but occur in combination with conditions created by the organization. Examples of such job resources are: Learning opportunities, non-monotonous work tasks, autonomy, feedback strategies, support strategies, working in teams, incentives, information strategies and control.

4.4.2.2 *Sickness Absence*

Sickness absence was defined as in study I.

4.4.3 **Study III**

4.4.3.1 *Psychosocial working conditions*

The determinant variables, Job demands and control were assessed using the Swedish Demand Control Questionnaire [100] with 11 questions covering psychological demands (5 items), skill discretion 4 (items) and task authority (2 items). Answers were given on a four-point scale: often, sometimes, seldom and hardly ever. The psychometric properties were found to be satisfactory [101], valid and generally reliable [102]. A reliability analysis revealed a Cronbach's alpha for demands at T1 (T2) of $\alpha = .74$ ($\alpha.74$), for skill discretion of $\alpha.67$ ($\alpha.65$) and for decision authority of $\alpha.76$ ($\alpha.77$). Control was constructed by adding skill discretion and decision authority.

The level of job demands and job control forms four psychosocial work characteristics with different implications for learning and strain:

- Jobs high in demands in conjunction with high levels of control, Active working conditions, make a positive context, optimal for an effective learning process. The high demands are balanced with the proper amount of control, which makes the demands be seen as challenges.
- High demands in combination with low control, High Strain jobs, will produce high levels of strain to the extent that it prevents people taking challenges, reduces their capacity to learn and use their knowledge, and undermines their feelings of self-efficacy.
- Working conditions characterized by low demands but high in control, Low Strain jobs, make a fairly positive context for learning.

- Jobs low in demands and with low control, Passive jobs, makes the most negative context for learning.

4.4.3.2 *Problem-Solving strategies*

The items capturing problem-solving was part of an inventory measuring the use of strategies for dealing with actual or anticipated problems and their attendant negative emotions. It was constructed of 12 dichotomous items following the question “When You are faced with problems that are important to you, how do You usually react?” The possible answers were: I agree or I do not agree [103]. In the PART questionnaire, the questions were found under “Life events, personal situation, environment and relations”.

The factor representing problem solving included following items: *I devote more time and energy to the problems*, reflecting effort exertion; *I try to see the situation as a possibility for me to develop*, reflecting a cognitive attempt to define the meaning of the situation; *I try to get information so as to be able to deal with the problems in a rational way*, reflecting information seeking and logical analysis; and *I try to organize and plan my life in a better way*, reflecting an active and logical behavioral effort. All items are part of several coping category systems and questionnaires [104-109].

4.4.3.3 *Potential confounders*

According to prior studies the effects of demands and control on problem-solving strategies may be distorted by age, gender and education. Those variables were assessed from the register of income and wealth kept by Statistics Sweden.

4.4.4 **Study IV**

4.4.4.1 *Variables from the questionnaire*

To assess differences between those participating in both waves and those participating only in the first, following items were used from the questionnaire:

- Financial margin defined as being able or not to raise €1,500 in a week.
- Presence of severe tension in the family during childhood.
- Having a confidant.
- At least three out of 21 listed severe life events during the past 12 months.

- Social support at work according to the Swedish version of JCQ [100] with 6 items. Answers were given on a four-point scale: Completely agree, agree, do not completely agree and disagree.
- Education divided into three categories: low (< 9 years), intermediate, and high (>14 years).
- Residential status divided into four categories: Co-habitant/Married, Over 20 living with parent/s, Lone parent and Single.

4.4.4.2 *Variables measuring well-being and depression*

- Well-being was assessed with the WHO-10 Well-being scale [110]. Scores of 20 and more (15%) was seen as low well-being.
- Depressive mood was assessed with the Major Depression Inventory [111]. The cut-off point of 19/20 was suggested by Forsell [97]. 10% showed depressive mood according to this definition.

4.4.4.3 *Variables from the registers*

- Gender
- Age
- Income in four categories: High, Medium high, Medium low and low
- Education in three categories: High, Intermediate and Low
- Residential status in six categories: Married, Co-habitant, Lone parent, Over 18 living with parent/s, Single
- Country of origin in two categories: Nordic and Other countries
- Diagnosis at hospital discharge in six categories: None, Schizophrenia/Psychosis, Psychoactive drugs or alcohol misuse, Mood disorders, Other psychiatric, and only somatic
- Early retirement in three categories: None, Psychiatric, and Somatic

4.5 ANALYSES

4.5.1 Study I and II, the qualitative studies

Qualitative studies may be a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts. Data may lead to

serendipitous findings and help researchers to go beyond initial conceptions, and to generate or revise conceptual frameworks. Qualitative knowledge concerns naturally occurring, ordinary events in natural settings and the influences of the local context is not stripped away, but are taken into account [112].

There are several qualitative methods that are predominantly used in psychological research, often with an aim to understand and create new meanings about human experience. Usually data are narratives, often interviews. In this thesis a case study design [113] where semi-structured interviews were analyzed within the frame of thematic analysis [114] was used for the qualitative studies.

4.5.1.1 Case study

A case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident. The qualitative case study afford researchers opportunities to explore or describe a phenomenon in context, it allows the researcher to explore individuals or organizations and it is a valuable approach to develop theory, evaluate programs, and develop interventions because of its flexibility and rigor [113]. The approach that guide the case study methodology in this thesis is the one proposed by Robert Yin [113]. According to Yin [113] a case study should be considered when: 1) the focus of the study is to answer “how” and “why” questions; 2) you cannot manipulate the behavior of those involved in the study; 3) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or 4) the boundaries are not clear between the phenomenon and context. The case is defined by Miles and Huberman [112] as, “a phenomenon of some sort occurring in a bounded context. The case is the unit of analysis. The specific type of case study will be guided by the overall study purpose; describe, explore, explain or compare cases Yin [113].

The manifest content of the interviews were analyzed using a thematic analysis. This is a qualitative analytic method for identifying, analyzing and reporting patterns (themes) within data, where a theme captures something important about the data in relation to the research question [115]. The qualitative software NVivo 7 [116] was used.

4.5.1.1.1 Procedure

The data was initially handled without knowledge of the company name or level of sickness absence. The analysis was carried out by five researchers by the rule: analyze the interviews of a colleague. In order to increase validity during the analysis, the procedures and the tentative results of the analysis were continuously presented to and discussed by the members of the analysis group and a scientific board and incongruent opinions were discussed until consensus was reached. To explain the way the analysis was conducted the analysis is presented sequenced as follows:

1) Verbatim transcriptions of all the 204 interviews were made and put into a dataset. Repeated reading of the dataset and initial ideas were noted down. 2) Interesting features of the semantic content of all statements were labeled (coded) and ordered into meaningful patterns. Each analyst worked individually with a fraction of the dataset. The coding's were compared and discussed to ensure that all analysts understood and agreed upon the definitions, and the ordered patterns were then discussed in the light of theory and empirical knowledge by the research group, and patterns judged to be relevant for the research question were considered as themes, for example "HRM strategies". 3) All statements under a theme (e.g. HRM strategies) was further analyzed to find new comprehensive sub-themes, for example "personnel recruitment". These themes were created in consensus. The relationship between codes, themes and different levels of themes were considered. 4) The coded statements were connected to the group of 'low sickness absence companies' and 'the average sickness absence companies' respectively. The 'low sickness absence companies' were compared to the 'normal sickness absence companies' according to how the themes were presented (i.e. reasons, plans and strategies). 5) The preliminary results were anonymously presented to and discussed with representatives of the analyzed companies. After their feedback the themes were further refined, organized coherently and finally labeled. 6) The final themes were regarded as important organizational factors characteristic for companies with low levels of sickness absence.

4.5.2 Study II

First, the qualitative method and the thematic analysis in study I was used. Then, a second thematic analysis of selected companies with low levels of sickness absence was performed.

4.5.2.1 Procedure

The deepened analysis of eight of the companies with low levels of long term sickness absence analyzed in study I was performed as sequenced: 1) The themes were repeatedly read through approached with specific questions based on theory and empirical findings within the concept of job resources. 2) The job resources were judged according to if they were created by the organization or not. 3) The job resources were re-checked if they work in relation to the coded extracts. 4) A comparison of differences in job resources and strategies for creating job resources was made between the companies. 5) A comparison of the cohesion of the different interviews at the same company was made. 6) Selection of vivid, compelling extract examples showing strategies for creating job resources.

4.5.3 Study III

In multivariate logistic regressions, odds ratios (OR) with 95 % confidence intervals (CI) for the determinant variables (demands, skill discretion, and task authority) were computed with all confounding variables (age, gender and education) controlled. The effect of all variables was tested on the outcomes (problem-solving strategies) at T2. First, the crude OR for each determinant variable was computed, after which we adjusted for possible confounding variables including the outcomes at T1.

Further, in multivariate logistic regressions, ORs with 95 % CI for the determinant variables (active, low strain and high strain, ref, category was passive) were computed with all confounding variables including the outcomes at T1. The effects of the model were tested on the outcomes (problem-solving strategies) at T2. First, the crude ORs for the model were computed, after which we adjusted for potential confounding variables including the outcomes at T1.

4.5.4 Study IV

First, potential determinants for non-participation in PART II were analyzed in bivariate and multivariate logistic regressions, using the entire sample (19,742) and those participating in PART I (10,441). The variables from the registers (4.4.4.2)

were used. Second, potential determinants for non-participation from the PART I questionnaire were analyzed in bivariate and multivariate logistic regressions.

Further, the relationship between potential determinants and reduced wellbeing and depressive mood among participants in PART II and the participants at PART I was analyzed in multivariate logistic regressions.

The SPSS computer package version 15 was used for all analyses.

4.6 ETHICAL APPROVALS

The ethical Committee at Karolinska Institutet approved the PART study as being in accordance with ethical standards (Ref. No. 96-260 and 01-218).

The HOF study is not considered to be subjected to ethical considerations by the Ethical Committee at Karolinska Institutet. The research is not regarded to encompass any prejudicial information (Ref. No. Protocol 2009/5:6

5 RESULTS

5.1 STUDY I

The following organizational factors on a company level, signifying companies with low levels of sickness absence were identified: strategies and procedures in managing leadership, employee development, communication, employee participation and involvement, corporate values and visions, and strategies for employee health.

5.1.1 Leadership

A common strategy in the companies with low levels of sickness absence was in-house recruitment of leaders. Experience from different positions within the company was valued. They had explicit leadership policies. These policies expressed, in addition to professional requirements, interpersonal skills such as skills in promoting social interaction and creating functional teams.

In companies with low levels of sickness absence extensive leadership support like mandatory leader-development programs was elaborated. In addition, day-to-day support to leaders, such as opportunities to discuss problems, responsibilities and limits was developed. When leaders had problems, resources were often allocated to create better overall conditions instead of focusing on individual leaders.

5.1.2 Employee development

To recruit and maintain skilled employees, companies with low levels of sickness absence seemed to have long-term, structured and elaborated strategies. Great consideration was given to creating functional teams and to the context in which the recruit would work. Shared values, principles and traditions were considered when hiring in order to adapt the recruit more easily to the work team and to endorse loyalty towards the company.

A distinguishing characteristic of the companies with low levels of sickness absence was that, they considered training important for personal growth and development in

addition to company needs. This was regarded as productive with regard to future possible needs and employee loyalty. In these companies willingness to try various ways to enhance competence, listening to the wishes and ideas of the employees, was expressed.

5.1.3 Communication

Characteristic features of companies with low levels of sickness absence was to endorse communication even when there were large physical distances between sections of the company and to stress the opportunities to express differing opinions and to criticize managers' decisions. There were consequently procedures to support these dialogues. Person-to-person contacts were preferred.

5.1.4 Employee participation and involvement

In companies with low levels of sickness absence employees were expected to participate in various ways. This was often expressed by pointing out that everyone should take responsibility, express commitment and be involved. To promote involvement, models and programs that gave room for ideas and improvement as well as training in decision-making existed. This also developed social interaction.

5.1.5 Corporate values and visions

Companies with low levels of sickness absence often worked methodically, through engaging the employees in elaborate programs and/or conducting regular meetings at divisional and regional levels to maintain the prevailing values. Support among the employees for these values was regarded as important to strengthen the company's identity and the employees' sense of loyalty.

5.1.6 Strategies for employee health

Companies with low levels of sickness absence had knowledge of the extent of both long-term and short-term sickness absence, whether it has changed over time, and why the employees were ill. Responsibility of monitoring sickness absence and rehabilitation was actively passed down. There was a great concern about how working

conditions and organizational factors were related to sickness absence, for example high levels of stress-related sickness being the result of factors like low monitoring of overtime work. They also articulated the importance to have possibilities to adapt the work situation for employees with an impaired ability to work.

5.2 STUDY II

The analysis of the companies with low levels of long term sickness revealed that some companies intentionally created organizational conditions for job resources even if natural opportunities lacked. The main strategies for creating conditions for job resources for both leaders and employees were through teams and education.

Following job resources were found: Authority (influence over how or what to perform), Autonomy (possibility to make own decisions fairly independent of management), Support (social or instrumental), Skill utilization (task requires creativity, task variation), Feedback, Role clarity, Predictability, and Learning possibilities (problem-solving opportunities, training or education). No big differences in job resources between the companies were found.

Companies' strategies towards developing their staff were directed both to leaders and employees. The strategies to create above mentioned job resources are as following:

5.2.1 The strategic role of the leader

To develop employees and promote social interaction could be the responsibility for leaders. The leaders could however be expected to delegate some of their authority to employees and it was recognized that leaders needed support.

5.2.2 The strategic use of teams

One way of providing leadership support was through teams. Teams were multi-purposely used: for problem solving and production development at the same time for creating learning opportunities, possibilities for feedback, autonomy and authority.

Teams were also created to create job resources that did not naturally exist at the workplace.

5.2.3 Strategies for planning development of employees

All the studied companies used personal developmental plans for their staff. Two types were found: one set in discussion with the employee and the other was regulated by the employer. The realization of the plans was also approached in two different ways: either did the company make all arrangements or the employee took responsibility both for finding and attending the course. Unskilled workers could be offered on-the-job-training with an experienced work mate as trainer and support.

5.3 STUDY III

Generally, a much bigger proportion agreed that they used a problem-solving strategy than denying using such strategy. However for the strategy "I try to see the situation as an possibility for me to develop" the difference between proportions agreeing and not agreeing were smaller than for the other three problem-solving strategies. There were small gender and age differences in proportions agreeing and not agreeing for all four strategies. For all four strategies, the proportions agreeing increased with increased education.

A bigger proportion among those having high skill discretion, task authority and control agreed to using all four problem-solving strategies than those not agreeing. Among those with low and high demands there were hardly any differences in those agreeing and not agreeing using the problem-solving strategies.

Those with low strain and active working conditions mainly agreed to use all four problem-solving strategies, however, for the strategy "I try to see the situation as an possibility for me to develop" the difference between proportions agreeing and not agreeing were much smaller than for the other three problem-solving strategies among those with passive and high strain working conditions.

5.3.1 Effects of skill discretion, task authority, control and demands on problem-solving

The crude OR: s for those reporting high skill discretion, task authority and control showed an association to all four problem-solving strategies. Except for the association between task authority and “trying to organize and plan life in a better way”, these increased likelihoods remained for all associations even when adjusted for potential confounders. The effects of demands did not reach acceptable statistical significance.

Logistic regression analyses on T 2 outcome variables for skill discretion, task authority, control and demands stable over both waves. Odds Ratios (OR) and 95% Confidence Interval (95% CI).

Variable	Time and Energy		Possibility for growth		Getting information		Organize and plan	
	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted
High Skill	2,7(2,2-3,3)	2,3(1,8-2,8)	2,0(1,8-2,3)	1,9(1,6-2,2)	2,5(2,1-3,1)	2,1(1,7-2,6)	1,7(1,5-2,0)	1,6(1,3-1,8)
High Auth.	1,8(1,5-2,2)	1,7(1,4-2,2)	1,9(1,7-2,2)	1,9(1,6-2,2)	1,6(1,3-2,0)	1,4(1,2-1,8)	1,2(1,0-1,4)	1,2(1,0-1,4)
High Control	2,3(1,8-2,8)	2,0(1,6-2,5)	2,2(1,9-2,6)	2,2(1,9-2,5)	2,6(2,1-3,3)	2,2(1,7-2,8)	1,6(1,4-1,9)	1,5(1,3-1,8)
High Demands	1,4(1,1-1,7)	1,3(1,0-1,6)	1,0(0,9-1,2)	1,0(0,8-1,1)	1,3(1,0-1,6)	1,2(0,9-1,5)	1,3(1,1-1,5)	1,2(1,0-1,4)

5.3.2 Effects of the JDC combinations on problem-solving

The crude ORs for those reporting low strain and active working conditions showed associations to all four problem-solving strategies.. These remained for all associations even when adjusted for potential confounders. The crude ORs for those reporting high strain working conditions showed that they had an increased likelihood to use the strategies “I devote more time and energy to the problem” and “I try to organize and plan my life in a better way”, although, only the increased likelihood to use the strategy “I try to organize and plan my life in a better way” remained significant ($p < .05$).

Logistic regression analyses on Time 2 outcome variables for a stable JDC-model. Odds Ratios (OR) and 95% Confidence Interval (95% CI).

JDC-model	Outcome 1 Time and Energy		Outcome 2 Possibility for growth		Outcome 3 Getting information		Outcome 4 Organize and plan	
	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted	Crude	Adjusted
Passive	1(ref)	1(ref)	1(ref)	1(ref)	1(ref)	1(ref)	1(ref)	1(ref)
L Strain	2,7(1,9-3,8)	2,3(1,6-3,3)	2,3(1,8-2,9)	1,8(1,4-2,4)	2,9(2,0-4,2)	2,1(1,4-3,1)	1,7(1,3-2,2)	1,5(1,1-1,9)
Active	2,8(2,0-3,9)	2,2(1,5-3,1)	2,2(1,8-2,8)	1,7(1,3-2,2)	3,7(2,6-5,4)	2,5(1,7-3,7)	1,9(1,5-2,4)	1,4(1,1-1,9)
H Strain	1,4(1,0-1,9)	1,3(0,9-1,7)	0,9(0,7-1,2)	0,9(0,7-1,1)	1,2(0,9-1,6)	1,1(0,8-1,5)	1,4(1,1-1,8)	1,3(1,0-1,7)

We found no evidence to support the hypothesis by Karasek & Theorell [6] that active work conditions have the highest effects on improving problem-solving.

5.4 STUDY IV

5.4.1 Questionnaire participation

Of the 10,303 individuals eligible for PART II, 8,613 (4,990 women and 3,623 men) responded to the questionnaire. The overall participation rate was 84%; 86% among women and 78% among men.

Participation was related to almost all variables, both when analyzing the total sample and those who only participated in PART I. The attrition between the first and the second phase was related to the same variables as non-participation in the first phase. Men (1,9 CI95% 1,7 – 2,1), younger individuals (1,7 CI95% 1,4 – 2,0), persons not married (1,2 CI95% 1,0 – 1,4), those born outside the Nordic countries (1,9 CI95% 1,6 – 2,2), those with low income (1,5 CI95% 1,3 – 1,8) and education (1,5 CI95% 1,2 – 1,8) participated less than those with opposite characteristics. Persons aged 20 – 34 years seemed to have a, relatively higher rate of non-participation in PART II than in PART I. All other variables were associated with similar rates of non-participation in the two waves.

Separate analyses for men and women in the total sample showed that lower age was weakly related to non-participation among women (OR 1.2 in both 20 – 34 and in 35 – 49 years of age) and strongly related to non-participation among men (OR 1.9 in the stratum 20 – 34 and 1.8 in the stratum 35 – 49 years of age). Over 18 living with parents as well as living alone was more strongly related to non-participation among men than women (OR's 2.4 and 1.8 for men and 1.6 and 1.3 for women). With all other variables, men and women showed similar results.

A gender specific analysis of the sample that only participated in PART I showed that men and women were more similar. Discrepancies remained just for the variables Living alone (women OR 1.2, men OR 1.7) and Over 18 living with parents (women OR 1.2, men OR 2.8).

Questionnaire data for gender, age, education and residential status showed results similar to those obtained from registers.

6 DISCUSSION

The overall aim of this thesis was to investigate working conditions and organizational strategies to provide conditions for job resources with potential for development, positive well-being and health. The forming of the aim is built on the assumption that the organization affects working conditions, working conditions affects employees' development, well-being, health and sickness absence. Both a qualitative case study design and a longitudinal epidemiologic design were used in this thesis. These two different approaches may be complementary in enhancing scientific knowledge as well as providing implementable tools for development and reduced absenteeism.

6.1 ORGANIZATIONAL FACTORS RELATED TO LOW SICKNESS ABSENCE

The first study of this thesis conveyed us with information about characteristics of companies with low levels of long-term sickness. Factors concerning, leadership, employee development, participation and influence, communication, values and visions, and strategically employee health measures, were found to be important. This enhances the knowledge of working conditions on the organizational level that is still rather sparse [23, 30, 31], and knowledge about the impact of organizations on working conditions and employee health is crucial for promoting health and for effective interventions to improve health [19].

A policy with the potential to strengthen loyalty and motivation, to our knowledge not presented in previous research, was found. Companies with low levels of sickness absence recruited to a higher degree internally. This made it easier to maintain the company's values and gave opportunities for career. The latter presents a potential reward for employees which is beneficial for health [57]. The possibilities for career in a company signalizes that it may be rewarding to develop and work hard, which may result in motivated and engaged employees, which has been found to be related to duration of sickness absence [74]. It also gives predictability for both the recruit and the company. Employees know what is expected of a leader in this particular company and the company has the possibility to follow possible future leaders over time, to gain knowledge of their abilities and development needs. These companies also used more

long-term, structured and elaborated strategies for recruitment in general, and paid attention to constructive team building. These are strategies that also may affect the organizational climate positively [34, 36].

The companies with low levels of sickness absence governed learning as a matter of personal development as well as by the needs of the business, which may increase job-motivation while opportunities for learning increases employees' knowledge and skills [6, 117]. They also had elaborate programs to promote involvement of their employees. Employee involvement may increase feelings of cohesion [118] and signifies non-autocratic leadership which has been found to be positively related to self-reported health [27]. Involvement and participation are also closely linked to other well-known notions such as decision authority and control, both linked to health and sickness absence [13, 15].

Communication was also stressed in various ways. Apart from formal meetings and information, a culture of dialogue was anticipated. Possibilities to express differing opinions and to criticize were created, feedback was seen as important, as well as employees' possibilities to be heard and appeal were central. This is in line with the organizational justice concept, found to be related to health in several studies [33, 119-121].

A systematic leadership philosophy implemented throughout the organization, making the leadership less bound to individuals and more bound to general policies and strategies was present. The effect of leadership on subordinates' health and sickness absence has been shown in several studies [26, 27, 122]. The companies preferred leadership emphasizing an awareness of individuality and recruited leaders with interpersonal skills, who could create functional teams and social interaction. This signifies a relationship-oriented leadership; the most important for subordinates' well-being, health and sickness absence [122-124] and it might lower the level of sickness absence [34, 36]. The interpersonal skills and knowledge about group processes helps in creating a supportive social climate, which has been linked to sickness absence [72, 125] and learning [75]. Additionally, the ability to promote good interaction, to be considerate and to be just has been related to health and sickness absence in several studies [32-35]. Leadership support was also more developed and has previously been connected to sickness absence [72].

Another factor, to my knowledge not previously related to sickness absence, was the focus on corporate values and visions. The systematic and continuous work with corporate values may lead to a higher degree of person-organization fit, which may in turn lead to loyalty and motivation. When sharing the values and beliefs of the company, employees may also experience a higher degree of positive job-satisfaction and self-realization, which can be related to subjective well-being [118].

Overall the companies with low levels of sickness absence were to a great extent characterized by clear structures and systems. Adapting to illness was another factor that characterized the companies with low levels of sickness absence. This may reflect that the company takes care of employees on long sickness absence. Companies with a good rehabilitation policy and structure have been found to have a lower level of sickness absence than companies where no such strong concordance existed [126, 127]. These companies also reacted early to the risk of illness or sickness absence; they expressed a preventive perspective.

6.2 CONDITIONS AND STRATEGIES FOR JOB RESOURCES

In the second study, the factors (result of study I) of the companies with low levels of sickness absence were searched for conditions and strategies for providing job resources. Job resources are working conditions functional in achieving goals, reduce job demands and/or stimulating personal growth [8, 9]. Conditions for following resources were found: Authority, Autonomy, Support, Skill utilization, Feedback, Role clarity, Predictability, and Learning possibilities. All of these job resources have been found to be associated to sickness absence, development, organizational commitment and engagement [32, 34, 62, 70-74].

A main finding was that strategies and conditions for job resources were found to be provided for both leaders and employees through the active use of teams. Natural work-teams were used or temporarily formed teams, often with multiple purposes, were created. Teams facilitates social interaction and social support, which may fulfill the basic human need of relatedness [128] important for well-being and interpersonal

functioning [129]. It also enables giving and receiving feedback, important for learning and self-efficacy [52]. Participation in group activities and working alongside others are work activities giving rise to learning, and informal support from whomever in the group, was found to be more important for learning than were formally designed helpers [75]. Accordingly, to emphasize group activities seems to be a rewarding strategy in creating a culture of motivation and conditions in favor of job resources, which affects sickness absence.

For example, some companies intentionally created opportunities for training decision making for their blue-collar workers. Teams of blue collar workers were put together to change production or develop new process. This was made purposely to promote involvement, decision-making and responsibility, related to sickness absence in several studies [119-121]. Employee involvement may increase feelings of predictability and control, both associated with health and sickness absence [70, 130], and with learning [131].

Another example was the use teams for developing and supporting leaders. Teams were created for education and used for production development. After the formal education, the teams of leaders were kept and used in solving problems arising from the production, on-the-job leadership development [132]. In this type of training the cognitive and interpersonal abilities are focused [133]. Apart from professional development, this teams facilitates development of role-clarity and behaviors and abilities such as interpersonal communication skills and decision making skills may help leaders to promote good interpersonal interaction, to be considerate and to be just, aspects related to health and sickness absence [32-35]. Important is according to Jackson and Parry [133] that managers and leaders have the ability to learn out of own experiences, it is about learning from your work not taking them away from work to educate them [134]. This leadership teams were continued to act as support and problem-solving groups. Apart from providing the leaders with opportunities for professional and personal development, this way of using the leadership training groups gave leaders' possibilities to use creativity, to get social support, operational support, and feedback, all associated with learning [52, 75] and sickness absence [72, 73].

Moreover, the teams were often composed with members from different levels of the company. A mixed group possesses a possibility to build bridges between levels,

meeting different perspectives, learn to cooperate and give rise to cooperative learning. The use of teams both for leaders and subordinates for personal development and enhancement of production processes corresponds with the “Kaisen teian” approach [135] and the Toyota Production System or Lean Production System, which highlights employee involvement as the keystone of organizational development, nurturing the engagement and empowerment of employees to “*foster a corporate culture that enhances individual creativity and teamwork value, while honouring mutual trust and respect between labor and management*” [136]. The autonomy and involvement can result in engaged employees more committed to their organization and its goals [137] and stimulate personal growth, learning and development [8].

Apart from the use of teams, another main finding in this study was that the companies were providing different kinds of learning opportunities. They organized formal learning such as courses and on the job training to increase competence required for successful performance of the job, and there were opportunities for variation in the work tasks. This is instrumental in achieving goals and promotes motivation. Further, it may create an up-ward spiral of capacity leading to even more learning and in increased job-motivation [6, 117].

The development for employees were regulated by personal development plans which could be of at least two types; either set in a discussion between employee and the immediate supervisor, or regulated by the employer. The opportunity to discuss the personal development, giving the employee control over their development might lead to motivation [8], as well as opportunities for feedback, a necessary prerequisite for learning and self-efficacy [52].

6.2.1 Methodological issues in study I and II

In order to enhance generalizability of results the companies examined were picked to represent different trades, number of employees and regional contextual conditions. This procedure was made to reach a representative distribution which is unusual in qualitative studies. The selection frame for study I was compared to the register of private companies in Sweden held by Statistics Sweden (SCB) and a satisfactory representation according to the above mentioned factors was found [81]. Though, the used registers did not contain data from the finance- and the public sectors.

Consequently, the companies, selected to represent the overall private Swedish trade and industry were similar in context and business cycle, though there is no representation from the public sector and the finance sector. Most companies operate internationally, which makes an international comparison possible.

In the second selection made for the analyses in study II, the representation of different trades, numbers of employees and regional representation was followed. In this selection, there is no representation of consulting companies. This means that the results from study II may not be transferrable to other sectors such as the public.. Therefore, further studies of job resources are needed especially in the public sector. Participants for the interviews were chosen to represent various levels of the companies which increase the possibilities of shedding light on the research question from a variety of aspects. This also made it possible to compare the agreement among different levels at the same company.

The interviews in the matched companies were conducted during the same period of time, so it is improbable that cyclical fluctuations can explain the differences we found between the companies.

However, differences in sickness absence may be due to selective recruiting and termination. To handle this issue official company documents were read through, and during the interviews questions concerning such recruitment procedures were asked for directly, which did not reveal such strategies. The interviewers were aware of the rates of sickness absence for the company under study. This could possibly lead to biased results both when interviewing and in the analyses. To minimize subjectivity and improve both the reliability and the validity we used experienced interviewers, a homogenous interview technique that stressed actual behavior, the use of pilot interviews with concordant refining of the interview template and the subsequent consensus meetings. Further, we de-identified the transcribed interviews for the analyses. The structured analyses and the measures undertaken to secure valid and clear definitions, codes and meaningful themes enhance the reliability of the results. Following Yin's [113] recommendations, tentative results were presented to and discussed with representatives of the companies to test construct validity.

6.3 THE IMPACT OF WORKING CONDITIONS ON LEARNING PROBLEM-SOLVING STRATEGIES

Study III examined the effects of durable demands, skill discretion, task authority and the combinations of those, the JDC model, on general problem-solving – a test of the active learning hypothesis.

The findings revealed main effects specifically for job control, which is in line with prior longitudinal studies [7, 51, 55, 56]. Further, the study confirmed that both active and low strain working conditions are associated with an improvement of problem-solving. Another study among Dutch teachers revealed the highest levels of learning among those in low strain jobs [51]. The importance of active working conditions for learning was supported in a longitudinal study among health-care employees [56]. In contrast, a longitudinal study of newcomers on the labor market did not support that active working conditions led to higher levels of learning [55]. Our findings strengthen the support for both active and low strain working conditions to be contexts well suited to learning.

Control is held as crucial for if learning is to accrue [6, 53], and the present study strengthens the importance of control for learning. Karasek and Theorell [6] also claim a close linkage between the two concepts of control, which they declare to be mutually reinforcing. The present study proposes that both concepts are separately associated with learning so task authority may be used to avoid possible overlap between exposure and outcome variables.

In line with previous research [4] the results indicate weak associations between demands and improvement of problem-solving. These results contradicts the notion that demands increase learning if they are converted into challenges by balancing levels of control [6]. It is also contrary to how action theory stresses the importance of regulation requirements (demands) as goals to overcome [138] and how the effects of one's actions to overcome the obstacles serve as feedback [52]. This may be due to the reporting of demands. Individuals might report uncontrollable demands, whereas controllable demands may be seen as challenges and thus not be reported as demands. Perceptions of whether a given task is demanding or challenging may differ among incumbents of the same work characteristics [139]. Another difficulty in reporting

demands is that they may vary rapidly in the same workplace. Different types of demands may be clustered instead of divided into separate groups of demands [140], which may lead to confusion as to whether the accessible amount of control can actually balance demands, or whether another kind of control is needed. Furthermore, it is possible that we have to measure more of cognitive as well as emotional demands. The source of development and learning may be the possible match between demands and control, although, it might be that there are different demands triggering learning than causing strain.

The measurement of general problem-solving not connected to working situation or working characteristics, implies that enhanced problem-solving skills may possibly affect the non-work domain. However, alternative explanations such as life-events in the non-work domain influencing problem-solving skills, and that those problem-solving skills may have an impact on working conditions cannot be ruled out. De Lange et al. [141] explicitly examined different types of causal relationships and found causal ordering of working conditions according to the JDC model. Our findings are also in line with the Action Theory [53, 138], and the concept of self-efficacy [52]. According to Geurts & Demerouti [1], the domains of work and non-work are highly interrelated and our results are concordant to the generalization hypothesis where high levels of job control are related to high levels of positive spill-over to the non-work domain. Additionally, the results are in line with Karasek's findings that employees with high demand/high control working conditions were more active in their leisure-time activities [142, 143]. However, further research on the interrelations between the work and non-work domain is needed.

This study extends the small body of research on the active learning hypothesis. It is the first study of the active learning hypothesis with a longitudinal, population based, design. Furthermore, it comprises a rather large sample and analyzes the impact of accumulated working conditions on learning. Our assumption that working conditions are rather stable over time corresponds with a substantial share of long-term employment within the OECD countries. The average employment tenure in the EU in 2005 varied between about 8 and 13 years, with an overall average of 10.7 years. Comparable figures are 6.9 years for the US (year 2004) respectively 12 years for Japan (year 2000) [144].

The time lag of three years is assumed to be long enough for the learning effects of working conditions to accrue. Karasek and Theorell [6] argue that active working conditions results in an on-going positive spiral of learning. Consequently, a long time lag would be preferred. A time lag of one year was found to be appropriate for measuring effects of demands and control on mental health [141], whereas a recent study did not find any effects of work characteristics on strain persisting over three months [145]. The ideal time lag is unknown to us, and we do not know if demands and control need different time lags to have an impact on learning. This is an interesting issue for future research. In fact there is little information available about adequate time lags, they are mostly pragmatically selected [50, 146].

6.3.1 Methodological issues in study III

Questionnaires possess a number of potential flaws such as the danger of method variance. The extent to which common method variance (CMV) affects research conclusions is debated. Waldenstrom & Harenstam [147] reported correspondence between self-reports of working conditions and ratings through direct observation and interviews. However, in the active job situation, external assessments deviated from self-reports in different directions for men and women. Women underestimated demands and overestimated control, while the situation was reversed for men. Although, the objective methods have also been criticized because they are not so objective as they seem to be. In sum, self-reports and alternative assessments seem to converge acceptable. For many constructs, an employee will be a more valid source of data than an alternative source, rendering the all-self-report study more accurate than one mixing incumbent with an alternative source [148]. Even the most sophisticated analytic procedures for controlling for response bias, including using multi-trait-multimethod matrices, may not adequately capture this multidimensional complexity [149]. Accordingly, a minimum of two data sources are needed to help rule out the validity threats of self-report and mono-method bias. In the present study, exposures as well as the outcome were self-reported. If outcome is associated with over-reporting of the exposure, it would result in improperly inflated estimates. However, we have partly diminished the risk of such common method variance by controlling for the outcome at T1. Furthermore, investigating general problem-solving, measured outside work, may also diminish the risk of CMV.

Non-participation may cause biased estimates. Therefore, extensive analyses of non-participation were made [83, 150]. Since response bias can alter both the relative risk and the odds ratio [79, 80] and to avoid biased estimates of population characteristics, non-response must be analyzed [78]. The determinants of non-participation and the effects of non-participation in the first wave of PART was analyzed [83]. The non-response in the first wave was higher among males, younger persons, singles, those with lower income, lower education and those born outside the Nordic countries.

Included in this thesis is the analysis of the attrition in the second wave (study IV), which shows that persons aged 20 – 34 years seemed to have a relatively higher rate of non-participation in the second wave, but that all other variables were associated with similar rates of non-participation in the two waves. The participation rate was 84% (8,613 persons) of those receiving the second questionnaire, though at the baseline it was 53%. Of the total 19,742 selected for participation in the first wave, 44% remained answering the second wave. This means that 50% of the women, 4 990 out of originally 9 939 selected for the first wave, and 37% of the men, 3 623 out of originally 9 803 selected answered both waves. The low participation rate may have implications for study III of this thesis.

The fact that the rates of non-response were higher among males, younger persons, singles, those with lower income, lower education and those born outside the Nordic countries in both waves and that this attrition was even relatively higher for younger persons to the second wave have biased the sample used in study III. The remaining 8 613 persons answering both waves are older, have higher education and income than the randomly selected original sample, which may indicate that they are more experienced and have higher positions than the population at large. Both experience and position may affect learning readiness, which can bias the results towards more learning. On the other hand, elderly and experienced people may already have learned how to tackle problems, meaning that no change in learning was detected and the result was biased towards less learning.

Those answering both waves are more often born in the Nordic countries and are more often females, which could mean that the representation of occupations and working conditions is biased in the study sample towards lower control, higher demands and less learning. Though, this would not bias the results, because this

would be according to the hypothesized path. Newcomers, those who are most likely to learn and therefore allow a probably more distinct assessment of the impact of working conditions [151] are under-represented. This may lead to an underestimation of the effect of working conditions on learning.

Finally, the concept of active learning used in study III is rather broadly described with vagueness concerning content and outcome [4]. The four items we used to measure problem-solving skills were chosen to reflect active and approaching problem-solving, an outcome that corresponds to the Karasek and Theorell [6] definition of learning, and to what is stated in Action Theory as an important part of learning [53, 138].

Unfortunately, dichotomous items had to be used due to the format of the questionnaire. Questions with a broader range of answers may have given more detailed information and possibilities to use other methods of analysis. The last outcome variable, “organize and plan”, seems not to discriminate very well. This may be due to the possibility of interpreting this variable as avoiding problems by organization and planning, not solving problems by active and logical planning and organization. Regrettably, the design of the present study is not suited for researching the process of active learning, an issue that needs further research.

Study III indicates that characteristics of work may improve general problem-solving strategies, although further research is needed to clearly operationalize the core variables of the active learning hypothesis. It also indicates the possibility that an advantage with the Job Content Questionnaire (JCQ), namely its universal applicability, constitutes a weakness. It might be necessary to customize the questions for the occupations under study..

7 CONCLUSIONS

Different factors characterizing companies with low levels of sickness absence was found. These may be seen as factors of importance for health and sickness absenteeism. The factors seem to be interconnected and the health promoting process needs to be continuously on different levels of the company simultaneously. The results support the assumption that improvements in working conditions are related to improvements of employee health and development.

Relationship-orientated leadership affects sickness absence and development positively. Such leaders have the ability to provide job resources through the creation of well-functioning teams and groups, enhance communication and shape a supportive climate.

To recruit internally might lower sickness absence. It make it easier to maintain the company's values and give opportunities for career, a rewarding possibility that might encourage employee loyalty, motivation and engagement. The company will know the social abilities and professional skills of the recruit, and thereby have the opportunity to make a good match between recruit and position.

The organizational consideration of learning as a matter of personal development as well as developing professional skills enhances motivation for development. It will also help the company to attract and keep personnel.

Teams, existing teams or specifically created, homogenous on one level or mixed of personnel from different levels, could be effective in developing employees, production and for supportive reasons.

Elaborate programs to promote involvement of the employees were found. Organizations may deliberately create conditions for job resources to decrease sickness absence and enhance development. Strategies aiming at developing production in teams may create job resources such as autonomy, authority, support, feedback and learning opportunities.

To afford employees with control, authority and feedback, formal employee development could be planned in a discussion with the employee, and evaluated by supervisor and employee together.

To improve the social climate effort may be spent to attain a company culture signified by dialogue, within and across levels.

Main effects of skill utilization, task authority, and for the combination decision latitude were found, as well as positive effects of high control combined with both high demands (active) and low demands (low strain working conditions) were found on developing problem solving skills. Control was found to be crucial for learning,

Working conditions was found to affect the non-work domain.

The non-participation and attrition resulted in a sample with persons that were older, better educated and with higher income than the population at large.

7.1 FUTURE RESEARCH

The studies included in this thesis do not incorporate the public sector. In this sector, studies of the association between working conditions and sickness absence, of the relations between job resources and development, on different levels of the organizations are needed.

On the whole, organizational research on working conditions, the creation of job resources and conditions for job resources, how different levels of the organization interact in shaping the work environment and their impact on employees at different levels are needed.

For the future, it would be desirable to combine empirical knowledge and theories from the fields of occupational and organizational psychology, workplace learning, HRM and management to enhance knowledge about health promoting processes and effectiveness in organizations.

Further, there is a need for more positive research. We need to learn more about how different job resources affect different individuals, at different levels, in different occupations and different workplaces.

There is also a lack of intervention research. It would be very interesting to study effects of implementations aiming at creating job resources in different kinds of companies and organizations.

We also need to shed light on eventual dangers to the individuals we provoke when trying to promote engaged and healthy employees. Some job resources may turn into demands under certain circumstances, and how is the interplay between demands and resources? Can all sorts of demands be buffered by all sorts of job resources or are there demands that always must be avoided when designing work?

The exposure time, both to demands and to job resources needs to be researched. Are challenging demands turning into detrimental demands with time, and when, is the time lag different for different demands? For how long time do an individual need to be exposure to certain job resources before learning and development occur, or the impact of demands are buffered?

Finally, with an aging work force and a need of stretching individuals working life, research is needed to study if working conditions affects older people otherwise than younger, and if older people need more of or other job resources to develop in their professions.

8 Acknowledgements

I would like to express my sincere gratitude to all of you who have been part of my work and work environment during my time at the division of Occupational and Environmental Medicine at Karolinska Institutet. You have really contributed to my well-being and performance at work.

I would like to thank my main supervisor Carl Åborg for sharing your knowledge, for reading and commenting wisely, giving support, feedback and encouragement. Gun Johansson I would like to thank for helping out at a time of chaos, for being an encouraging supervisor and for taking your time to understand and discuss also unfamiliar methodology. My supervisor Magnus Svartengren I would like to thank for sharp comments on design, methods and structure.

A very special person is my friend and colleague Ulrich Stoetzer. Thank You very much for being there, for creative discussions and small talk. Together we have produced some science, produced solutions for all problems in the world and we do have a lot of fun.

During the first years, working with the PART project I received a lot of support from my supervisors Gunnel Ahlberg, Ingvar Lundberg and Lennart Hallsten. You led me in to research and science, and we had a whole lot of fun. I like to thank you all.

I want to thank all colleges with whom I have worked together within the PART study and in the HOF project. Especially I want to mention Marianne Parmsund. Further, I want to thank Anne-Marie Windahl, Irene Tjernberg and Maria Elb for helping with practical things and good laughs.

My old and very dear friend Paul Olsson I want to thank for always believing in me.

I naturally want to thank my parents Siv and Nils Bergman. It all started with You.

And at last, I want to thank the most important persons in my life: My wife Helena for endless emotional and operational support, for your knowledge, love and trust, and for your energy. Our daughter Delilah for being just wonderful and newly born ☺ daughter Lavinia for making the last time even more exiting.

9 References

1. Geurts, S.A.E. and E. Demerouti, *Work/Non-work Interface: A Review of Theories and Findings*, in *The Handbook of Work and Health Psychology*, M.J. Schabracq, J.A.M. Winnhubst, and C.L. Cooper, Editors. 2003, John Wiley & Sons Ltd: Chichester.
2. Bakker, A.B. and W.B. Schaufeli, *Positive organizational behavior: Engaged employees in flourishing organizations*. *Journal of Organizational Behavior*, 2008. **29**: p. 147 - 154.
3. Gilbreath, B. and M.U. Montesino, *Expanding the HRD Role: Improving employee well-being and organizational performance*. *Human Resource Development International*, 2006. **9**(4): p. 563 - 571.
4. Taris, T. and M. Kompier, *Job characteristics and learning behavior: Review and psychological mechanisms*, in *Research in Occupational Stress and Wellbeing*, P.L. Perrewé and D.C. Ganster, Editors. 2004, JAI Press: Amsterdam.
5. Karasek, R., *Job demands, job decision latitude, and mental strain: implications for job redesign*. *Administrative Science Quarterly*, 1979. **24**: p. 285-307.
6. Karasek, R. and T. Theorell, *Healthy Work. Stress, productivity and the Reconstruction of Working life*. 1990, New York: Basic Books. Inc.. Publishers.
7. Holman, D.J. and T.D. Wall, *Work characteristics, learning-related outcomes, and strain: a test of competing direct effects, mediated, and moderated models*. *Journal of Occupational Health Psychology*, 2002. **7**(4): p. 283-301.
8. Bakker, A.B. and E. Demerouti, *The Job Demands-Resources model: state of the art*. *Journal of Managerial Psychology*, 2007. **22**(3): p. 309-328.
9. Demerouti, E., et al., *The job demands-resources model of burnout*. *Journal of Applied Psychology*, 2001. **86**(3): p. 499-512.
10. Siegrist, J., *Adverse health effects of high-effort/low-reward conditions*. *Journal of Occupational Health Psychology*, 1996. **1**(1): p. 27-41.
11. Hobfoll, S.E., et al., *Conservation of Social Resources: Social Support Resource Theory*. *Journal of Social and Personal Relationships*, 1990. **7**(4): p. 465-478.
12. Marmot, M., et al., *Sickness absence as a measure of health status and functioning: from the UK Whitehall II study*. *Journal of Epidemiology & Community Health*, 1995. **49**(2): p. 124-30.
13. Niedhammer, I., et al., *Psychosocial factors at work and subsequent depressive symptoms in the Gazel cohort*. *Scand J Work Environ Health*, 1998. **24**(3): p. 197-205.
14. Melchior, M., et al., *Work factors and occupational class disparities in sickness absence: findings from the GAZEL cohort study*. *Am J Public Health*, 2005. **95**(7): p. 1206-12.
15. Head, J., et al., *Influence of change in psychosocial work characteristics on sickness absence: The Whitehall II Study*. *J Epidemiol Community Health*, 2006. **60**(1): p. 55-61.
16. Johansson, G., *The illness flexibility model and sickness absence*, in *Public Health Sciences*. 2007, Karolinska Institutet: Stockholm.
17. Virtanen, M., et al., *Job strain and psychologic distress influence on sickness absence among Finnish employees*. *Am J Prev Med*, 2007. **33**(3): p. 182-7.

18. Jaffee, D., *Organization Theory: Tension and Change*. Sociology Series. 2001, New York: McGRAW-HILL.
19. Macdonald, L.A., et al., *Incorporating work organisation into occupational health research: an invitation for dialogue*. *Occup Environ Med*, 2008. **65**(1): p. 1-3.
20. MacDonald, L.A., et al., *Covariation between workplace physical and psychosocial stressors: evidence and implications for occupational health research and prevention*. *Ergonomics*, 2001. **44**(7): p. 696-718.
21. Burstyn, I. and K. Teschke, *Studying the determinants of exposure: a review of methods*. *Am Ind Hyg Assoc J*, 1999. **60**(1): p. 57-72.
22. Härenstam, A., et al., *The significance of organization for healthy work*. 2004, National Institute of Working Life: Stockholm.
23. Michie, S. and M.A. West, *Managing people and performance: an evidence based framework applied to health service organizations*. *International Journal of Management Reviews*, 2004. **5/6**(2): p. 91-111.
24. Eriksen, W., D. Bruunsgard, and S. Knardahl, *Work factors as predictors of sickness absence: a three moth prospective study of nurses' aides*. *Occupational and Environmental Medicine*, 2003. **60**: p. 271-278.
25. Dellve, L. and E. Wikström, *Managing complex workplace stress in health care organizations: leaders' perceived legitimacy conflicts*. *Journal of Nursing Management*, 2009. **17**: p. 931-941.
26. Nyberg, A., et al., *Managerial leadership and ischaemic heart disease among employees: the Swedish WOLF study*. *Occup Environ Med*, 2009. **66**(1): p. 51-5.
27. Nyberg, A., et al., *Managerial leadership is associated with self-reported sickness absence and sickness presenteeism among Swedish men and women*. *Scand J Public Health*, 2008. **36**(8): p. 803-11.
28. Dellve, L., K. Skagert, and R. Vilhelmsson, *Leadership in workplace - health promotion projects: 1 and 2-year effects on long-term work attendance*. *European Journal of Public Health*, 2007. **17**: p. 471-476.
29. Bolin, M., C. Höckertin, and S. Marklund, *Organizational effects on working conditions and health*, in *The Dynamics of Organizations and Healthy Work*, S. Marklund and A. Härenstam, Editors. 2010, Linnéuniversitetet: Växjö. p. 76 - 92.
30. Härenstam, A., et al., *Understanding the organisational impact on working conditions and health*, in *Arbete och Hälsa*, S. Marklund, Editor. 2006, National Institute for Working Life: Stockholm.
31. Szücs, S., Ö. Hemström, and S. Marklund, *Organisatoriska faktorers betydelse för långa sjukskrivningar i kommuner*. *Arbete och Hälsa*, ed. M. Staffan. Vol. 2003:6. 2003, Stockholm: Arbetslivsinstitutet.
32. Duijts, S.F., et al., *A meta-analysis of observational studies identifies predictors of sickness absence*. *J Clin Epidemiol*, 2007. **60**(11): p. 1105-15.
33. Elovainio, M., M. Kivimaki, and J. Vahtera, *Organizational justice: evidence of a new psychosocial predictor of health*. *Am J Public Health*, 2002. **92**(1): p. 105-8.
34. Vaananen, A., et al., *Role clarity, fairness, and organizational climate as predictors of sickness absence: a prospective study in the private sector*. *Scand J Public Health*, 2004. **32**(6): p. 426-34.
35. Ybema, J.F. and K.v.d. Bos, *Effects of organizational justice on depressive symptoms and sickness absence: A longitudinal perspective*. *Soc Sci Med*, 2010. **70**(10): p. 1609 - 1617.

36. Piirainen, H., K. Rasanen, and M. Kivimaki, *Organizational climate, perceived work-related symptoms and sickness absence: a population-based survey*. J Occup Environ Med, 2003. **45**(2): p. 175-84.
37. Vahtera, J., M. Kivimaki, and J. Pentti, *Effect of organisational downsizing on health of employees*. Lancet, 1997. **350**(9085): p. 1124-8.
38. Vahtera, J., et al., *Organisational downsizing, sickness absence, and mortality: 10-town prospective cohort study*. BMJ, 2004. **328**(7439): p. 555.
39. Verhaeghe, R., et al., *Impact of recurrent changes in the work environment on nurses' psychological well-being and sickness absence*. Journal of Advanced Nursing, 2006. **56**(6): p. 646-656.
40. Marklund, S., M. Bolin, and J. von Essen, *Can individual health differences be explained by workplace characteristics?--A multilevel analysis*. Social Science & Medicine, 2008. **66**(3): p. 650-662.
41. Morris, J.H., D.J. Sherman, and R.A. Snyder, *Prediction of Absenteeism from Attitudes, Prior Absenteeism and Performance*. Personnel Review, 1989. **18**(1): p. 16 - 22.
42. Savery, L.K., A. Travaglione, and I.G.J. Firms, *The links between absenteeism and commitment during downsizing*. Personnel Review, 1998. **27**(4): p. 312 - 324.
43. Harrison, D.A. and J.J. Martocchio, *Time for absenteeism: A 20-year review of origins, offshoots, and outcomes*. Journal of Management, 1998. **24**(3): p. 305-350.
44. Harrison, D.A., D.A. Newman, and P.L. Roth, *How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences*. Academy of Management Journal, 2006. **49**(2): p. 305-325.
45. Hausknecht, J.P., N.J. Hiller, and R.J. Vance, *Work-Unit Absenteeism: Effects of satisfaction, Commitment, Labor Market Conditions, and Time*. Academy of Management Journal, 2008. **51**(6): p. 1223-1245.
46. Patterson, G.M., et al., *Impact of People Management Practices on Business Performance*. Issues in People Management. 1997, London: Institute of Personnel and Development.
47. Nieuwenhuijsen, K., D. Bruinvels, and M.H. Frings-Dresen, *Psychosocial work environment and stress-related disorders, a systematic review*. Occupational Medicine, 2010. **60**: p. 277-286.
48. Johnson, J.V. and E. Hall, *Job strain, workplace social support, and cardiovascular disease: A cross-sectional study of a random sample of the Swedish working population*. American journal of public health, 1988. **78**: p. 1336 - 1342.
49. Doef van der, M. and S. Maes, *The Job Demand-Control (-Support) Model and psychological well-being: a review of 20 years of empirical research*. Work & Stress, 1999. **13**(2): p. 87-114.
50. De Lange, A.H., et al., *"The very best of the millennium": longitudinal research and the demand-control-(support) model*. Journal of Occupational Health Psychology, 2003. **8**(4): p. 282-305.
51. Taris, T., et al., *learning new behaviour patterns: a longitudinal test of karasek's active learning hypothesis among dutch teachers*. Work & Stress, 2003. **17**(1): p. 1.
52. Bandura, A., *Self-efficacy: Toward a unifying theory of behavioral change*, in *The self in social psychology*, R.F. Baumeister, Editor. 1999, Psychology Press: New York, NY. p. 285-298.

53. Hacker, W., *Action Regulation Theory: A practical tool for the design of modern work processes?* European Journal of Work and Organizational Psychology, 2003. **12**(2): p. 105-130.
54. Parker, S.K. and C.A. Sprigg, *Minimizing strain and maximizing learning: the role of job demands, job control, and proactive personality.* Journal of Applied Psychology, 1999. **84**(6): p. 925-39.
55. Taris, T. and J.A. Feij, *Learning and strain among newcomers: a three-wave study on the effects of job demands and job control.* Journal of Psychology, 2004. **138**(6): p. 543-63.
56. Cunningham, C.E., et al., *Readiness for organizational change: A longitudinal study of workplace, psychological and behavioural correlates.* Journal of Occupational and Organizational Psychology, 2002. **75**(4): p. 377-392.
57. van Vegchel, N., et al., *Reviewing the effort-reward imbalance model: drawing up the balance of 45 empirical studies.* Soc Sci Med, 2005. **60**(5): p. 1117-31.
58. Bakker, A.B., E. Demerouti, and W.B. Schaufeli, *Dual processes at work in a call centre: An application of the job demands-resources model.* European Journal of Work and Organizational Psychology, 2003. **12**(4): p. 393-417.
59. Bakker, A.B., M. van Veldhoven, and D. Xanthopoulou, *Beyond the demand-control model: Thriving on high job demands and resources.* Journal of Personnel Psychology, 2010. **9**(1): p. 3-16.
60. Arnold, B.B., et al., *A Multigroup Analysis of the Job Demands-Resources Model in Four Home Care Organizations.* International journal of stress management, 2003. **10**(1): p. 16 - 38.
61. Bakker, A.B., E. Demerouti, and W. Verbeke, *Using the Job Demands-Resources Model To Predict Burnout and Performance.* Human Resource Management, 2004. **43**(1): p. 83-104.
62. Bakker, A.B., et al., *Job demands and job resources as predictors of absence duration and frequency.* Journal of Vocational Behavior, 2003. **62**(2): p. 341-356.
63. Xanthopoulou, D., et al., *Working in the sky: a diary study on work engagement among flight attendants.* J Occup Health Psychol, 2008. **13**(4): p. 345-56.
64. Xanthopoulou, D., et al., *Reciprocal relationships between job resources, personal resources, and work engagement.* Journal of Vocational Behavior, 2009. **74**(3): p. 235-244.
65. Bakker, A.B., E. Demerouti, and M.C. Euwema, *Job resources buffer the impact of job demands on burnout.* Journal of Occupational Health Psychology, 2005. **10**(2): p. 170-80.
66. Bakker, A.B., et al., *Job resources boost work engagement, particularly when job demands are high.* Journal of Educational Psychology, 2007. **99**(2): p. 274-284.
67. Schultz, A.B. and D.W. Edington, *Employee health and presenteeism: a systematic review.* J Occup Rehabil, 2007. **17**(3): p. 547-79.
68. Caverley, N., J.B. Cunningham, and J.N. MacGregor, *Sickness Presenteeism, Sickness Absenteeism, and Health Following Restructuring in a Public Service Organization.* Journal of Management Studies, 2007. **44**(2): p. 304-319.
69. Johansson, G. and I. Lundberg, *Adjustment latitude and attendance requirements as determinants of sickness absence or attendance. Empirical tests of the illness flexibility model.* Soc Sci Med, 2004. **58**(10): p. 1857-68.
70. Christensen, K.B., et al., *Workplace levels of psychosocial factors as prospective predictors of registered sickness absence.* J Occup Environ Med, 2005. **47**(9): p. 933-40.

71. Labriola, M., et al., *Multilevel analysis of workplace and individual risk factors for long-term sickness absence*. J Occup Environ Med, 2006. **48**(9): p. 923-9.
72. Nielsen, M.L., et al., *Psychosocial work environment predictors of short and long spells of registered sickness absence during a 2-year follow up*. J Occup Environ Med, 2006. **48**(6): p. 591-8.
73. Väänänen, A., et al., *Job characteristics, physical and psychological symptoms, and social support as antecedents of sickness absence among men and women in the private industrial sector*. Social Science & Medicine, 2003. **57**(5): p. 807-824.
74. Schaufeli, W.B., A.B. Bakker, and W.v. Rhenen, *How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism*. Journal of Organizational Behavior, 2009. **30**: p. 893 - 917.
75. Eraut, M., *Informal learning in the workplace*. Studies in Continuing Education, 2004. **26**(2): p. 247-273.
76. Reijneveld, S.A. and K. Stronks, *The impact of response bias on estimates of health care utilization in a metropolitan area: the use of administrative data*. International Journal of Epidemiology, 1999. **28**(6): p. 1134-40.
77. Deeg, D.J., et al., *Attrition in the Longitudinal Aging Study Amsterdam. The effect of differential inclusion in side studies*. J Clin Epidemiol, 2002. **55**(4): p. 319-28.
78. Bethlehem, J. and B. Schouten, *Nonresponse Analysis of the Integrated Survey on Living Conditions (POLS)*. 2004, Statistics Netherlands.
79. Austin, M.A., et al., *The effect of response bias on the odds ratio*. Am J Epidemiol, 1981. **114**(1): p. 137-43.
80. Criqui, M.H., M. Austin, and E. Barrett-Connor, *The effect of non-response on risk ratios in a cardiovascular disease study*. J Chronic Dis, 1979. **32**(9-10): p. 633-8.
81. Nise, G., et al., *Friska företag i alla branscher*, in *Hälsa och Framtid - Ett forskningsprojekt om långtidsfriska företag*. 2007, Karolinska Institutet, Uppsala Universitet, SLL: Stockholm.
82. Warr, P., ed. *Work, Unemployment, and Mental Health*. 1987, Clarendon Press: Oxford.
83. Lundberg, I., et al., *Determinants of non-participation, and the effects of non-participation on potential cause-effect relationships, in the PART study on mental disorders*. Social Psychiatry & Psychiatric Epidemiology, 2005. **40**(6): p. 475-83.
84. Dahlberg, K., et al., *Mental health problems and healthcare contacts in an urban and a rural area. Comparisons of two Swedish counties*. Nord J Psychiatry, 2007. **61**(1): p. 40-6.
85. Forsell, Y., *Psychiatric symptoms, social disability, low wellbeing and need for treatment: data from a population-based study*. International Journal of Social Psychiatry, 2004. **50**(3): p. 195-203.
86. Forsell, Y., *The pathway to meeting need for mental health services in Sweden*. Psychiatric Services, 2006. **57**(1): p. 114-9.
87. Forsell, Y., *A three-year follow-up of major depression, dysthymia, minor depression and subsyndromal depression: results from a population-based study*. Depress Anxiety, 2007. **24**(1): p. 62-5.
88. Forsell, Y., S. Levander, and J. Cullberg, *Psychosocial correlates with depressive symptoms six years after a first episode of psychosis as compared with findings from a general population sample*. BMC Psychiatry, 2004. **4**: p. 29.

89. Airaksinen, E., M. Larsson, and Y. Forsell, *Neuropsychological functions in anxiety disorders in population-based samples: evidence of episodic memory dysfunction*. Journal of Psychiatric Research, 2005. **39**(2): p. 207-14.
90. Airaksinen, E., et al., *Cognitive functions in depressive disorders: evidence from a population-based study*. Psychological Medicine, 2004. **34**(1): p. 83-91.
91. Airaksinen, E., et al., *Low episodic memory performance as a premorbid marker of depression: evidence from a 3-year follow-up*. Acta Psychiatr Scand, 2007. **115**(6): p. 458-65.
92. Airaksinen, E., et al., *Cognitive and social functioning in recovery from depression: results from a population-based three-year follow-up*. J Affect Disord, 2006. **96**(1-2): p. 107-10.
93. Alderling, M., et al., *Psychiatric diagnoses and circadian saliva cortisol variations in a Swedish population-based sample (the PART study)*. Psychother Psychosom, 2008. **77**(2): p. 129-31.
94. Alderling, M., et al., *The demand control model and circadian saliva cortisol variations in a Swedish population based sample (The PART study)*. BMC Public Health, 2006. **6**: p. 288.
95. Hansson, A., P. Hilleras, and Y. Forsell, *Well-being in an adult Swedish population*. Social Indicators Research, 2005. **74**(2): p. 313-325.
96. Hansson, A., P. Hilleras, and Y. Forsell, *What kind of self-care strategies do people report using and is there an association with well-being?* Social Indicators Research, 2005. **73**(1): p. 133-139.
97. Forsell, Y., *The Major Depression Inventory versus Schedules for Clinical Assessment in Neuropsychiatry in a population sample*. Social Psychiatry & Psychiatric Epidemiology, 2005. **40**(3): p. 209-13.
98. Tinghog, P., T. Hemmingsson, and I. Lundberg, *To what extent may the association between immigrant status and mental illness be explained by socioeconomic factors?* Soc Psychiatry Psychiatr Epidemiol, 2007. **42**(12): p. 990-6.
99. Waldenstrom, K., et al., *Externally assessed psychosocial work characteristics and diagnoses of anxiety and depression*. Occup Environ Med, 2008. **65**(2): p. 90-6.
100. Theorell, T., et al., *Changes in job strain in relation to changes in physiological state*. Scandinavian Journal of Work, Environment & Health, 1988. **14**(3): p. 189-196.
101. Sanne, B., et al., *The Swedish Demand-Control-Support Questionnaire (DCSQ): factor structure, item analyses, and internal consistency in a large population*. Scand J Public Health, 2005. **33**(3): p. 166-74.
102. Karasek, R., et al., *Testing two methods to create comparable scale scores between the Job Content Questionnaire (JCQ) and JCQ-like questionnaires in the European JACE study*. International Journal of Behavioral Medicine, 2007. **14**(4): p. 189-201.
103. Aronsson, G. and A. Stromberg, *Ogonbesvar vid bildskarmsarbete. Stora skillnader beroende pa arbetsinnehall*. Lakartidningen, 1993. **90**(37): p. 3059-60.
104. Aronsson, G. and A. Strömberg, *Arbetsvillkor, copingmönster och hälsa i nio olika akademikeryrken*. 1994, National Institute of Occupational Health: Solna.
105. Skinner, E.A., et al., *Searching for the structure of coping: A review and critique of category systems for classifying ways of coping*. Psychological Bulletin, 2003. **129**(2): p. 216 - 269.
106. Skinner, E.A. and M.J. Zimmer-Gembeck, *The development of Coping*. Annual Review of Psychology, 2007. **58**: p. 119 - 144.

107. Carver, C.S., *You want to measure coping but your protocol's too long: Consider the Brief COPE*. International Journal of Behavioral Medicine, 1997. **4**(1): p. 92-100.
108. Carver, C.S., M.F. Scheier, and J.K. Weintraub, *Assessing coping strategies: a theoretically based approach*. J Pers Soc Psychol, 1989. **56**(2): p. 267-83.
109. Dewe, P.J. and D.E. Guest, *Methods of Coping with Stress at Work - a Conceptual Analysis and Empirical-Study of Measurement Issues*. Journal of Organizational Behavior, 1990. **11**(2): p. 135-150.
110. Bech, P., C. Gudex, and K.S. Johansen, *The WHO (Ten) Well-Being Index: validation in diabetes.[see comment]*. Psychotherapy & Psychosomatics, 1996. **65**(4): p. 183-90.
111. Bech P, W.L., *Applicability and validity of the Major Depression Inventory in patients with Parkinson's Disease*. Nordic Journal of Psychiatry, 1998. **52**(4): p. 191 - 201.
112. Miles, M.B. and A.M. Huberman, eds. *Qualitative Data Analysis: An expanded sourcebook (2nd edn.)*. 1994, Sage:: London & Thousand Oaks, California.
113. Yin, R.K., *Case Study Research*. Applied Social Research Methods Series, ed. D.S. Foster. Vol. 5. 1994, Thousand Oakes: Sage Publication, Inc.
114. Braun, V. and V. Clarke, *Using thematic analysis in psychology*. Qualitative Research in Psychology, 2006. **3**(2): p. 77-101.
115. Braun, V. and V. Clarke, *Using thematic analysis in psychology*. Qualitative Research in Psychology, 2006(3): p. 77-101.
116. NVivo 7, QSR International Pty Ltd.
117. Neal, A., M.A. West, and M.G. Patterson, *Do Organizational Climate and Competitive Strategy Moderate the Relationship Between Human Resource Management and Productivity?* Journal of Management, 2005. **31**(4): p. 492-512.
118. Verquer, M.L., T.A. Beehr, and S.H. Wagner, *A meta-analysis of relations between person-organization fit and work attitudes*. Journal of Vocational Behavior, 2003. **63**(3): p. 473-489.
119. Colquitt, J.A., et al., *Justice at the millenium: A meta-analytic review of 25 years of organizational justice research*. Journal of Applied Psychology, 2001. **86**(3): p. 425-445.
120. Kivimaki, M., et al., *Organisational justice and health of employees: prospective cohort study*. Occup Environ Med, 2003. **60**(1): p. 27-33; discussion 33-4.
121. Kivimaki, M., et al., *Effects on blood pressure do not explain the association between organizational justice and coronary heart disease in the Whitehall II study*. Psychosom Med, 2008. **70**(1): p. 1-6.
122. Westerlund, H., et al., *Managerial leadership is associated with employee stress, health, and sickness absence independently of the demand-control-support model*. Work, 2010. **37**: p. 71 - 79.
123. Kuoppala, J., et al., *Leadership, Job Well-being, and Health Effects - A systematic Review and Meta-Analysis*. Journal of Occupational and Environmental Medicine, 2008. **50**(8): p. 904 - 915.
124. Melchior, M., et al., *Burnout and the work environment of nurses in psychiatric long-stay care settings*. Social Psychiatry & Psychiatric Epidemiology, 1997. **32**: p. 158 - 164.
125. Väänänen, A., et al., *The role of work group in individual sickness absence behavior*. Journal of health and social behavior, 2008. **49**: p. 452 - 467.
126. Cunningham, I. and P. James, *Absence and return to work: towards a research agenda*. Personnel Psychology, 2000. **29**(1): p. 33 - 47.

127. Vingård, E., et al., *Delstudie 4 - Långtidssjukskrivning, rehabilitering och återgång i arbete*. 2007, CFF - Stockholm City Council
Uppsala University
Karolinska Institutet: Uppsala
Stockholm.
128. Baumeister, R.F. and M.R. Leary, *The need to belong: desire for interpersonal attachments as a fundamental human motivation*. *Psychol Bull*, 1995. **117**(3): p. 497 - 529.
129. La Guardia, J.G., et al., *Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being*. *Journal of Personality and Social Psychology*, 2000. **79**: p. 367 - 384.
130. Väänänen, A., et al., *Lack of predictability at work and risk of acute myocardial infarction: An 18-Year prospective study of industrial employees*. *American journal of public health*, 2008. **98**(12): p. 2264 - 2271.
131. Bergman, P.N., et al., *Do job demands and job control affect problem-solving?* Work, in Press.
132. Yukl, G., *Leadership in Organizations*. 6th ed. 2006, New Jersey: Pearson Education.
133. Jackson, B. and K. Parry, eds. *A very short, fairly interesting and reasonable cheap book about studying leadership*. 2008, Sage: London.
134. Moxley, R.S. and W.P. O'Connor, *A systems approach to leadership development*, in *The Center for Creative Leadership handbook of leadership development.*, C.D. McCauley, R.S. Moxley, and E. van Velsor, Editors. 1998, Jossey - Bass: San Francisco.
135. Tozawa, B., ed. *The improvement engine: creativity & innovation through employee involvement; the kizen teian approach*. ed. J.H.R. Association. 1995, Productivity Press, Inc.: Portland.
136. Toyota. *Guiding Principles at Toyota*. [cited; Available from: http://www.toyota-global.com/sustainability/csr_initiatives/csr_concepts/pdf/sustainability_e.pdf].
137. Steinheider, B., P. Bayerl, and T. Wuestewald, *The Effects of Participative Management on Employee Commitment, Productivity, and Community Satisfaction in a Police Agency*, in *The Annual meeting of the International Communication Association*. 2006: Dresden International Congress Centre, Dresden, Germany.
138. Frese, M. and D. Zapf, *Action as the core of work psychology: A German approach.*, in *Handbook of Industrial and Organizational Psychology*, H.C. Triandis, M.D. Dunnett, and L.M. Hough, Editors. 1994, Consulting Psychologists Press: Palo Alto. p. 271-340.
139. Steenland, K., J. Johnson, and S. Nowlin, *A follow-up study of job strain and heart disease among males in the NHANESI population*. *Am J Ind Med*, 1997. **31**(2): p. 256-60.
140. Kristensen, T., et al., *The distinction between work pace and working hours in the measurement of quantitative demands at work*. *Work & Stress*, 2004. **18**(4): p. 305 - 322.
141. De Lange, A.H., et al., *The relationships between work characteristics and mental health: Examining normal, reversed and reciprocal relationships in a 4-wave study*. *Work & Stress*, 2004. **18**: p. 149-166.
142. Karasek, R., *The impact of the work environment on life outside the job*. 1976, Institutet för social forskning: Stockholm.
143. Karasek, R., *Job socialization and job strain: The implications of two related psychosocial mechanisms for job design*, in *Working life: A social science*

- contribution to work reform*, B. Gardell and G. Johansson, Editors. 1981, John Wiley & Sons Ltd: Chichester.
144. Auer, P., *In search of optimal labour market institutions*, E.A.a.R.U.E.a.L.M.A. Department, Editor. 2007, ILO Publications.
 145. Tucker, J., et al., *A temporal investigation of the direct, interactive, and reverse relations between demand and control and affective strain*. *Work & Stress*, 2008. **22**(2): p. 81-95.
 146. Dormann, C. and D. Zapf, *Social stressors at work, irritation, and depressive symptoms: Accounting for unmeasured third variables in a multi-wave study*. *Journal of Occupational and Organizational Psychology*, 2002. **.75**(1): p. pp.
 147. Waldenstrom, K. and A. Harenstam, *Does the job demand-control model correspond to externally assessed demands and control for both women and men?* *Scand J Public Health*, 2008. **36**(3): p. 242-9.
 148. Shmatukha, A.V. and C.J. Bakker, *Correction of proton resonance frequency shift temperature maps for magnetic field disturbances caused by breathing*. *Phys Med Biol*, 2006. **51**(18): p. 4689-705.
 149. Donaldson, S.I. and E.J. Grant-Vallone, *Understanding self-report bias in organizational behavior research*. *Journal of Business and Psychology*, 2002. **.17**(2): p. pp.
 150. Bergman, P., et al., *Non-participation in the second wave of the PART study on mental disorders and its effects on risk estimates*. *The International Journal of Social Psychiatry*, 2010.
 151. De Witte, H., E. Verhofstadt, and E. Omey, *Testing Karasek's learning and strain hypotheses on young workers in their first job*. *Work & Stress*, 2007. **21**(2): p. 131-141.