



UMEÅ UNIVERSITY

Exploring firefighters' health and well-being at work

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To Jan-Olof, Andrea and Camilla with love

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Abstract

Background: Firefighters and other first responders within the rescue services are exposed to traumatic, stressful events and critical incidents. This thesis supports the assumption that firefighters' health and mental well-being is important, in order to cope with the stress that the profession implies. As health is an essential part of everyday life, it seems important to understand how an almost exclusively male workforce of firefighters construct their discourse in relation to health and well-being. The overall purpose of this thesis is to explore health and ill-health among firefighters in relation to their work environment, including coping strategies, critical incidents and 'ordinary' day-to-day work at the rescue service station.

Methods: In Study I with the title '*Experiences of critical incidents among female and male firefighters*', 180 full-time firefighters (16 women, 164 men) answered an open-ended question included in the larger survey (Study II). Qualitative content analysis was used to analyse the free-text answers. Study II with the title '*Burnout and association with psychosocial work environment among Swedish firefighters*', was based on a cross-sectional survey. The participants were based on 882 randomly selected full-time Swedish firefighters and the final sample consisted of 476 firefighters (58 women, 418 men). The questionnaires consisted of previously validated instruments measuring burnout, psychosocial work environment and coping strategies. In Study III with the title '*There is nothing wrong with diversity and equality as long as the right people are employed. Promoting and hindering health and well-being in firefighter discourse*' and Study IV with the title '*Diversity, preventive work and education - matters of health and well-being in firefighter discourse*', a total of 28 firefighters (4 women and 24 men) participated in the study. For Study III and IV, the research questions was dealt with applying critical discourse analysis on the focus group discussions (FGD) and individual interviews that were conducted. In Study IV the analysed material also included policy documents.

Results: Findings from Study I were presented in four categories; 'overwhelming critical situations', 'risks of delay', 'risk of failure' and 'risks to oneself'. Women in Study I described their experiences in a more distanced account, while men described their experiences more vividly. Results from Study II showed overall low mean values in the burnout scales of emotional exhaustion (EE) and depersonalization (DP) among both women and men. Only 2 % of women and 1% of men scored high levels of EE, and only 2 % of women and 3% of men scored high levels of DP. A multiple linear regression showed that high demand and lack of social support contributed significantly to predicting EE

among men. The coping strategies among firefighters influence the level of EE and DP, and these strategies were different between women and men. First, worth mentioning, the mean value of psychological distancing (PDi) was significantly higher for women than men. Also an association was found; both EE and DP were significantly associated with PDi among women. In Study III, six dominant themes were identified in the work culture of promoting and maintaining health and well-being of firefighters at work. A strong sense of the firefighter community was articulated in all FGD as health promoting. The physical exercise at work and the balance between emergency and station work were also two recurrent theme supporting firefighters' health. Another health-promoting theme concerns clarity of roles among firefighters both in emergency situations and at the station. Peer support and tolerance in the work group was another common theme, alongside with expressions of the firefighter as hero or helper. Themes described as hindrances to health and well-being in firefighters' discourse were diversity, preventive work and education. All hindrance themes were articulated as important struggles in the firefighter discourse against changes in work. In Study IV, we have identified two sides in the struggles, on the one hand we have the 'insiders', a majority of male firefighters working in the rescue services representing a collective defending its autonomy and traditions. On the other hand we have the 'outsiders', represented by the government, the Swedish Civil Contingencies Agency, (MSB), municipalities, politicians at different levels and other actors such as academic researchers.

Conclusion: Firefighters described critical incidents at work as overwhelming situations, along with negative experiences of organizational and practical tasks. Despite these experiences, firefighters were reported as relatively healthy according to EE and DP (Study I and II). Results of Study II also showed a relationship between psychosocial work environment and burnout among men, but not among women. The coping strategies among firefighters influence the level of burnout, and these strategies differ between women and men. The well-being in firefighters' discourse, at least partly, is gained from a strong sense of belonging to a homosocial group characterized by closeness to each other and peers who take care of each other. The firefighters in our studies articulate this community-sense, and describe the importance of similarity rather than diversity (Studies III and IV). Findings from our studies regarding health and well-being, add knowledge to the current explanations relating to firefighters' resistance to change.

Original papers

The thesis is based on the following publications and manuscript, which are referred to in the text by its Roman numeral.

- I. Jacobsson, A., Backteman-Erlanson, S., Brulin, C., Hörnsten, Å. 2014, Experiences of critical incidents among female and male firefighters, *International Emergency Nursing*. Vol.23, pp.100-104.

- II. Jacobsson, A., Backteman-Erlanson, S., Padyab, M., Egan Sjölander, A., Brulin, C., 2016, Burnout and association with psychosocial work environment among Swedish firefighters, *Global Journal of Health Science*. Vol.9, pp.214-225.

- III. Jacobsson, A., Backteman-Erlanson, S., Brulin, C., and Egan Sjölander, A., 'There is nothing wrong with diversity and equality as long as the right people are employed'. Promoting and hindering health and well-being in firefighter discourse. *Submitted for publication*.

- IV. Jacobsson, A., Backteman-Erlanson, S., Brulin, C., and Egan Sjölander, A., Diversity, preventive work and education - matters of health and well-being in firefighter discourse. *In manuscript*.

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Sammanfattning på svenska

Bakgrund Brandmän och annan blåljuspersonal utsätts i sitt arbete för traumatiska, stressiga och kritiska händelser. Denna avhandling utgår från antagandet att brandmännens hälsa och mentala välbefinnande är viktiga faktorer för att klara av de påfrestningar som yrket innebär. Ett växande internationellt forskningsområde om brandmän har i stor utsträckning problematiserat brandmännens motstånd mot olika typer av förändringar i yrket, särskilt gällande förbättrad jämställdhet i arbetet. Brandmäns hälsa och välbefinnande formas även i deras vardag och vid rutinarbetet på stationerna i en i nästan helt enkönad yrkeskår. Det har därför varit betydelsefullt i denna avhandling att söka förstå hur hälsa konstruerades i brandmannadiskursen. Det övergripande syftet med föreliggande avhandling var att undersöka hälsa och ohälsa bland brandmän i förhållande till arbetet och vidare att undersöka hanteringsstrategier, relaterade till både kritiska händelser och dagligt arbete på räddningstjänsten.

Metod Delstudie I med titeln; Erfarenheter av kritiska händelser bland kvinnlig och manlig brandpersonal, omfattade 180 brandmän (16 kvinnor, 164 män) som besvarade en öppen fråga om kritiska händelser och ingick i en större undersökning (Delstudie II). Svaren analyserades med hjälp av kvalitativ innehållsanalys. Delstudie II med titeln; Utbrändhet bland svenska brandmän och samband med psykosocial arbetsmiljö, var en tvärsnittsstudie med 882 slumpmässigt utvalda heltidsanställda svenska brandmän som bjudits in för att delta, varav totalt 476 personer (58 kvinnor, 418 män) slutligen besvarade aktuell enkät. Databasinsamlingen baserades på validerade och väl beprövade enkäter vilka används bland annat i arbetsmiljöforskning som mäter olika dimensioner av utbrändhet (emotionell utmattning, depersonalisation), psykosocial arbetsmiljö och hanteringsstrategier (psykologisk distansering, problemfokuserad hantering, konfrontativ hantering, önsketänkande, självkontroll, positivt tänkande). I delstudie III med titeln; Hälsobefrämjande faktorer och hälsohindrande faktorer i räddningstjänsten och i delstudie IV med titeln; Mångfald, förebyggande arbete och utbildning - frågor om hälsa och välbefinnande i räddningstjänsten, baserades analysen på fokusgruppdiskussioner (FGD) och individuella intervjuer. Totalt deltog 28 brandmän (4 kvinnor och 24 män) i studien bestående av tre fokusgrupper och tre individuella intervjuer. I delstudie IV ingick också ett strategiskt urval av policydokument. Kritisk diskursanalys användes för att identifiera resurser i brandmannadiskursen som främjar och upprätthåller hälsa och välbefinnande bland brandmän, samt motsatsen, det vill säga frekvent artikulera hälsohinder i brandmannadiskursen.

Resultat I delstudie I sammanfattades brandmännens erfarenheter av kritiska händelser i fyra kategorier; 'överväldigande kritiska situationer', 'risk för fördröjningar', 'risk för misslyckande' och 'egen risk'. De överväldigande kritiska situationerna berörde trafikolyckor, stora bränder och andra dödliga händelser som drunkningar och självmord. Brandmännen beskrev att de negativa erfarenheterna kunde lindras om extra ansträngningar gjorts i organisationen som syftade till att minska riskerna för fördröjningar och misslyckanden i arbetet. Kvinnor i delstudie I beskrev sina erfarenheter på ett mer distanserat och abstrakt sätt än männen, medan de senare beskrev sina erfarenheter mer personligt och detaljerat. Resultat från delstudie II visade att endast 2% av kvinnorna och 1% av männen uppvisade höga nivåer av emotionell utmattning (EE), och motsvarande proportioner med höga nivåer av cyniskhet (depersonalisation (DP) 2% för kvinnor, respektive 3% för män. En multipel linjär regression visade att höga krav i arbetet och brist på socialt stöd hade samband med EE bland män. Vissa hanteringsstrategier bland brandmän visade sig ha samband med EE och DP, men dessa strategier var olika mellan kvinnor och män. Förekomsten av psykologisk distansering (PDi) var signifikant högre för kvinnliga jämfört med manliga brandmän. Även ett samband visades där både EE och DP var signifikant associerade med PDi bland kvinnor. I delstudie III identifierades sex dominerande teman i brandmännens arbetskultur som främjar och upprätthåller välbefinnande och hälsa. *En stark känsla av gemenskap* artikulerades återkommande i alla FGD som en viktig del i upprätthållandet av hälsa och välbefinnande i arbetet. Även den *fysiska träningen* som ingår i arbetet beskrivs som hälsofrämjande. *Bra balans mellan utryckningsverksamhet (akuta insatser) och stationsarbete* är också ett återkommande tema i brandmännens beskrivning av vad som främjar och upprätthåller deras hälsa och välbefinnande. Arbetsfördelningen och *tydliga roller* både vid akuta utryckningar och vid stationsarbetet, beskrivs också som hälsofrämjande. *Kollegialt stöd och tolerans* i arbetsgruppen var ett annat gemensamt tema, tillsammans med allmänhetens tilltro (och därmed indirekta stöd) där brandmän ofta benämns som samhällets *hjälpare och hjältar*. Hälsohindrande teman som identifierats i brandmannadiskursen var; *mångfaldsarbetet*, ökade krav på *förebyggande arbete*, och *brandmannautbildningen*. Alla hälsohindrande teman har det gemensamt att de berör ökade krav och olika pågående förändringar i brandmannens yrke och arbete. I Studie IV har vi identifierat två sidor ('the insiders' och 'the outsiders') i kampen om förändringarna i arbetet som brandman. 'The insiders' utgörs av en majoritet av manliga brandmän i räddningstjänsten, vilka gör motstånd mot förändringskraven och försvarar istället kollektivt sin självständighet och sina yrkestraditioner. Motparten, 'the outsiders' som förespråkar dessa förändringar företräds istället av regeringen, Myndigheten för samhällsskydd och beredskap (MSB), kommunerna, politiker på olika nivåer, samt andra aktörer som forskare och experter. Gemensamt för

alla är att de kan sägas företräda samhällets krav på ökad mångfald, förebyggande arbete och en förnyad brandmannautbildning.

Slutsatser: Brandmännen i denna studie beskriver kritiska händelser i arbetet som överväldigande situationer och de vittnar även om 'risk för fördröjningar', 'risk för misslyckande' och 'egen risk' som negativa erfarenheter vid akuta insatser. Trots dessa erfarenheter framstår brandmän som en relativt välmående yrkesgrupp jämfört med andra, relaterat till de proportionellt sett få som rapporterades med höga EE och DP (delstudie I och II). En multipel linjär regression visade att höga krav i arbetet och brist på socialt stöd hade samband med EE bland män, men inte bland kvinnor. Resultatet visade även skillnader mellan kvinnor och män gällande vilka hanteringsstrategier de hade i samband med EE och DP. Hälsa och välbefinnande i brandmannadiskursen är, åtminstone delvis, beroende av att många brandmän upplever en stark känsla av tillhörighet. Den homosociala gruppens kännetecken är närhet till varandra och omsorg. Brandmännen i våra studier ger uttryck för denna grupp gemenskap och betonar vikten av likhet och likriktning inom gruppen - snarare än ökad mångfald (Studie III och IV). Sammanfattningsvis bidrar resultaten gällande hälsa och välbefinnande med ny kunskap och nya frågeställningar till rådande förklaringsmodeller gällande brandmännens motstånd och motvilja till förändringar i arbetet.

Abbreviations

CCo	Confrontive Coping
CDA	Critical Discourse Analysis
DP	Depersonalization
EE	Emotional Exhaustion
EFA	Exploratory Factor Analysis
FGD	Focus Group Discussion
JDCS	Job Demand Control Social Support Model
MBI	Maslach Burnout Inventory
MSB	Swedish Civil Contingencies Agency
NSS	Nordic Safety and Security
PDi	Psychological Distancing
PRe	Positive Reappraisal
PPS	Planful Problem Solving
PTSD	Post-Traumatic Stress Disorder
QPS ^{Nordic}	General Nordic Questionnaire for Psychological and Social Factors at Work
SOC	Sense of Coherence
SPSS	Statistical Package for Social Science
SWEA,	Swedish Work Environment Authority
WOCQ	Ways of Coping Questionnaire
WTh	Wishful Thinking

Preface

To start with, I would like to give a brief description of what my journey into the research field of this thesis has looked like, including the movements between different research perspectives that I have experienced during my doctoral studies. After 10 years of clinical work in emergency care as a registered nurse anaesthetist, I continued with academic studies, and graduated with a master's degree in nursing in 2009. Later on, in the starting phase of a multidisciplinary research project about collaboration in crisis management, called the Nordic Safety and Security Project (NSS Reg. no. 41952), funded by the European Union Regional Development Fund, I began my research career. To work in an interdisciplinary research area was a real eye opener for me and gave me a lot of new perspectives. In addition, the interaction between my current positions, working as a teacher educating firefighters in emergency care, employed by the Swedish Civil Contingencies Agency (MSB), and that of being a university employed PhD-researcher studying health and firefighting, has been important in order to be able to develop and understand interdisciplinary research questions in the field of study.

This thesis has moved between different research perspectives and ways to explore knowledge. To shift between perspectives, and to bring the parts together again, has been a challenge and a knowledge journey in itself. This work is anchored in the tradition of nursing science and is related to other fields of knowledge, such as sociology and gender studies. The discourse analytical perspective is for me yet 'another point of view' that stresses that it is through language-use that a large part of our knowledge of the world is formed. When I began to try out and apply this theoretical perspective, I noticed that it enriched my research. The critical discourse analytical (CDA) approach has helped me to understand and contextualize firefighters' health, as well as ill-health, relating to their work, and made 'taken for granted' knowledge more visible. CDA has also, since it embraces interdisciplinary approaches, enabled me to combine perspectives and to stand at the same time with one foot in nursing science and the other one in social science and/or the humanities.

Introduction

In mass media, as well as social media, the firefighter profession is associated with traditional traits of masculinity, such as physical strength, handiness and dangerous work. Ericson and Mellström, (2016) claim that public representations of firefighters are built on positive notions; they are heroic and symbols for the good in society. Accordingly, men within the profession are given high status in society and are generally seen as trustworthy people (Ericsson, 2014). This framing probably stems from, and is reinforced by, the knowledge that firefighters often are involved in physically threatening situations when attending traumatic incidents such as emergency care response, motor vehicle accidents, fires, floods, chemical hazards and terrorist attacks. In addition to the physical health strains, and according to previous research, firefighters are likely to suffer mental ill-health from working in vulnerable and difficult situations and from handling serious road accidents with severely injured people and other emergencies (Comcare, 2008). The psychological effects may be triggered by a single critical incident or the response to a long-term cumulative vulnerability (Cook & Mitchell, 2013). One can also observe that firefighters' work includes long periods of low activity followed by periods of high activity. Organizational factors such as work culture, work climate and leadership also affect the health and well-being of firefighters (Dallner et al., 2000). Moreover, psychosocial factors, both on the individual (as coping strategies) (Lazarus & Folkman, 1984) and situational level (degree of demands, control and social support in work) also affect health (Karasek, 1979).

This thesis focuses on full-time firefighters in Sweden, and the main interest has been their health and well-being. It has been of value to understand both how firefighters experience critical incidents in operational work and their on-going day-to-day work situation at the station. Additionally, the intention has been to explore how health-related outcomes, such as burnout, are affected by firefighters' work (Taris, Bakker, Schaufeli, Stoffelsen, & Van Dierendonck, 2005). Mental status among firefighters may adversely affect their services for victims and patients and consequently lead to a negative impact on work performance, including the ability to provide optimal levels of care to trauma survivors (Elmqvist, 2014; Kleim & Westphal, 2011; Wright & Cropanzano, 2000). Previous research regarding relationships between health and work among firefighters have not, as far as I know, considered the organizational culture and the meaning-making processes of all 'ordinary', day-to-day work at rescue stations. My point of departure - with health and well-being in focus - has motivated me to further explore resources within the firefighters' discourse that maintain and promote their health and well-being. This thesis also explores hindering components for health and well-being and seeks to include the wider sociocultural practice surrounding firefighting in the analysis.

The firefighter profession, like most other occupations, develops in relation to the surrounding society. In Sweden, each municipality is in charge of organizing the local rescue services, and the Swedish Civil Contingencies Agency (MSB) operates at a national level and has the overriding responsibility for risk and security work in firefighting. Seen from a societal perspective, firefighters have received a lot of attention during many years regarding how strongly gendered coded or biased the firefighter profession is. The assumption that firefighters are supposed to embody masculinity is part of what has been problematized (Ericson & Mellström, 2016). Increased gender equality and diversity within the workforce have been MSB's goal since the 1990s (Ericson, 2014; Ericson & Mellström, 2016; Olofsson, 2012). The gender studies perspectives and the explanatory models this research has offered have contributed important knowledge about the firefighter discourse, not least in Sweden. In this thesis, I use the term firefighter since it is the most commonly accepted term internationally for this profession, even though I am aware that the term is gendered in itself. The Swedish professional title 'brandman' is even more problematic seen from this perspective since it contains the gender-specific description 'man'.

On the cover of this thesis, you can see an illustration entitled 'Community' created by Albin Söderlind, an art student.

Background

In this background, I will present the research and theory that have guided my work. First, an overview of previous studies from different areas of relevance for the thesis is presented. The main features presented in research overview are '*Experience of health*', '*Promoting and maintaining health*', '*Prevalence of mental-ill-health and risk of having mental ill-health*' and '*Gender in firefighting*' due to the different starting points regarding health and ill-health in the respective studies in this thesis. Second, the theories, starting with health theories, followed by gender theories, and then a part of how the two can be linked together are described. Finally, the theoretical framework and the rationale for the study are presented.

Research overview

Health in general, as well as within the context of the workplace, is a complex phenomenon that can be explored from either a pathogenic or a salutogenic perspective. The pathogenic perspective focuses on risk factors and ill-health, while the salutogenic perspective focuses on experience of health and resources for promoting and maintaining health (Bauer, Davies & Pelikan, 2006).

Experience of health

The importance of focusing on experiences of health and factors that increase and maintain health, has been emphasized by World Health Organisation (WHO), (2004). Despite this, the dominant focus in research about health in relation to work is risk factors and shortcomings (Lindberg & Vingård, 2012). Additionally, Lawton (2003) observed in her review of 25 years of research that most of the published research about health and ill-health focuses on ill-health. Most studies about laypersons' perspectives on health were conducted in the 1970s and 1980s, and a few in the 1990s (Hughner & Kleine, 2004). Moreover, Lawton (2003) concluded that the concept of health and healthiness was more abstract than the concept of illness, and therefore illness has been more explored. Hughner & Kleine's (2004, p.407) review of published research concerning people's experiences and thoughts about health and its meaning and place in their on-going-day to-day-lives, includes both '*negative*' and '*positive*' beliefs regarding how to maintain health. The positive concept describes health in terms of equilibrium and people's ability to realize their goal. An example of a description of equilibrium is, '*happiness, relaxation, feeling strong and having good relations to others*' (p.407). These descriptions represent people's beliefs in what factors promote good health. On the other hand, people identified health as the absence of illness or the ability to carry out daily duties by avoiding illness, alternatively a state when they find themselves affected by uncontrollable factors

relating to genetic conditions (Hughner & Kleine's, 2004). Calnan (1987) terms this perspective a negative approach to health due to the focus on avoiding negative outcomes. Experience of health has also been described as a process of striving for balance between experiences of wellness and illness. The '*health experiences were not a state of either or not wellness or illness, but of both, in varying degree at different times*' (Wiiitavaara, Lundman, Barnekow-Bergkvist, & Brulin, 2007, p. 26).

Promoting and maintaining health

According to WHO (1986) health promotion is facilitated through supportive environments in society in general, and workplaces are also considered one important environment source for peoples' health. When focusing on promoting and maintaining health on an individual level, adequate coping strategies (Folkman & Lazarus, 1988) have been identified as protective factors increasing the likelihood of mental health. Coping is defined as the person's strategies for managing internal and external demands in perceived stressful situations. Coping has two widely recognized functions: problem-focused and emotion-focused. Problem-focused coping involves active strategies dealing with the problem causing the distress. Emotion-focused is passive and involves efforts to regulating stressful emotions without attempting to change the situation itself (Lazarus & Folkman, 1984). Furthermore, One of the most common theoretical models when studying the psychosocial environment meaning to maintaining health, is the Job Demand-Control Model (JDC) (Karasek, 1979). The key idea behind this job demands-control model is that control buffers the impact of job demands and can help enhance employees' job satisfaction (Johnson & Hall 1988; Karasek & Theorell 1990). However, Johnson and Hall (1988) pointed out that social support received from supervisors and colleagues, often buffered the impact of demands and control, and therefore they proposed to extend the JDC model with a social support dimension (JDCS).

Previous research about the experience and maintenance of health among firefighters is scarce. However, Haslam and Mallon (2003) identified individual coping mechanisms, such as exercise and concentration on health and nutrition among firefighters. Moreover, they found that most firefighters preferred to use partners for support, with some indicating that they did not want co-workers to know how they felt. On the other hand, others preferred to talk to co-workers because they did not want to burden their partners 'at home', or because co-workers who had been through the same or similar incidents had a greater understanding of the issues. Another study of firefighters (Varvel et al. 2007) described social support operating through feelings of safety and security, social integration, recognition by others, availability of assistance if needed, access to

advice and a sense of being needed by others as crucial for maintaining and promoting health.

Prevalence of mental ill-health and risk of having mental ill-health

In this thesis I use the concept of 'ill-health' instead of 'illness' due to its wider scope or broader meaning. Ill-health is often seen as a collective term for the concept trilogy of 'illness', 'disease', and 'sickness' (Wikman, Marklund, & Alexanderson, 2005, p. 450). When choosing between the concepts of 'illness' and 'ill-health' Nordenfelt (2013) argues for the use of ill-health due to the benefit of a more general state and also because it is distinguished from the particular 'illness' concept, for instance the diagnostic criteria of mental illness. However, according to a study including a large sample with more than 20,000 respondents from six different European countries, Alonso et al, (2004) reported that nearly 10% had experienced mental ill-health in the past 12 months. Major depression and specific phobia were the most common mental ill-health signs among the general population. Furthermore, Alonso et al (2004) highlighted differences according to gender and age. Among women, mental ill-health was almost twice as common as among men, and the highest rates of mental ill-health were found in the youngest age group. The Swedish Work Environment Authority (Arbetsmiljöverket, AMV, in Swedish) showed in a review that nearly half of the surveyed population (47%) had difficulty relaxing during their spare time and 36% had sleeping problems. Additionally, they found that psychosocial strain in the form of high demands and lack of resources was associated with lower workforce and increased the incidence of mental and physical ill-health (AMV, 2016).

Research about firefighters has to a large extent concentrated on Post-Traumatic Stress Disorder (PTSD), which is probably the most widely researched subject in relation to firefighters' mental ill-health (Cook & Mitchell, 2013; Corrigan et al., 2009; Del Ben, Scotti, Chen, & Fortson, 2006; Haslam & Mallon, 2003; North et al., 2002; Perrin et al., 2007). PTSD is one type of stress disorder that may be the result of exposure to traumatic events. One of the prerequisites for the diagnose PTSD according to the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (2013) is exposure to a traumatic incident in which the person was confronted with death or threatened death, or severe injury to herself/himself or others and experienced intense fear or helplessness. Alonso, et al., (2004) showed that the lifetime prevalence of PTSD was estimated at 6%, and 12-month prevalence of PTSD was estimated at 1% in a major European cooperation study of the general population. Berger et al. (2012) conducted a meta-analysis of epidemiologic studies on the prevalence of PTSD in rescue workers and showed that the pooled current worldwide prevalence of PTSD in rescue workers in general was 10%, and that was higher than the

reported 1.3 – 3.5% in the general population, based on results from a diverse set of countries. Moreover, according to Berger et al., (2012), studies of ambulance personnel showed a higher prevalence of PTSD than studies of firefighters and police officers. Studies have reported varying estimates of the prevalence of PTSD among firefighters from 12% to 22% (North et al., 2002, Perrin et al., 2007, Corrigan et al., 2009). Other studies have concentrated on specific groups of firefighters, and consequently the prevalence varied between 6.5% and 22% (Haslam and Mallon, 2003; Del Ben et al., 2006).

In contrast to the reported occurrence of PTSD among firefighters and as far as I have found, burnout is seldom in focus. The most frequently used definition of burnout was formulated by Maslach (1982). She initiated a description of burnout conceptualized as a syndrome primary related to work, described as a prolonged response to chronic stress at work, including emotional exhaustion (EE), depersonalization (DP) and reduced personal accomplishment (PA). (Maslach, 1982, 2001). These three dimensions are included in the Maslach Burnout Inventory (MBI). The prevalence of burnout differs between working populations and between countries, also due to differences in study design (Schutte, Toppinen, Kalimo, & Schaufeli, 2000). In Netherlands in the 1990s, prevalence of burnout ranges from 7% to 13% when measured with MBI (Schaufeli & Enzmann, 1998). In Finland, an investigation reported burnout prevalence of 2.4% (Ahola et al, 2006). In general populations in Sweden, the prevalence varied between 13% and 17.9% (Lindblom, Linton, Fedeli, & Bryngelsson, 2006; Magnusson Hanson, Theorell, Oxenstierna, Hyde, & Westerlund, 2008; Norlund et al., 2010). In occupations similar to firefighters, the prevalence of burnout was measured at 8.6% among ambulance personnel in The Netherlands (Van Der Ploeg & Kleber, 2003). In a study from Scotland, Sterud et al. (2006) reported that 26% and 22% of ambulance personnel had high scores on the MBI subscales of emotional exhaustion (EE) and depersonalization (DP) respectively. Among Swedish police personnel, high scores were reported for both EE (28% of personnel) and DP (56% of personnel), (Backteman-Erlanson, Padyab, & Brulin, 2012).

According to Taris et al. (2005) job control affects the risk of burnout. The link between the degree of job control and the occurrence of burnout was also described earlier by Lee and Ashforth (1996). Norlund et al., (2010) reports that increased burnout levels are associated with demands at work and that burnout levels decrease with age. However, whether and how age affects burnout has been discussed in different studies. Some have found decreasing burnout with increasing age (Lindert, Müller-Nordhorn, & Soares, 2009; Maslach, Schaufeli, & Leiter, 2001; Soares, Grossi, & Sundin, 2007) while others have found increasing burnout related to increase in age (Ahola et al., 2006; Lindblom et al., 2006). Differences in prevalence of burnout regarding women and men have been shown in several studies. Norlund et al., (2010) reported significantly higher levels of

burnout among women than men. Kumar and Mellsoy (2013) found that women were more vulnerable to experience burnout, especially emotional exhaustion (EE), than men. According to Schabracq, Winnburst, Cooper & Wiley (2003) men seem to show higher levels of DP. According to Schaufeli and Enzmann, (1998) the prevalence of burnout is higher among personnel working in occupations requiring close relations with other people. In a police sample in Sweden, Backteman-Erlanson, et al., (2012) reported that high levels of stress of conscience and high job demand were a risk factor for EE for both women and men; organizational climate was also a risk for EE among women but not among men in the sample. Instead, lack of job control was a risk for EE among men but not among women.

Gender in firefighting

In recent years, the firefighter profession has been the subject of extensive attention and in focus for many researchers influenced by gender and masculinities studies (Baigent, 2001, Chetkovich, 2004, Ericson & Mellström, 2016, Ericson, 2011, Häyren Weinestål, Berg, & Bondestam, 2014, Olofsson, 2012). Ericson and Mellström (2016) explain the particular interest given to firefighters as relating to their organization being one of the last remaining almost exclusively male-dominated environments in working life. For example, Ericson (2011) shows how the absence of women in the rescue services is intimately linked with a male community that also constructs a specific type of complex masculinity. Ericson's studies are developed partly from Lipman-Blumens (1976, p. 16) where the concept of homosociality is defined '*as the seeking, enjoyment, and/or preference for the company of the same sex.*' This homosociality also includes a care rationality among the firefighters that can lead to deep friendship - referred to as bromance by Häyren Weinestål, et al. (2014). The term bromance defines the deepest brotherhood between men, which included a particular kind of intimacy and emotionalism based on deep and close friendships - which are exclusive to men. Baigent (2001) a sociologist and firefighter, describes the firefighter's work as extreme masculinized to the extent that effective rescue and extinguishing work is equated with the performance of masculinity. The specific masculinity found in the firefighter's field in terms of hard-core masculinities is discussed and mentioned as '*forms of masculinity that have resisted gendered change and reform, and cling to traditional patriarchal core values in social communities that exclude women*' (Ericson & Mellström, 2016, p. 2). A similar pattern was previously observed by Chetkovich (2004), who examined recruitment, reception and inclusion of new firefighters in the United States, showing that the profession as a firefighter has been practiced by mostly white and exclusively male participants. In summary, the masculinity constructions have proved to be of great importance for the understanding of the firefighter

discourse. Based on this, I describe gender and masculinity theories further in the following theoretical part.

Theories

In this part I describe theories important for this thesis. Initially, theories in *Health and Ill-health* and *Gender* were important. In order to explore and further understand the results in Studies I and II, *critical discourse analysis* has been incorporated into the thesis (in Study III and IV).

Health and ill-health

Health has historically been a subject of philosophical reflection and scientific study. Whatever is contained in a philosophical or scientific concept of health is closely related to human beings, epistemology and ontology and other values that are considered important in society (Eriksson, 1991). The central issue here is therefore how to define health. In my opinion, health is not something given without taking cultural or discursive into consideration. According to Brülde (1998), health is related to the context in which the term is used. The WHO (1998) defines health as '*a resource for everyday life, not the objective of living. Health is a positive concept emphasizing social and personal resources, as well as physical activities*' (p. 1). This definition assumes a holistic approach to physical, mental and social factors in interaction at the same time. Common to this salutogenic perspectives is the relationship between health and ill-health not considered as a dichotomy. Instead, in an ongoing process, health is constantly created and maintained (Medin & Alexanderson, 2000). This theoretical approach takes its starting point in what preserves and develops human health, and often regards health as the presence of something positive, such as well-being (WHO 1948; WHO, 1986), quality of life (Nordenfelt, 1987; Nordenfelt, 1991), a balance between internal and external factors (Pörn 1995) or sense of coherence (SOC), (Antonovsky, 1996).

This thesis is based on a social humanistic perspective of health and ill-health, affirming the dignity and worthiness of all people and emphasizes that all humans should have the possibility of influencing their own lives in relation to the context. Furthermore, health and ill-health can be understood as the individual's physical, mental and emotional experiences rather than just the presence or absence of disease (Eriksson, 1996). According to Gadamer (1996), health and ill-health cannot be characterized as a single product or a static condition, even though researchers often investigate health status or symptoms of ill-health at a specific point in time. Accordingly, there are differences in opinions about how to study health and ill-health, depending on the scientific perspective. In this thesis, we found it useful to investigate burnout at a specific point of time in Study II.

Additionally, this thesis' interdisciplinary approach enabled us to shift perspective to examine promoting and hindering aspects of health and well-being in context (Studies III and IV). Gadamer (1996) defines well-being as a feeling of completeness, a condition of being involved – being in the world with active and rewarding engagement in everyday tasks. Mental health is defined by the WHO (2001) as *'...a state of mental and psychological well-being in which every individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community'* (p.1). Mental health is thus determined by a range of socioeconomic, biological and environmental factors. In this thesis, the point of departure is that health and well-being are related to a high degree to the individual's prerequisites, context and psychosocial factors such as social relations, work conditions and cultural norms.

Gender

As stated in the research overview above, the masculine connotations of the firefighter profession are strong. Ericson (2011) argues that this exceptionalism is constructed in the firefighter profession as an important aspect of how hegemonic masculinity is produced and reproduced in this profession. Hegemonic masculinity as a concept was coined in 1985 by Carrigan, Connell, and Lee (1985) and further developed by Connell (1987) and Connell and Messerschmidt, (2005). Views of masculinity constructions were presented as an alternative to gender role theories because they lacked a power dimension. Masculinity is problematized in relation to masculinity constructions. To be a man is relationally to be not-female and vice-versa. Hence, a central role in masculinity construction is to position itself towards and sometimes even against femininities. However, the concept of masculinities goes beyond dichotomous sex differences and refers to diversity and complexity between men and forms of masculine identity across situations and contexts. Gender is therefore best understood as a dynamic, social structure in which power relations between men and women are important (Connell, 2009; Connell, 1995).

Connell (1987) and Connell and Messerschmidt, (2005) considered hegemonic masculinity to be a useful analytical tool when exploring gender and power relations. Within the framework of a gender system based on subordination of women and marginalization of homosexuals, gender segregation processes could thus be analysed as part of the masculinity construction based on asymmetric power relationships in the gender order. The social identity process described by the term 'hegemonic masculinity' is a tool for answering the question of how gender or masculinity is constituted in a given context. The social definition of masculinity is embedded in the dynamics of institutions referring to Connell's (1987) concept of 'gender regimes', which can be family, school or workplace.

Connell (2009; 1995) claims that we cannot speak of masculinity but that the concept of masculinities is more descriptive; men and women in various contexts may construct a variety of masculinities. This is one of the important conclusions in Courtenay's (2000) study about masculinities and their influence on men's health and well-being. According to Courtenay (2000) masculinities are social constructions based inter alia on power relations, ethnicity, sexuality, class and nationality; therefore, the masculinity project is multiplied and diversified.

Hegemonic masculinity has often been associated with various heroic positions (Connell, 1987). According to McLaughlin and Beggan (2007), heroism has special conditions that must be fulfilled, where inclusion in hegemonic masculinity is central. Heroism is embodied with typical traits associated with masculinity, such as physical strength, intelligence and bravery. Holt and Thompson (2004, p. 428) have formulated a '*Man-of-Action Hero*' model, where caring is considered to be a component of a masculinity construction. They describe the concept of caring as a way of defining the hero, where an important part of heroism consists of helping and caring for others. However, according to Holt and Thompson (2004), their model allows a theoretical approach where caring can be regarded as part of masculinity construction. The importance of providing care becomes particularly clear in organizations such as rescue service that focus on creating and maintaining social security is a part of firefighters' masculinity construction (Häyrén Weinstäl, Bondestam, & Berg, 2011). The caring rationality can also be adapted in a homosocial order that has occurred in the firefighter profession, where they take care of each other. Male homosociality and the context have been used in research as an explanation of how power is distributed and how inclusion in a context remains quantitatively and qualitatively male (Häyrén Weinstäl, et al., 2014).

Health and gender

Women and men are exposed to different health hazards, which can be explained partly by different contexts due to gender segregation of work and the different gender expectations that women and men face in their daily life (Danielsson & Lindberg, 2001). Thus, social context needs to be incorporated into the understanding of why some people are affected by ill-health while others stay healthy (Kawachi & Berkman, 2000). Some literature points towards biological sex differences in health and ill-health. These biological health outcomes occur in a pattern of gendered social interactions, namely expectations of how men and women should behave, and in practices that treat men and women of various ages, ethnicities and social classes differently (Doyal, 2001; Lorber & Moore, 2002). In addition to awareness of sex differences in health, Doyal (2001) has highlighted the complex links between biological sex, social gender and health. The differences in the health outcomes of women and men are oversimplified,

when there are major differences between different groups of women and different groups of men (Doyal, 2001). To understand men's health and in this Thesis firefighters' health in particular, there are two main tracks in the literature. One is the traditional study of inequalities in health and another is the growing research field of men's health arising from the study of men and masculinities (Lohan, 2007; Robertson, 2007). The concept; 'Critical studies on men's health' is the study of the gendered nature of men's lives that emerges primarily from within feminism (Kimmel, Hearn, & Connell, 2005). The 'critical' in Critical studies on men health is about prioritising power in gender relations. This is what Hearn (2004) describes as not just an interest in hegemonic masculinities but rather in the 'hegemony of men'; in other words, men's position of power in relation to women in society. Critical studies of men's health acknowledge that while power within and between gender relations may be complex, inconstant and contradictory, it is important not to ignore the asymmetrical relationship between men and women and between masculinities and femininities in western societies when studying health outcomes (Lohan, 2007). A contextual approach that includes aspects of gender equality can therefore add new perspectives and make patterns of gender at workplace visible to enable a more complete understanding of health among firefighters. Courtenay (2000) has argued the need to link theories of different masculinity constructions and health, for the understanding of the resources and hinders that a specific masculinity construction has on health.

Theoretical framework

This thesis is anchored in the tradition of nursing science and is also related to other fields of knowledge. The nursing sciences are inspired by various philosophies and embraces epistemological pluralism (Eriksson, 1996; Morse, Solberg, Neander, Bottorff & Johnson, 1990; Paley, 2001; Watson & Smith, 2002), but dominant paradigms are naturalism and humanism. Naturalism is associated with the philosophical belief that everything arises from natural properties and causes. In nursing, humanistic philosophy affirms the dignity and worthiness of all people (Eriksson, 1996). The discourse analytical perspective embraces interdisciplinary approaches, which makes it possible to combine perspectives (Fairclough, 1997). The field of critical discourse analysis (CDA), informed by a long tradition of critical theory, has guided the main part and especially the latter part of my work (Egan Sjölander & Gunnarsson Payne, 2011; Jørgensen & Phillips, 2002).

The rich and diverse tradition of CDA, which has significantly grown in size in the last few decades, is largely rooted within critical studies in social sciences and the humanities (Chouliaraki & Fairclough, 2010). The theoretical basis of CDA derives to a large extent from critical social theory and the work of Foucault,

Bourdieu, Habermas, Gramsci, Giddens, Laclau and Mouffe and the Frankfurt school (Blommaert & Bulcaen, 2000; Threadgold, 2013). These different scholars have influenced how power has been conceptualized within CDA research. Their views have also mattered a lot for the way that discourses, this vital '*instrument in the social construction of reality*', functions both as constitutive of, and as constituted by, social practices (Jørgensen & Phillips, 2002, p. 91). Van Dijk, Wodak and Fairclough are an instrumental trio of researchers who have been vital for CDA's establishment and are still the main representatives in many ways. With roots in linguistics, Fairclough and Wodak (1997) define discourse as language use in speech and writing, and as a form of social practice. This definition explains the strong focus on different kinds of text analyses in their research. They also highlight the dialectal dimension, namely that discourses (or discursive events) are socially constitutive of, as well as shaped by the specific context of a situation, including its institutions and social structures at work.

CDA offers not only a theoretical viewpoint, but also a methodological approach that is integrated with this, including tools for examination of how discourses are formed in text at a micro level. Fairclough's approach to CDA links textual and sociological analysis in a way that foregrounds issues of power, resistance and identity, an approach that fits well with the intentions of this study. In this thesis, the language and practices of firefighting, embedded in wider sociocultural practice, are studied in parallel in order to understand how they shape and limit health and well-being among firefighters. CDA further aims to make power relations and dominant structures in discourses as transparent as possible, which in turn is a way of influencing and changing them.

Fairclough (1995; 2003) describes three aspects that need to be considered and examined when engaging in this kind of analysis. The first one concerns the details of a concrete text, the second one is the context within which a specific text is produced and consumed or received, and the third one relates to surrounding sociocultural practice, in other words the societal and structural dimension at work in a given text. Applied to the firefighter discourse and this thesis, it means that language use about health at work among firefighters, and discussions about their well-being, constitute prime texts to be analysed in a systematic manner and at different levels (Fairclough, 1992; Fairclough, 1995; Fairclough, 2003). The detailed textual analysis needs to be conducted in conjunction with an analysis of discursive practices for its production and consumption, as well as the wider sociocultural practices that gives it meaning. Rescue stations are the main discursive practices that are studied here.

Critical discourse analysis has been increasingly used in recent years in order to analyse health-related discourses. Annandale and Hammarström's (2011) critical discourse analysis of publications in the field of gender-specific medicine is one

example. Lupton (1992) argues that discourse analysis is relevant to the concerns of public health, because it has the potential to make visible the ideological dimension of phenomena such as health beliefs and the dissemination of health-promoting information in official texts (such as government health policy documents). Several studies have also utilized discourse analysis in nursing research (Crowe, 2005; Sandvide, 2008; Traynor, 2006). Smith (2007) emphasizes the value of CDA for research in medicine or health care, in that it relates to the ability to examine the way that language functions in order to shape the perceptions of health and health issues (including the surrounding context). CDA has further proven to be a valuable tool for tracing both policy discourses and the ways in which identities are constructed within and through discourses (Jørgensen & Phillips, 2002). CDA also contributes to understanding of struggles over identity by describing how social groups are represented and how they relate to each other (Chouliaraki & Fairclough, 2010). Smith (2007) showed how a critical discourse analysis of a particular nursing-related policy problem can be carried out by highlighting the struggle for particular nurses to be or not to be. According to this theoretical backdrop with the basis assumption from CDA and masculinity constructions perspective, this thesis has enabled us to identify and critically examine the dominant discursive constructions in relation to work, health and masculinity that shape the formation of firefighters' everyday health practice.

Rationale

Firefighters and other first responders are exposed to traumatic, stressful events and critical incidents as part of their responsibility to save lives and property. Previous research about firefighters' health in relation to their work tends to concentrate on the consequences of work-related stress, including physical and psychological hazards often associated with critical events. As mentioned earlier, PTSD is perhaps the most widely researched subject in relation to firefighters. There has been less research regarding mental health and well-being in relation to the day-to-day work of firefighters in relation to their work environment. This thesis supports the assumption that it is important that firefighters' mental health and well-being are stable in order to cope with the stress that the profession implies. It is well known that mental well-being is significantly associated with work-related performance. A growing international field of research on the rescue service has extensively problematized firefighters' resistance to change, especially gender equality work. As health is an important part of everyday life, it seems important to understand how an almost exclusively male workforce of firefighters constructs their discourse in relation to their health and well-being. Since the firefighter discourse, in particular the masculinity construction, has been shown to be important in many areas of their work, we assume it should also affect their health and well-being.

Aim

The overall purpose of this thesis is to explore health and ill-health among firefighters in relation to their work environment, including coping strategies, critical incidents and 'ordinary' day-to-day work at the rescue service station.

The specific aims of the studies are:

1. To describe experiences of critical incidents among female and male Swedish firefighters.
2. To examine the gender-stratified relationship between psychosocial work environment and burnout, when considering the moderating effect of coping strategies, among female and male Swedish firefighters.
3. To identify and discuss dominant and recurrent themes in the firefighter discourse that promote and hinder health and well-being among firefighters.
4. To analyse firefighters' reluctance to change and resistance to new policies and organizational changes in the firefighter discourse, more specifically regarding diversity, preventive work and education. The intention is also to discuss its implications in terms of firefighters' health and well-being at work.

Methods

Initially, this thesis was part of a project entitled Nordic Safety and Security (NSS), funded by the European Union Regional Development Fund (NSS, Reg. no. 41 952). NSS was a multidisciplinary research project involving Umeå University, the Västerbotten County Council, Luleå University of Technology and the Swedish Defence Research Agency. The overall aim was to develop collaboration in crisis management research, as well as education programmes for firefighters, emergency nurses and police officers. The focus of this thesis was to explore firefighter's health and well-being at work using a mix of methods.

Research design

Both qualitative and quantitative methods have been used in order to increase the understanding of health and ill-health among firefighters in relation to work, including coping strategies, critical incidents and 'ordinary' day-to-day work at the fire station. The first study had a qualitative approach based on data collected from one open question in a survey of Swedish firefighters. The same survey also formed the basis for Study II, which had a quantitative approach, using questionnaires consisting of previously validated instruments measuring burnout and psychosocial work environment, as well as coping strategies. For subsequent studies, the research questions was dealt with answered using critical discourse analysis (CDA), empirically based on focus group discussions (FGD) and individual interviews with firefighters working in Sweden. In addition, a smaller strategic sample of policy documents was analysed. An overview of the participants and study designs is presented in Table 1.

Table 1. Overview of Studies I-IV

Study	Time for data collection	Data analysis	Participants/Material	Data collection
I	2010-2011	Qualitative content analysis	Firefighters in emergency positions (full-time) n=180 (women=16)	An open question in a survey
II	2010-2011	t-test, Hierarchical multiple regression	Firefighters in emergency positions (full-time) n=476 (women=58)	MBI, JDCS, QPS ^{Nordic} , WOCQ
III	2016	Critical Discourse Analysis (CDA) with qualitative text analysis	Firefighters in emergency positions (full-time) Focus groups discussions n=3 (individuals n=33 (women=4)) Individual Interviews n=3 (women=2)	Focus group discussions and individual interviews
IV	2016	Critical Discourse Analysis (CDA) with qualitative text analysis Bacchi's policy analysis	Firefighters in emergency positions (full-time) Focus group discussions n=3 (individuals n=25 (women=2)) Individual Interviews n=3 (women=2) Policy documents n=6	Focus group discussions and individual interviews Policy documents

Setting

The Swedish Civil Contingencies Agency (MSB) has overall responsibility for organizing the nation's rescue sector and for developing both individuals' and society's ability to prevent and deal with emergencies and crises. MSB (2009) does so in cooperation with municipalities, county councils, government agencies, companies and other organizations. On a local level, the municipalities are in charge of organizing the rescue service, usually in collaboration with other principal functions in society with operative responsibilities, not only within, but also across, municipal borders. Firefighters in emergency positions are divided into full-time employees and another group working voluntarily and part-time. Full-time firefighters often have two years of post-secondary training. In 2010 in Sweden (MSB, 2010) about 2.4 % of full-time firefighters were women, and 5 years later about 3.9% were women (MSB, 2015a). Firefighters from ethnic minority groups are too few to be measurable in percentages according to the same statistical report. Within the firefighter organization, there are also some other specialist competencies, including rescue leaders, fire engineers and firefighters working exclusively with preventive work. In this thesis, the participants were solely working full-time as firefighters in emergency positions, including one or two in rescue leader positions in each focus group discussion.

Participants and material

Participants for *Study I* and *Study II* were based on a stratified random sample from all 290 municipalities in Sweden. The addresses arrived mainly from two trade union records and were also manually collected from two municipalities that were not represented in the union member register. When data collection started, 15 803 (410 women and 15 393 men) were employed as firefighters in emergency positions. A total of 4 980 were full-time employees (60 women and 4 920 men) (MSB, 2007). A power analysis with 80% power and a confidence level of 0.05 proposed inclusion of 800 firefighters from the group of men and all of the women. Due to the expected number of dropouts, the ambition was to include 1,000 male firefighters and all females (n=60). However, the available registers limited the number to 60 women and 882 men. Changed employment and unknown addresses resulted in 198 participants were excluded and the final invitation sent out to participants in the study included 744 firefighters (59 women and 685 men). After four reminders (data collecting ended in June 2011), the response rate was, 51% (n=476) in total, 97% for women (n= 58) and 47% for men (n=418). These participants are the basis for quantitative Study II. Participants in Study I included those who answered the open question in the questionnaire used. A total of 180 firefighters (16 women and 164 men) answered the question. A flowchart for the total data collection is illustrated in Figure 1.

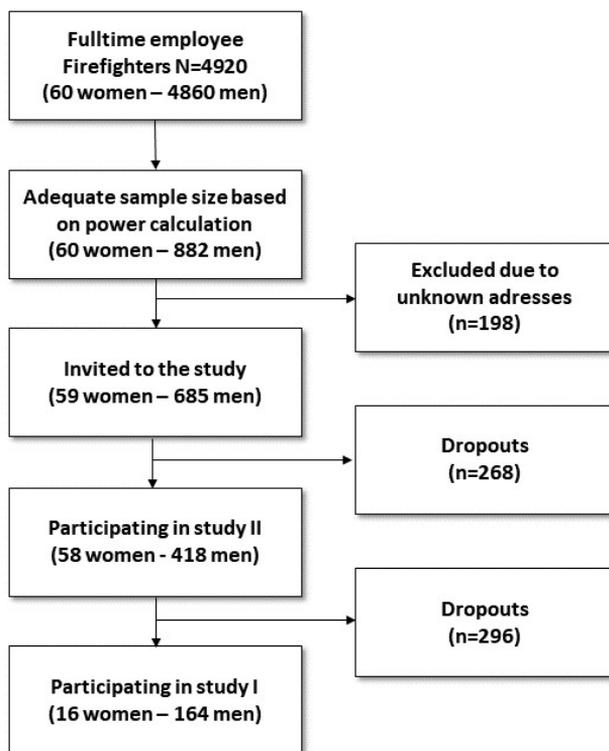


Figure 1. Flow chart of inclusion process for participating in Study I and Study II.

In *Study III* and *Study IV*, data were collected from different rescue service stations around Sweden, chosen to represent various parts of the country, as well as rescue services of various sizes and organizations. The inclusion criteria were being responsible in emergency positions in operative duty as a full-time employee. All firefighters were informed by letter about the study and invited to participate. Participants from all three invited rescue services showed interest in participating in FGD or in the individual interviews. For the individual interviews, a convenience sample was performed with the intention of including women in the individual interviews, due to the numerical minority of women both in the overall firefighter population, Sweden and in performed FGD. One participant in an individual interview had to leave because of an emergency alarm and therefore participated in a telephone interview later on. All firefighters invited chose to participate, both in the FGD and in the individual interviews. A total of 25 firefighters (2 women and 23 men) agreed to participate, divided in 3 Focus groups. In the individual interviews, 3 firefighters (2 women and 1 men) participated. Data collection was performed on six occasions during 2016.

The policy documents analysed in Study IV represent the written materials available as legislation and other policy initiatives at various levels. The levels are the Swedish Government, MSB (national level) and Municipalities strategically chosen to link to hindrance themes from the FGD and individual interviews. More specifically, the hindrance themes are *Diversity*, *Preventive work* and *Education*. A total of 6 separate documents were included, as follow; a) the *Swedish Accidents Protection Act* (SFS, 2003:778), b) *Action Program for Increased Gender Equality and Diversity in the Rescue Service* (Axelsson, 2009), c) *Program for Fire, Rescue and Safety Education* (MSB, 2016), d) *Governing document for Rescue Service I*, e) *Governing document for Rescue Service II*, f) *Governing document for Rescue Service III*. (Figure 2).

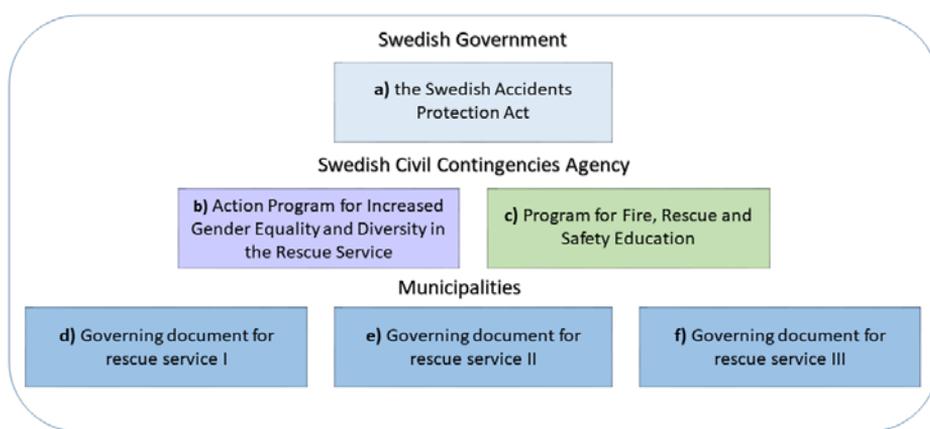


Figure 2. Model of policy initiatives and legislation at different levels in the firefighter discourse.

Data collections and procedures

Data collection for *Study I* is the answer to a two-in-one question in a larger survey. In the overall study, the participants were asked to complete a set of well-evaluated scales, consisting of established and tested instruments regarding burnout and psychosocial work environment. For the purpose of Study I, we included one open question asking participants to describe in detail critical incidents experienced during the previous year. The question had two parts. 1) How many times during the past year have you experienced situations in your profession that you characterize as critical incidents? 2) Could you please describe such situations? All the answers were later translated to English.

The questionnaire in *Study II* included and analysed questions on demographic characteristics, such as sex (woman/man), age and marital status (living alone or married/living together). In the survey, questions about children living at home, type of duty, employment status, and lifestyle characteristics (such as physical exercise, drinking, and smoking habits) were also included. Furthermore, data

from the Maslach Burnout Inventory (MBI), General Nordic Questionnaire for Psychological and Social Factors at Work (QPS_{Nordic}), and Karasek and Theorell's Job Demand-Control-Social Support Model (JDCS) were included. For assessing coping, the Ways of Coping Questionnaire (WOCQ) instrument was used. Questions about physical symptoms, such as headache, digestive problems and sleeping disturbances, were also included in the questionnaire. A letter including the questionnaire, information and an informed consent form about agreement to participate were sent to the participants at their home addresses and for two rescue service stations through their work. Included instruments are described in the following paragraphs.

Maslach Burnout Inventory (MBI) was used for measuring burnout (Maslach, Jackson, & Leiter; 1996). The Swedish version of the MBI was used, which was translated and validated by Hallsten (1985). The original MBI consists of three subscales: emotional exhaustion (EE), depersonalization (DP) and personal accomplishment (PA). Burnout is increasingly regarded as consisting of only two subscales, EE and DP, instead of the three subscales of burnout that included PA (Bakker, et al, 2004; Maslach & Schaufeli, 2001). In this investigation, we used only EE and DP. A Likert scale ranging from 'never' (1) to 'every day' (7) was used for both subscales. A total score was used for each subscale, giving an EE score ranging from 9.0 to 63.0 and a DP score ranging from 5.0 to 35.0. The MBI instrument has been tested for validity and reliability, and Cronbach's alpha (α) for each scale was: EE = 0.90, DP = 0.79 and PA = 0.71 (Maslach et al., 1996). The MBI instrument has also been used with similar Cronbach's α in: Glasberg, Eriksson & Norberg (2007) used EE = 0.90, DP = 0.69, and PA = 0.80; and Åhlin, Ericson-Lidman, Norberg, and Strandberg (2015) used EE = 0.90, DP = 0.90. From another blue light occupation, a police context Cronbach's α was reported: EE = 0.85 and DP = 0.74 (Backteman-Erlanson et al., 2012). In our study, the corresponding values for Cronbach's α were 0.78 for EE and 0.60 for DP.

The General Nordic Questionnaire for Psychological and Social Factors at Work (QPS_{Nordic}) was developed by researchers affiliated with the National Institute for Working Life in a Nordic context to measure psychological and social factors in the work environment (Dallner et al., 2000). The instrument shows good psychometric properties for assessing psychological and social factors at work (Wännström, Peterson, Asberg, Nygren, & Gustavsson, 2009). QPS Nordic consists of three modules: task module, organizational module and individual module, and further divided into 26 subscales with 118 items all in all. Each of these modules can be regarded as a separate subscale (Dallner et al., 2000). In this study, only items from the organizational module were used, such as the organizational culture subscale (six items), the organizational climate subscale (five items) and the empowering and fair leadership subscale (eight items). For each item, rating scales varied between 1 ('very seldom') and 5 ('very often or

always'). To provide an overall index score, mean scores were calculated for each subscale based on the items, given a range from 1.0 – 5.0. Low scores were considered a positive 'good climate', while high scores were considered a negative 'bad climate'. Likewise for organizational culture and leadership, low scores were considered as positive and high scores were considered as negative. Internal consistency has been measured using Cronbach's α and varied from 0.68 to 0.86 for the three scales (Wännström et al., 2009). For corresponding values in a Swedish police officer's sample (n=856), Cronbach's α varied from 0.71 to 0.78 (Backteman-Erlanson, et al 2012). In our study, Cronbach's α varied between 0.65 and 0.86, which seems consistent with studies above.

The Job Demand-Control-Social Support Model (JDCS) measures psychological demand (five items), control (six items) and social support (six items) (Johnson & Hall, 1988; Karasek & Theorell, 1990). Karasek (1979) identified job demands and job control as essential job characteristics influencing well-being. In the following years, social support was integrated into the model as a further characteristic of the work environment, (JDCS), (Johnson & Hall, 1988; Johnson, Hall, & Theorell, 1989). Items on demand and control vs social support were responded to on a four-point scale from 1 ('often') to 4 ('never') vs from 'agree completely' (1) to 'do not agree at all' (4). Based on the items within respective subscales, mean scores were calculated, given a range from 1.0 to 4.0. Low values were considered positive and high values negative. The JDCS is often used by researchers in occupational health (Lindeberg et al., 2010; Staland-Nyman, Alexanderson, & Hensing, 2008) and is also used in studies among ambulance personnel (Aasa, Brulin, Ängqvist, & Barnekow-Bergkvist, 2005) and police personnel (Backteman-Erlanson et al 2012). The JDCS has been tested for internal consistency with Cronbach's α for job demand 0.78, for job control 0.70 and for social support 0.93 (Adriaenssens, De Gucht, Van Der Doef, & Maes, 2011). In this Study, Cronbach's α was 0.61 for job demand, 0.43 for job control and 0.81 for social support.

The Ways of Coping Questionnaire (WOCQ) was constructed and revised by Folkman and Lazarus (1988). In this study, a 40-item version of the WOCQ was used, translated to Swedish (Padyab, Backteman-Erlanson, & Brulin, 2016). Participants were asked to reflect upon how they would manage a specific challenging situation, formulated as follows: '*Last week I was the first person arriving to a car accident. One child was bleeding a lot from the intestines.*' The participant then responded to questions by estimating the extent to which this particular coping strategy was used. The items are scored on a four-point Likert scale from 0 to 3; 0 = does not apply and or not used; 1 = used somewhat; 2 = used quite a bit; 3 = used a great deal. Raw scores for each subscale were calculated in order to get a total score on each subscale, and high numbers on each subscale indicated that the respondent often engaged in the behaviour

described by that subscale (Folkman & Lazarus, 1988). The 40-item version consisted of a six-factor solution representing emotion-focused and a set of problem-focused subscales. The emotion-focused subscales were: Psychological Distancing (PDi) with 17 items (sample item: “ I waited to see what would happen before doing anything, Wishful Thinking (WTh) with 4 items (sample item: “ wished that I could change what had happened or how I felt”, and the problem-focused subscales: Planful Problem Solving (PPS) with 9 items (sample item: “ came up with a couple of different solutions to the problem”, Confrontive Coping, with 3 items (sample item: “I let my feelings out somehow”, Self-Control (SCo), with 3 items (sample item: “I told myself things that helped me feel better” and Positive Reappraisal (PRe) with 4 items (sample item: “ rediscovered what is important in life”. The 40-item version of the WOCQ has been used and tested in a Swedish context with a Cronbach’s α showed satisfactory levels from 0.63 to 0.89 on all subscales, except for the subscales of confrontive coping 0.59 and self-control 0.47 (Padyab et al., 2016). Cronbach’s α in this study varied between 0.55 and 0.84.

Focus group discussions and individual interviews with firefighters were performed simultaneously for *Study III* and *Study IV*. Additionally, for *Study IV*, a strategic sample of policy documents was included in the empirical material. Both the FGD and individual interviews were semi-structured and focused on the topic of health and well-being, especially firefighters’ experiences of health promotion in their profession. The FGD were facilitated and coordinated by a moderator (AJ) and an observer/secretary (CB or SB). The location for the FGD was decided in agreement with the participants and the FGD was performed in a room at each rescue service station. Similar questions about health promotion were used in all FGD and interviews (Appendix A) but it was important to also take into account the interaction that occurred within the group setting (Morgan, 1996). The questions were pre-tested on people who were not involved in the research project to ensure that the questions were comprehensible and not biased towards a specific response. The moderator of FGD strived for conversations between participants – not between participants and the moderator – by minimizing the speaking time for the moderator. Initially, in order to establish a safe conversation climate, the importance of confidentiality was emphasized. The three individual interviews started with initial questions to open up topics and facilitate participants’ narrations (Riessman, 2008). Thereafter, the interviewee was asked to narrate and reflect upon work situations, including health promotion. Two of the individual interviews were conducted by phone and one in a room at the participant’s current workplace. Total data collection was performed on six occasions (three FGD and three individual interviews) during 2016 and they were taped and lasted for 75 to 97 minutes, for a total length of 8 hours and 58 minutes.

After identifying themes articulated in the FGD as promoting or hindering health and well-being in the firefighters' discourse (Study III), the next step (for Study IV) was to collect and analyse relevant policy initiatives or directives that related to the most common health hindrance in the working environment that firefighters mentioned in the FGD. These policies form part of the wider context or surrounding sociocultural practice that the discursive practice at each fire station is influenced by; hence the importance of studying them. Identifying which documents to include in the analysis has been a comprehensive analytical exercise in itself. Starting in the present and delving gradually into the past has entailed reading and looking at a variety of official policy texts about the rescue service in Sweden, particularly documents regarding firefighting, such as strategy plans, action programmes, development reports/circulars, steering documents, official Swedish contingency reports and legislative text. The policy documents that were finally selected for closer analysis in Study IV represent a strategic sample of written materials that can be linked to the themes highlighted in the interviews with firefighters and that we deemed important within the organization and firefighter discourse, such as legislation (SFS, 2003:778) or comprehensive policy initiatives by MSB (Axelsson, 2009).

First, regarding *gender equality and diversity* as health hindrance, we started our search at MSB's website since the authority has worked a long time with these issues in relation to firefighters' work environment and consequently initiated a series of policy initiatives and projects dealing with gender equality and diversity in the nation's rescue service. On the MSB's website, the authority also highlights this work and describes it in a document entitled 'About MSB's work of equality and diversity in municipal rescue services' (2015b). This website provides an overview of the diversity work directed towards the rescue stations and firefighters in Sweden, and additionally guides us further into the action programme that is the most comprehensive current *diversity* programme produced by MSB; b) *Action Program for Increased Gender Equality and Diversity in the Rescue Service* (Axelsson, 2009), which was issued in 2009 with a time frame of five years. The Action Programme has been the subject of our analysis.

When it comes to the second theme of health hindrance in the firefighter discourse, namely, regarding *preventive work*, the governing document for each of the three rescue services studied has been chosen for closer analysis since they most clearly address and steer the issue of preventive work (versus emergency operations) in the organization. The *Governing document for rescue service I* (e), *II* (f) and *III* (g) were found at the respective municipality website for each rescue service station.

Third, regarding the *education* theme, the selected policy document that we have included in the sample is the steering document entitled, c) '*Program for Fire, Rescue and Safety Education*' (MSB, 2016), which includes intentions, descriptions of content and expectations for the new revised educational programme for firefighters that MSB has been running since 2013. The same programme constitutes the main of object for critique from firefighters.

Lastly but not least, the principal Swedish legislation that governs all work within the nation's rescue service has been included in the analysed sample because it is evident when analysing the Swedish firefighter discourse that the, a) *Swedish Accidents Protection Act* (SFS, 2003:778) influences both the balance between preventive and emergency work at fire stations and what the renewed education of firefighters should look like.

Data analysis

In Study I, a qualitative content analysis inspired by the method description of Graneheim and Lundman, (2004) was used. The potential of content analysis as a method of qualitative analysis for health researchers has been recognized, leading to its increased application and popularity (Graneheim, Lindgren, & Lundman, 2017). Qualitative content analysis goes beyond merely counting words to examining language intensely for the purpose of classifying large amounts of text into a manageable number of categories that represent similar meanings (Weber, 1990). Qualitative content analysis focuses on finding similarities and differences in the specific text. Gender aspects were taken into consideration throughout the analysis process. Initially, when thoroughly reading the text it was divided into two domains based on women's respective men's statements. Thereafter, the analysis was performed in different steps: first, reading the whole text to gain a sense of the material; second, readings of the text several times and marking 'meaning units' relevant to the aim. In the third step, 'meaning units' were condensed to shorter texts, still preserving the core meaning expressed in codes relevant to the aim of the study; finally, 'codes' were organized in 'categories'. Throughout the analysis, a back and forth movement was performed between the different phases (Graneheim & Lundman, 2004). To ensure trustworthiness, the research group discussed findings and interpretations throughout the steps in the analysis process.

In Study II, statistical analyses were performed with Statistical Package for the Social Sciences (SPSS), version 22.0. The descriptive statistics were presented as means (m) and standard deviations (sd) for continuous variables and percentages for categorical variables. Student's t-test for independent groups was calculated to compare means of the MBI subscales scores as well as psychosocial work environment, psychological demand, control and social support between women

and men. Effect size (η^2) was also calculated for continuous variables to ensure not only statistical but practical significance (Cohen, 1988). Cronbach's α were calculated to ascertain the homogeneity of the items in each subscale. The dependent variables were the total scores for the EE and DP subscales of the MBI. Independent variables were sex, age, years of employment, civil status, organizational culture, climate, leadership, psychological demand, control and social support in work, as well as coping strategies that were defined as potential moderators. Marital status was categorized into married/living together or not (yes or no). Pearson correlation coefficients were applied to assess the correlations between the MBI scales and age, years of employment, organizational culture, climate, leadership, psychological demand, control and social support and coping strategies. To investigate the relationship between MBI and psychosocial work environment, psychological demand, control, social support and coping strategies, we performed a hierarchical multiple linear regression analysis.

The analysis of the interviews in Study III and Study IV was inspired by Fairclough's (1989; 1995) take on CDA, which divides the work into different parts. Analysis started with a thorough reading of all interview transcripts performed by three of the authors (AJ, AES, and SB). According to FGD, we then analysed the transcript text and studied what topics dominated and how the words were distributed in the discussion. The speaking order and the role of certain individuals in the focus group – for example, how much different individuals talked, their respective formal position, age or work experience, gender, and the kinds of responses they received from the group was studied. Noticing these distributions is part of trying to relativize what appears to be given – a crucial motto for CDA scholars. Another initial step in the textual analysis of both FGD and the individual interviews was to highlight and code all segments that related to our research questions about health and firefighting, and then to group them thematically; see example in Table 2. Using this approach, we could identify recurrent and dominant themes about health and well-being in the firefighter discourse that we wanted to study in greater detail.

Table 2. Example of the intertextual analysis process of transcript text from FGD and individual interviews to segments, codes and theme

Segments	Codes	Themes
<i>"We usually say that we are like a family"</i>	The family	The firefighters' community
<i>'You feel that you have confidence in each other and that they all feel like family'</i>	The family	
<i>'For those who subscribe to this – the deal – you become part of this community, but then you have to join the template...'</i>	The community	
<i>'As much support as I give in the community, I think I'm spoiled to get that support as well.'</i>	Support in the community	
<i>'Good fellowship I would say Yes, that's the first thing I could think of'</i>	Fellowship	

The three-dimensional framework for studying discourses that Fairclough has introduced were used in both Study III and Study IV, with the aim of integrating three separate forms or levels of analysis with each other, from micro to macro. The three separate forms involves analysis of; 1) language in specific texts, in this case texts from FGD and individual interview texts (Studies III and IV) and policy documents (Study IV) at the micro level; 2) discourse practices at the meso level that produces and consumes these texts, in this case the studied rescue stations and their work culture and environment; 3) macro level in terms of the wider sociocultural practice that the firefighter discourse is influenced by, as well as influences, in this case gender equality policy in Sweden and the national policies that aim to govern the rescue service in the country, including the government directives that regulate work in this area (Fairclough, 1995). In Study IV, the analysis of the firefighter discourse was based on core results found in Study III. In the former Study (III), we looked at recurrent themes that firefighters identified as hindrances to their health and well-being in the workplaces. It turned out that all of them corresponded with different types of changes that the firefighter organization was currently facing. These changes include the pressure for increased *diversity*, including increased gender equality and the current emphasis on more *preventive work*. The current *education* of firefighters in Sweden also occurs as a hindrance and one of the changes the interviewed firefighters in our study are generally critical of.

In order to understand these changes better, including the resistance to them, we linked the interview texts (recurrent themes of resistance) to legal texts and policy documents that proposed changes, as well as addressed these themes. We aimed to include the wider sociocultural practice or context that affects the firefighters discourse. The analysis of the legislation and policy documents was not only based on Fairclough's analysis method, but inspired by Bacchi's (2016) critical form of policy analysis. She recommends critical analysis of knowledge that shapes current governing practices by starting to explore the suggested solution, which indicates what or who needs to change - to problematizations of how 'problems' are constituted within policies and policy proposals. Following her analysis model, it becomes possible to explore how the "problem" is constituted from examining a specific policy proposal. Central to Baccis's approach is to question the policy issues as given. Instead, the policy has been questioned: what is considered to be solved and what consequences the articulated problem solving has for the subject positions created and transformed. Linking policy documents that concern the identified themes of changes in the FGD with firefighters enabled us to better understand what constitutes the on-going discursive struggle against changes among firefighters.

Ethical considerations

The studies conform to the principles of the Declaration of Helsinki (World medical association, WMA, 2013) and were approved by Regional Ethical Review Board in Umeå (Reg. no. 08-186 M). Letters of information that outlined the purpose and content of the research were sent to the participants assuring them that their participation was voluntary; also informed consent was sent back. They could drop out of the research at any time and their contributions would not be identifiable in reports. Participants who agreed to participate gave informed consent with the returned questionnaire. Recorded material, transcripts, questionnaires and presentations of results was handled such that no one except the interviewers had access to, or could identify, any individual data. Demographic information in the form of references for the local governing document for each rescue service station analysed in Study IV is not given due to identity protection of these participants and groups.

Results

The presentation of results is based on the aims of Studies I, II, III and IV and is an overview of the main findings. Detailed findings of each study are presented by the original publications and manuscripts appended in the latter part of the thesis.

Study I

Study I presents firefighters' experiences of critical incidents among Swedish firefighters. Overall, we found that women described experiences in a terser perspective, while men described their experiences of critical events more vividly and often included detailed descriptions of death and death anxiety from their rescue operations. More specifically, four central categories were identified in the description of experiences of critical incidents (Table 3). The critical incidents concerned *overwhelming critical situations* such as traffic accidents, huge fires, and other fatal incidents such as drownings and suicides. The firefighters expressed a need for a better cooperation with ambulance personnel to reduce *risks of delays* and *risks of failures*. Lack of training and education in emergency care and dealing with mental health issues while waiting for ambulance staff was described as leading to delayed responses. Lack of or insufficient equipment was also described as frustrating and stressful, leading to unnecessary delays. In addition, problems with organization and staffing led to risk of failure. Lack of resources was also expressed as devastating, since it made rescuing operations difficult and sometimes impossible. First responders are sometimes exposed to violence and assault during rescue operations and consequently *risks toward oneself*. The firefighters express that no matter how much preventive work is undertaken to reduce such incidents, risky and challenging operations will always occur. The negative experiences of those involved in rescue operations, however, could be alleviated by extra efforts directed towards reducing risks of delay and failure according to the firefighters' narratives.

Table 3. Example of codes and an overview of categories

Codes	Categories
Traffic accidents, huge fires, drowning accidents, and suicides	Overwhelming critical situations
Equipment failures, defective training, and education	Risks of delay
Lack of resources and organizational problems	Risks of failure
Threats, assaults, or violence during rescue	Risks to oneself

Study II

The overall low mean value in the burnout scales (EE and DP) among both women and men in our study was notable (Table 4).

Table 4. Descriptive statistics of individual characteristics, MBI, JDCS, QPS^{Nordic} and WOCQ, among female (n = 58) and male (n = 418) firefighters

	Women		Men		P-value	η^2	Cronbach α
	Mean	SD	Mean	SD			
Age in years	39	10,1	41	10.2	.119		
Years of employment	7	13.1	17	13.3	<.001	-.72	
MBI							
Emotional exhaustion	17.85	6.94	17.94	5.99	.917		.78
Depersonalization	6.96	2.78	8.18	3.59	.014	-.33	.60
JDCS							
Demand	2.50	.41	2.61	.41	.053	-.26	.61
Control	1.90	.32	1.93	.34	.590		.43
Social support	1.74	.50	1.58	.43	.013	.36	.81
QPS							
Organizational culture	2.95	.73	2.86	.65	.344		.65
Organizational climate	2.61	.46	2.65	.49	.585		.78
Leadership	2.92	.88	3.04	.70	.243		.86
WOCQ							
Psychological distancing	12.01	7.45	8.85	5.97	.004	.50	.84
Planful problem solving	16.39	3.98	14.88	4.23	.012	.36	.77
Confrontative coping	6.10	1.87	5.19	1.78	.000	.49	.62
Wishful thinking	5.34	2.45	3.50	2.54	.000	.70	.68
Self-control	5.81	1.87	5.66	1.72	.527		.55
Positive reappraisal	6.66	2.26	5.33	2.44	.000	.52	.73

Only 2 % of women and 1% of men scored high levels of EE, and the corresponding proportions with high levels of DP were 2% for women and 3% for men (Table 5).

Table 5. Descriptive statistics of Maslach Burnout Inventory among 476 Swedish firefighters (58=women) and (418=men)

	Total		Women		Men		P-value
	n	%	n	%	n	%	
MBI							
Emotional exhaustion							.917
Low	410	90	47	91	362	90	
Average	36	8	4	7	32	8	
High	7	1	1	2	6	1	
Depersonalization							.014
Low	398	85	54	93	343	84	
Average	57	12	3	5	54	13	
High	13	3	1	2	12	3	

Results of Study II, performed with a hierarchical multiple regressions analysis, and showed that high demand and lack of social support were significantly associated with EE among male firefighters but not among the women, with a variance of 22%. An association was also confirmed among men with DP as the outcome, and lack of good leadership and the coping strategies PDi as the exposure, accounting for 5% of the variance.

The analysis among women showed that the coping strategy PDi contributed significantly to EE, accounting for 44% of the variance. PDi also contributed significantly to DP among women. The coping strategies PRe were negatively associated with DP among women. PRe is described as leading to a focus on personal growth in an effort to create positive meaning. The negative association suggests that the lower PRe is associated with greater DP. PRe is an emotional coping strategy and refers to a form of positive reconsideration, such as "*changed or grew as a person in a good way*": "*found new faith*", (Folkman & Lazarus, 1988, p. 468). These associations with DP as the outcome among women accounted for a variance of 36%.

Study III

In analysing the firefighter discourse, six dominant themes were identified in the work culture that promote and maintain health and well-being of firefighters at work (Figure 3).

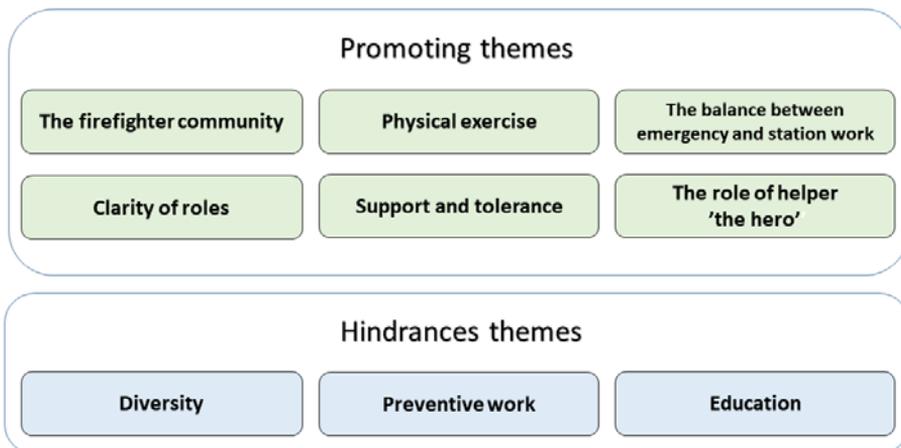


Figure 3. Model of recurrent promoting and hindrance themes in the firefighters discourse.

First and foremost, there is a strong sense of *the firefighter community* in all these focus groups, followed by articulations about the pivotal *physical exercise* associated with firefighting including statements about the importance of physical strength in emergency work. *The balance between emergency and station work* is also a recurrent theme that supports firefighters' health, at least when sufficient space for recovery is allowed. Another health-promoting theme concerns *clarity of roles* among firefighters, both at the station and in emergency situations. Peer *support and tolerance* in the work group is yet another common theme in firefighter discourse, alongside with expressions of the firefighter as *hero or helper*, which very much summarizes the public perception, if not the

firefighters' self-understanding of their profession. All these promoting themes are expressed as different parts of the support system that exist in the work.

We have also identified the other side of the coin – in other words, what can be described as hindrances to the health and well-being of firefighters. They all relate to *changes in the work culture and the profession* and are expressions of external pressure on the rescue service – such as the desire of politicians to increase the number of women, or the amount of preventive work that firefighters undertake. The three themes that we have identified as hindrances in firefighter discourse are *diversity, preventive work* and *education*. Even if these articulations are not as common as the one about the firefighter community, these three themes symbolize unwanted change and generate a lot of resistance and threaten the current order within firefighter discourse. The most obvious hindrance to firefighters' health and well-being at work that is brought up in the focus groups is the pressure for increased *diversity*. Furthermore, in all focus groups, the firefighters repeatedly described the stronger focus on *preventive work* as an inconvenient element and sometimes even as an obstacle to carrying out the operational parts of the work. The *education* that firefighter get today is also a recurring theme that is brought up in all focus groups, and the firefighters are generally critical of the 'new' education.

Rescue stations are the main discursive practices that are studied here. In all three focus groups, participants tended to reproduce a 'hegemonic working-class masculinity'. The firefighters' narratives repeated the importance of physical toughness, coupled with achievement and thereby protecting the heavy tools and advocates for physically demanding working tests. The same group mechanism is largely built on homogeneity, which generates resistance to any efforts towards diversity. In all of the individual interviews, the women clearly expressed the exclusion that they have been exposed to in the work, both explicit from a co-worker; '*You are not a firefighter, I would never want to work with you in an emergency situation*' and more systematically when one woman expressed '*If you didn't talk so much, it was not good, and if you talked, it was often considered as too much so that was not good either. It was very difficult to adapt to please everyone*'.

The work culture at the rescue stations is articulated as horizontal as regards hierarchies in the focus groups. Nevertheless, we noticed that the age, work experience, and gender of the firefighter were factors that influenced the amount of space they took up in the focus groups. Younger people, new employees, and women spoke less, even if we tried to create and provide space for them during the FGD. The male rescue leaders – often with many years of work experience – had the highest status in the conversations, and often related current changes to the situation 'back in the day' when things were better, a kind of nostalgia.

Study IV

In Study IV, we have analysed a strategic sample of policy initiatives that can be related to the themes of reluctance to change within the firefighter discourse. This linking towards policy initiatives are made in order to get a better understanding of what types of 'new' demands are directed towards the firefighter profession and its current organization, and how they are framed. We have noticed that these different policies are intertwined and linked to each other, like the emphasis on preventive work in both the organization and the education of firefighters. Also, one realizes when studying these texts that the call for change regarding increased diversity in the workforce is not really anything new, which shows that changes in these areas are happening at a relatively slow pace. Diversity, preventive work and education are all examples of important struggles in the firefighter discourse (Figure 4).

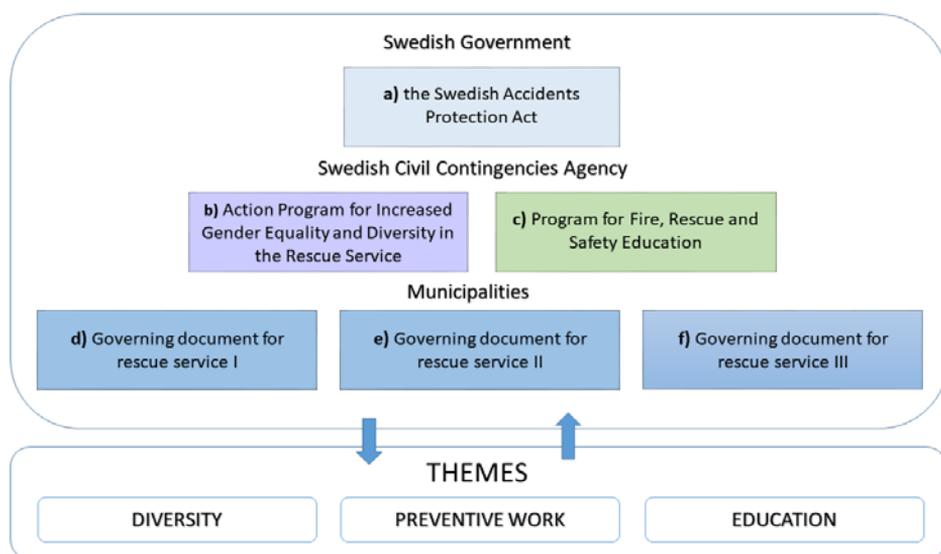


Figure 4. Model of policy initiatives and legislation that relates to hindrance themes in the firefighter discourse.

Change – Diversity

The topic of diversity is a cause for concern among firefighter in our study. In all FGD, the subject of diversity, and above all the pressure to progress towards increased gender equality, are articulated recurrently. The firefighters articulate the experience of strong pressure to change in combination with a lack of understanding in the organization for their situation. Indicating motive for the reluctance towards gender equality and women's entry into the profession is the 'physically demanding' character the profession has.

The suggested solution in the, b) *Action Program for Increased Gender Equality and Diversity in Rescue Service* (Axelsson, 2009) was to promote an egalitarian, diverse rescue service organization.

The identified problems to solve constituted in the *Action Program for Increased Gender Equality and Diversity in Rescue Service* (Axelsson, 2009) program are:

- the culture that maintains the very homogeneous profession.
- the number and representation, how many, or rather how few, women in relation to men who are employed as firefighters.
- the physical work environment of firefighters, since it is identified as a problem area that has to be solved in order to attract more women.

The authors of the current action programme support research describing (Baigent, 2001; Ericson, 2011; Häyrén Weinestål, et al., 2011) the rescue service organization as strongly gender-coded and formulate the problem to change '*the image of the firefighter and the idea of who can be a firefighter*' [our translation]. (p. 12). The homogenous rescue service organization is mentioned as something negative from a democratic perspective. Questions about how to achieve the solution, how to ensure more diversity in this macho culture are asked. The action programme has diversity in its title, nevertheless, alongside of gender equality; relatively little attention is directed to grounds for discrimination other than gender. In the report, diversity is defined as more than a gender issue. Ethnicity, sexual orientation, religion (and other creeds), disability status and age are also mentioned. Despite these claims, when reading the whole text, the overall problem representation is mainly about the numerical lack of female firefighters in the rescue service organization. The problem of finding the right level of physical tests is dealt with in the action programme. Simultaneously, this is identified as a problem area according to women's opportunity to be employed if the tests are too tough.

Change – preventive work

The main law governing the rescue services work in Sweden is, a) the *Swedish Accidents Protection Act* (SFS, 2003:778). All governing documents from the different municipalities that are analysed in Study IV (see figure 4) take their 'point of departure' in this law. The three documents are described as follows; d) *Governing Document for rescue service I*, (e) *Governing Document for rescue service II*, (f) *Governing Document for rescue service III*.

All three documents above mainly emphasize preventive work. The one thing that differs between these local policies is how extensively the different parts of the

local rescue services work are described. Legislative texts (SFS, 2003:778) are recognized in these documents. Central problems are:

- to prevent fires and fire-related damage
- to work to establish protection against other accidents

One main vision, articulated in all governing documents, is inclusive society. To make sure that people in the society who are in a vulnerable situation gets help, and that individual and groups that feel excluded increase their trust in society and its functions.

Change – Education

The Accident Prevention Training-course (Skydd mot olyckor (SMO) in Swedish) was designed in 2003 with the aim of increasing the impact of risk prevention work in the national rescue services. The SMO education follows the c) *Program for Fire, Rescue and Safety Education* (MSB, 2016)

The SMO–education was initiated as a solution to the previous internal recruitment that proved homogeneity in rescue services organisation. Central issues are:

- the mission to educate firefighters with a broader perspective including preventive work, rather than just operational emergency work (the underlying problems to solve are previous focus on operational emergency work).
- one leading cause of the incentives to introduce the SMO education program was the need for a more transparent and equal recruitment process to the rescue service.

Among other things, this led to an increased degree of academic/theoretical subjects for firefighters and a broadened professional concept.

Diversity, preventive work and education are all examples of central struggles in the firefighter discourse. The committed stakeholders with conflicting views about what is pivotal in the rescue service and who is 'right' to decide about its future. We have two sides: on the one hand we have the 'insiders', a majority of male firefighters working in the rescue services. They represent the collective defending its autonomy and traditions. On the other hand we have the 'outsiders', represented by the government, the national authority (MSB), municipalities, politicians at different levels and other actors in Swedish society like academic researchers, all convinced of the importance of gender equality. In our study, the hindrance themes correspond to a certain extent to the resistance to change within the firefighter discourse.

The resistance to change within the firefighter discourse is linked both to the hindrance that firefighters identified to their health and well-being and to the policy initiatives that try to open up and influence the future of firefighting.

Discussion

The discussion of the results will be structured on basis of the main findings, and described in four sections, followed by methodological and theoretical considerations. The section ends with conclusions and future perspectives.

Experiences of emergency work

In Study I, firefighters described emergency work as overwhelming and in particular when it came to critical incidents such as traffic accidents, huge fires and other fatal incidents, such as drownings and suicides. Witnessing critical incidents can cause strong reactions in individuals that last long afterwards, affecting individuals physically, emotionally, cognitively, and behaviourally (Mitchell & Dyregrov, 1993). According to the firefighters' narratives in Study I, the negative experiences of being involved in rescue operations could be alleviated by extra efforts directed toward reducing risks of delay, failure and to the firefighters themselves in threatening situations. Another main finding of Study I was the differences between men and women regarding descriptions of critical incidents. Men described experiences more vividly and deeply, while women described them more distanced and in an operational way. Comparable research focusing on gender differences in narratives about experiences of emergency situations among firefighters, however is lacking. The reasons for the lack of studies including both women's and men's narratives might be due to a strong male majority in the occupation, causing the experiences of women to be left out. More thorough analyses regarding gender differences, in particular with a focus on women's situation, have been insufficient due to difficulties in recruiting women to the occupation (Ericsson & Mellström, 2016). It is also likely that the culture at workplaces with a majority of men is shaped by masculine ideals that include expectations of being able to manage demands through control over the situation and independence (Connell & Messerschmidt, 2005). In Chetkovich's (2004) study of women entering the firefighter profession, the author has shown that the relationship with co-workers deteriorated rapidly as men stepped up their harassment of women who take a stand and say what they think and feel. Based on Chetkovich's findings and our results, there is reason to assume that women who work as firefighters maintain a low and distanced approach in view of their powerful subordination in this profession. Differences in psychological distancing (PDi) among men and women (Study II) and differences between women and men in the way of describing experiences of critical incidents (Study I) suggest that the workplaces are not equal when it comes to participating in firefighter discourse. Consequently, one can assume that female firefighters do not have the same opportunity to process events at work even if women and men perceive similar situations. (Häyren Weinestål, et al, 2014; Ericson & Mellström, 2016). Results of Study III showed that different

kinds of support systems are in place when dealing with emergencies in the work of a firefighter. The strong sense of the firefighter community with peer support and tolerance, the balance between emergency and station work, and the clarity of roles among firefighters in emergency situations can partly explain the fact that firefighters experienced well-being.

According to several reports (Ericson, 2011; Ericson, 2014; Ericson & Mellström, 2016), firefighters share strong comradeship that seems to include elements of cherishing a kind of masculine culture to the extent that homosociality seems to be conflated with professionalism. Firefighters in all three focus groups (Study III) described their community as most important and essential for their work: *'the community'* or *'the family'* were a recurring theme and became the dominant explanation for the support they have after severe events in this firefighter community. This family metaphor were articulated in all FGD; *'...we are like a small family and take care of each other and are humble with each other'*. This sort of metaphor is what Acker (1990, 2006) describes as one mechanism through which gendered power relations are produced and reproduced in work organizations. Gendering processes create symbols and images justifying exclusivity and thereby shape and maintain gender in the workgroups. Metaphors are thus constructs that help create group cohesion, encourage commitment and maintain the control of employees (Gagliardi 1992; Gherardi, 1995). The homosociality described above can also be interpreted as the articulated collegial support and the special *'peer support and tolerance'* that the firefighters in Study III said they offered each other.

The balance between emergency and station work was also a recurrent promoting theme in the firefighters' articulations of their well-being. The opportunity for mental recovery and peer support in between severe events are expressed as important by several firefighters (Study III). Work involving constant overload without recovery is a known risk factor for negative job-related outcomes (Nijp et al., 2012) and according to Benedek, Fullerton, & Ursano (2007); *proximity, intensity and duration of exposure* to critical incidents were significant predictors of rescue workers' physical and mental health symptoms (p. 57).

'The clarity of roles' among firefighters in emergency situations was also framed as health-promoting. However, in several emergency situations, first responders have to perform tasks outside of their usual roles, probably leading to stress at times and, if the performance fails, decrease in self-esteem and increases in self-doubt (Nijp, Beckers, Geurts, Tucker, & Kompier, 2012). All promoting themes reported in Study III were identified as parts of the support system in place when dealing with critical incidents.

Health and well-being in relation to work environment

Findings of Study II confirmed the assumption that an insufficient psychosocial work environment was associated with EE among men, but not among women. These associations among men is consistent with Stansfeld and Candy's (2006) assumption that the interaction of the psychosocial work environment with psychological processes has an impact on illness. We have not found any comparable studies among firefighters or other first responders regarding the gender differences results in Study II. The likely explanations of the outcome can be viewed in the light of findings of Study III, where being excluded versus included in 'the family of firefighters' makes a big difference. Individuals who were excluded and not part of the team became invisible in firefighter discourse. Furthermore, Study III suggests that one of the reasons for the resistance to change in firefighter discourse is the health benefits that this community sense brings. Acting in a relatively homogenous, protected and respected group enables firefighters to cope with demanding emergency work. The challenge is to overcome the resistance to change while sustaining the well-being of the majority of firefighters.

Theoretical assumptions that social support might have a buffering effect on the development of burnout (Maslach, 2001) are confirmed in empirical research (Bakker, Demerouti, & Verbeke, 2004; Lindblom et al., 2006; Lindeberg et al., 2010; Töyry et al., 2004). This corresponds to our results in Study II, showing an association between EE and lack of social support among men. An association between EE and high demand was also reported. However, among women, EE and DP were associated only with the coping strategy of Psychological Distancing (PDi). Furthermore, DP was negatively associated with PRe, which can be interpreted such that lower PRe was associated with greater DP. This result seems reasonable in view of the findings in Study I, where women recounted difficult events in a distanced way.

Regardless of the result of the regression analyses, we must consider low mean scores on the outcome variables EE and DP for both women and men in Study II. However, the low level of burnout (EE and DP) is somewhat surprising because the firefighters are undoubtedly and recurrently exposed to potential traumatic events and critical incidents as part of their responsibility to save lives and property (Declercq et al., 2011). Furthermore, according to the JDCS model, the most negative effect on well-being is found among employees reporting high demands and low control (Karasek, 1979; Murphy, Johnson, & Beaton, 2004; Stansfeld & Candy, 2006). Additionally, burnout is more common in occupations focused on dealing with people (Maslach, 2001; Maslach et al., 1996; Norlund et al., 2010). Backteman-Erlanson, et al. (2012) reported high levels of both EE and DP for women and men among Swedish police personnel. Comparable research

on the prevalence of burnout among firefighters, however, is lacking. The low proportions regarding EE and DP among women and men in Study II can partly be tied to the results of Study III, where several health promoting factors were identified in firefighter discourse.

According to the low levels of EE and DP, we assume that firefighters in Sweden enjoy relatively good mental health. Additional to our study, a previous study using the same data as in Study II measuring physical symptoms, also reported low levels of psychosomatic symptoms such as stomach problems and sleeping disturbances (Jonasson and Vänman, 2014), which also supports the conclusion of healthiness among firefighters in our study. Health complaints in the form of different physical symptoms or minor problems such as stomach problems and sleeping disturbances are considered to be more general indicator of poor well-being (Fritz & Sonnentag, 2006). Arnetz reported similar results among firefighters regarding work-related stress and its impact on different categories of first responders. In the study, Arnetz (2012) included first responders such as police personnel, firefighters, military personnel, coast guard and customs officials. In comparative measurements, firefighters were found to be the healthiest occupational group in several respects, especially in relation to police personnel, who reported more negative consequences from their work-related stress.

Promoting and maintaining health and well-being at work

The firefighter community, articulated as '*the family*' or '*fellowship*' of firefighters in our study, is the most dominant feature and main finding when it comes to firefighters' sense-making of their occupation (Study III). The same community sense is conceptualized by Häyrén Weinestál, et al., (2014, p 26) as '*bromanceship*'. Firefighters in our study also described a strong emotional relationship, creating a bond, including a particular form of care rationality among peers that involves caring of each other in the work environment. '*Bromance*' is a form of homosocial order known in masculinity research as a way to subordinate other types of masculinities, as well as women (Ericson & Mellström; 2016, Ericson 2014; Häyrén Weinestál, et al, 2014; Baigent, 2001; Olofsson, 2012). Based on the results from our study, we claim that the maintenance of this homosocial order is two-part. In part, it has a bearing on maintaining the 'power order system', where a special kind of man enjoys certain benefits relating to a hero status, based on notions of firefighters as heroic and positive symbols for the good in a society. The second part is the advantages of the unique community sense. Most firefighters are included in the community and can draw advantages in terms of security from belonging to a close-knit group. Even if it is problematic from an equality perspective, we can assume that this homogeneity is key to this group's relatively good health and well-being. In

our study, another aspect of the advantages occurred – *peer support and tolerance* (Study III). Firefighters’ articulate collegial support and tolerance which also is important for the well-being of those who are included in the group. At the same time, there is no or little tolerance for mistakes from those not included in the group. These forms of positions are in a sense both challenged and legitimized, constantly standing in relationship to privileged notions of that which is permitted and normal in the profession (Connell, 2009). The meaning-making processes of firefighters are explored here since it is a neglected area of research in the field of health and well-being, but from our study, we can assume that tolerance has a positive meaning for health and well-being in the form of safety in the group. At the same time, other studies have also shown how social interaction and peer support are important for health and well-being (Cook & Mitchell, 2013; Setti, Lourel, & Argentero, 2016). Another important part of peer support is the opportunities for social interaction whilst working and according to our findings there is time between the emergencies for such activities. As mentioned above, *‘The balance between emergency and station work’* was frequently pointed out as promoting health and well-being, even if demands for preventive work took up more and more of the time of firefighters.

The firefighters in our study articulate *clarity of roles* as supporting security in their emergency response work (Study III). We can assume that clear and distinct roles in emergency work, together with station work that allows for recovery, and all repetitive drilling and preparation for different emergency events, are stress-reducing factors. Previous research has shown that role ambiguity and role conflict, together with responsibility for others, are major sources of potential stress (Cartwright & Cooper, 2009). Additionally, our results showed that firefighter discourse is built on a clear hierarchy, with one formal leader and everyone else in the group positioned on a more or less equal level. We assume the work and actions in this organizationally predictable environment should also be of importance to individuals’ health and well-being.

Physical activity as part of the daily routine was described by the firefighters in our study as something that was strengthened and that promoted well-being and mental health (Study III). Physical strength and the ability to meet the physical challenges in different types of work situations are central to the construction of certain occupational identities, ensuring effects of these various masculinities on men’s health (Gough & Robertson, 2009). Belonging to a profession that literally symbolizes strength and capacity should help reproduce the image of vitality and health.

Firefighters position themselves, at least to some extent, as *‘helpers’* in the society if not *‘heroes’*, especially in relation to other similar professions (such as the police) (Study III). Firefighters often symbolize a cultural ideal in the public space

and the good-hearted masculine heroism of firefighters is a common theme also in mass media (Ericson & Mellström, 2016). As mentioned in one FGD; *'We have the advantage that we are welcome when we arrive; they know that we are going to help and they are usually satisfied with it'*. One must assume that this privilege brings a positive self-image and well-being in terms of positive feedback and attention from the public. But firefighters do also resist this prescribed hero status, (Ericson & Mellström, 2016) which was also articulated in Study III in statements such as *'we do not see us as heroes'*. On the other hand, the work is described as meaningful and *'it is meaningful to be able to help'*. This sense of their work being meaningful most certainly contributes to the health and well-being of firefighters. According to Antonovsky (1996) manageability, comprehension and meaningfulness are what together makes an individual resistant to stress.

Identified hindrances to health and well-being at work

We have also identified themes described as hindrances to the health and well-being of firefighters. In our study they relate to changes regarding *diversity, preventive work* and *education* in firefighter discourse (Study III). The result in Studies III and IV are consistent with well-known knowledge about the strong resistance to recent education reforms, gender equality work and new legislation to expedite changes in the profession (Ericson & Mellström, 2016; Glans & Rother, 2007). Firefighters are nowadays required to do more preventive, proactive and reflective work, and this broader assignment is reflected in legislation (SFS, 2003:778). Firefighters in Studies III and IV put the responsibility on policymakers and leaders from the 'outside' when describing the changes they are facing in the organization. This distancing approach among firefighters might enabled them to better preserve the community (and homogeneity) they describe in the FGD, and that we identify as one of the main reasons for supporting firefighters health and well-being.

Opposition to external pressure and the need to change constitute pivotal struggles in firefighter discourse, e.g. regarding diversity. On the one hand, stakeholders like the government, the national authority (MSB), municipalities, politicians at different levels and other actors in the Swedish society takes proud in its gender equality work, but at the same time is the progress of gender equality in the workforce particularly slow in this context (Häyrén Weinestål, et al., 2014) also when compared to similar professions such as the police (Dahlgren, 2007), and military (Ivarsson, Estrada, & Berggren, 2005). Ericson (2011) pointed out that the number of women working as firefighters in Sweden is also very low when compared to the number of women working as firefighters in other countries. This is a disturbing exception to the general view of the nation as a forerunner when it comes to gender equality (Ericson, 2011). Stakeholders with conflicting views in firefighter discourse about what is needed in the rescue services and who

has the right in a democratic society to decide about the future provide strong pressure for faster changes. The masculinities constructions in firefighter discourse have often been framed as a problem deriving from the dominant cultural and normative understanding of the profession. This is also the current explanatory model for the firefighters' struggle and resistance to change (Baigent, 2001; Ericson & Mellström, 2016). Findings in our study regarding health and well-being add knowledge to these current explanations related to gender. But it is important in our view to try to understand these articulations of resistance also in terms of health and well-being among firefighters (Studies III & IV). The struggle in the firefighters' discourse strongly links to masculinity construction that gives firefighters a high, hero-like status in society. The risk of increased diversity, not least an increased number of female firefighters, is a potential loss of this status, since it is based on e.g. physical strength. In addition to these explanations related to gender, it is also fruitful in our perspective to try to understand these struggles in terms of health and well-being among firefighters. By applying such a perspective, we also claim that it brings a new understanding to the reasons that change is happening at such a slow pace within firefighter discourse. By looking at our results, health and well-being can be what is at stake for the majority of firefighters, hence the strong resistance to the proposed changes.

Methodological considerations

Quantitative and qualitative methods are used to achieve the objectives in this thesis. With this combination of methods, it was possible to gain different perspectives on the obtained knowledge and in this way strengthen the research (Morgan, 2007). The quantitative method was chosen to be able to draw conclusions that are valid for a larger population. The method also allows analysis of associations between exposures and outcomes. Qualitative methods were used to get deeper knowledge and understanding about firefighters' health and well-being at work. The answers from the open question contributed detailed and in-depth stories about experiences of critical incidents and thereby combining and overlapping the knowledge from the quantitative questionnaires. Folkman & Moskowitz (2000) propose combining the WOCQ instrument with narratives for uncovering ways of coping not included in the instrument. Additionally, Kvale and Brinkmann, (2009), have utilized and recommended interviews, particularly interpretive interviews, to illuminate and explore qualitative research findings. Furthermore, the focus groups and individual interviews in Studies III and IV made it possible to obtain answers to questions from the findings of the quantitative study. Analysing policy documents linked to FGD and individual interviews contextualized the findings. In this thesis, using several research approaches permitted a richer knowledge of findings developed from each study. Another strength was the interdisciplinary research team with experiences of

developing different research questions and analysing qualitative as well as quantitative data, as well as experience in nursing and the social sciences. In my opinion, using different scientific theoretical starting points was important throughout the research process, allowing wide and depth knowledge in the area of this thesis.

Generally speaking, the research questions and theories guided the choice of design and method (Streubert & Carpenter, 2011). In this thesis, the aim of study I was to describe experiences of critical incidents among female and male Swedish firefighters. This led to a decision to use qualitative content analysis. In qualitative research, trustworthiness is an overarching concept often discussed, due to the significance of the researcher's pre-understanding, probably given different interpretations of the data. According to Graneheim, Lindgren and Lundman (2017), it is a challenge to keep interpretation degrees and abstraction levels logical and congruent throughout the analysis process. In our Study I, the empirical material was comprehensive but consistent, allowing us to stay close to the text and analyse with a low level of interpretation and abstraction. The explicit content ended up as codes and categories to describe the experiences of critical incidents. The findings were discussed by the research team throughout the process to ensure that the interpretation was sustainable and therefore reliable. In this study, efforts were also made to describe the interpretation from text answers to comprehensive understanding, and quotes were included to help the reader understand and assess trustworthiness (Graneheim & Lundman (2004). The participants were represented by a relatively large sample with varying experiences. The fact that participants had different experiences of working as firefighters from 1 to 22 years should contribute to the credibility. The question of whether the results are transferable to another context is an assessment to be made by the reader (Graneheim & Lundman, 2004). Transferability can be judged by how well the context and culture to which participants belong are described and how suitable and precisely quotes are chosen to strengthen the analytical process.

A cross-sectional design was used in Study II; thus the results only describe associations between variables without given causality conclusions. Data were collected using a self-reported questionnaire. Validity refers to how well an instrument measures what it intends to measure (Polit & Beck, 2004). In this thesis, well-known measurements have been used, previously tested for validity and reliability in different contexts aimed at studying burnout and work environment, as well as coping strategies in work. All of the included instruments showed acceptable reliability with some exceptions, according to internal consistency and have been estimated using Cronbach's α and compared to other studies. The exceptions were the subscale job control in JDCS ($\alpha = 0.43$), the job demand subscale in JDCS ($\alpha = 0.61$), the subscale depersonalization in MBI (α

=0.60), the subscale self-control ($\alpha = 0.55$) and confrontive coping ($\alpha = 0.62$) in WOCQ.

Another advantage in Study II was the randomly selected sample, giving us the opportunity to generalize the results. However, only the male sample was randomly selected, while the female sample included all full-time female firefighters. Even though few women work as firefighters, it is important to include women in research in order to more clearly describe health and work separately for females and males. The response rate among men in Study II indicates a potential problem of non-response bias, which may threaten external validity and thus generalizability. It is not possible to deduce the nature of any potential non-response bias, due to unknown characteristics of the non-respondents. Nevertheless, the number of dropouts could partly be explained by the fact that the sample was drawn from an old register, as was shown in the fact that 21% of the questionnaires were returned addressee unknown. However, Sogaard, Selmer, Bjertness, & Telle, (2004) have shown that even with moderate response rates in studies of current health issues, prevalence figures and associations between exposures and outcomes are relatively unbiased. However, in contrast to the moderate response rate among men, almost all women responded. The findings of this study should be interpreted with some caution, considering the sample size for women, resulting in poor power to detect small differences between the sexes. According to Greenglass (1991), sex differences are often difficult to interpret because of an unequal distribution of men and women. Other things to consider are the confounding effect of other life circumstances, such as marital status and degree of unpaid work outside working hours. The effect of the working mechanism may also differ between women and men depending on different gender socialization (Ogus, Greenglass, & Burke, 1990).

Validity was considered in the design, data collection and analysis of the qualitative focus groups. We regarded the fact that all firefighters invited chose to participate, both in the FGD and the individual interviews, as a strength. In the FGD, the majority of the participants were men, due to the majority of men employed. We noticed that the few women were given less speech space in the discussions, although the moderators worked actively to create an open, accepting and equal environment to ensure a variety of views, opinions and experiences (Morgan, 1996). However, two women were chosen for individual interviews to give an opportunity for more narrative space in view of their numerical minority. In further studies it is of great importance to include more women for a better power balance. The most essential feature to achieve a variety of opinions about the research topic is to create an atmosphere that encourages an open discussion. This depends on the group leader and on the group composition. In all three focus groups, homogeneity was striking due to the majority of the participants having been male firefighters in operative rescue

services with one or two rescue leaders. This group composition is representative of the firefighter population and therefore not possible to change. This probably also explains the consensus in the focus groups. Despite the consensus, the focus groups also resulted in a lively and interactive discussion. Being accompanied by co-workers in the firefighters' own workplace created a familiar and secure setting for the participants, and for us as researchers, it gave us some insight into workplace relations as context and discursive practice. Likewise, the firefighters in the first study spontaneously said that meeting in the focus group was a positive experience. Individual interviews were important in order for differing voices to be heard. They complemented the homogeneous image of the firefighter discourse, and it clarified the inclusion and exclusion process that exists in rescue services. There was also the opportunity to deepen the interviews on the subject of being subordinated within the firefighter discourse.

During the analysis process, we repeatedly returned to the transcripts and the notes to confirm the interpretations and strengthen the validity. To ensure a high level of coding consistency, I discussed coding throughout the process with the other researchers (Kidd & Parshall, 2000). In CDA, it is fruitful to include conditions from the text level, discursive practice, where the text is produced and consumed (rescue stations) and the social culture practice that surrounds the discursive practice (society, government agencies) (Fairclough, 1989; Fairclough, 1995). However, the text material contributed to comprehensive results intertextually and discursively and therefore Study III analytics to a large extent end up at micro and meso levels, although background facts (previous research and history of firefighter work, etc.) are considered. The three-dimensional framework for studying discourses was used in Study IV (from micro to macro) with the aim of integrating the macro level with the intertextual and discursive level from Study III. Study IV aimed to understand how firefighters, both individually and collectively, make sense of their own health and well-being. Furthermore, the analysis was designed to create an opportunity to learn more about what factors the firefighters identified as hindrances in Study IV by linking a strategic sample of policy initiatives that can be related to this reluctance to change within the firefighter discourse. CDA made it possible for us to not only describe and reveal patterns, but also to put them in perspective in order to relativize the 'given' and scrutinize the possible social consequences of the discursive patterns at hand. For example, this involves understanding who might not fit in or who might be excluded in the firefighter discourse and consequently the unequal conditions for women in relation to men in general to operate in the work environment.

The use of 'secondary' data or material like legislation and policy documents is not without problems, as the researcher chooses which data to include and which to exclude (Appleton & Cowley, 1997). The way to overcome risk of bias is to be

transparent about which criteria were used when selecting the relevant material. The researcher exercises power through the choice and definition of the research topic, which stresses the importance of the researcher being self-reflective. However, no absolutely right interpretation exists according to CDA (Wodak, 1999).

My current position as a teacher working for the Swedish Civil Contingencies Agency (MSB) and educating firefighters in emergency care may have affected the research process, from the pre-research stage through data collection and data analysis. I assume this background has both been an advantage and a disadvantage. According to CDA, the researcher has a responsibility to be reflective about their own role in the research process and evaluate the results in relation to their consequences (Jørgensen & Phillips, 2002). Based on this background, it has been necessary to reflect on my position as researcher throughout the process. Knowledge production, as in any discourse, actively produces reality while representing it. In my understanding, and as Burr (2003) describes, knowledge is historically and culturally related and created in all social interactions. All social actions are closely linked to knowledge outcomes. As an actor and one of the actors around firefighters and rescue services (teacher, MSB employee), I know the organization and some of the 'rules'. My pre-understanding made it easier to find the way through decisions about formulating research questions and data collection procedures, such as finding relevant policy initiatives in the myriad of documents available, or the choice of rescue service stations for as wide a variety as possible.

My position may also have affected the FGD and the individual interview content and the direction of the discussion. What these firefighters said, and how they said it, were influenced not only by their professional identity, but by my presence as a moderator and the presence of CB and SB as observer/secretary.

Conclusion

Firefighters described critical incidents at work as overwhelming situations. Additionally, according to the firefighters' narratives, organizational failings may lead to more pressure in the form of risks of delay or risks of failure. Other constraints that they described were the risks to firefighters themselves in threatening situations. Despite the high risks and demands associated with their work, the firefighters were reported as relatively healthy according to EE and DP, as well as compared with other similar occupational groups. Results from this study also showed a relationship between psychosocial work environment and burnout among men, but not among women. The coping strategies among firefighters influenced the level of burnout, and these strategies differ between women and men. Among women, only PDi contributed significantly to DP.

According to the mentioned differences regarding gender in the results from the survey, some explanations to this can be found in the findings from the FGD and interviews, where being excluded or included in the firefighter community made the big difference regarding the individuals' health and wellbeing at work. Individuals who were excluded and not part of the team became invisible in the firefighter discourse, and did not have the same opportunities as the majority of firefighters. They however, can take advantage in terms of security from belonging to the community. Even if this is problematic seen from an equality perspective, we can assume that this homogeneity is key to this groups' relatively good health. Firefighters' wellbeing, at least partly, is gained from a strong sense of belonging to a homosocial group characterized by closeness and peers who take care of each other. The firefighters in our study stress this family like situation and strong community-sense whilst being at work, and describe the importance of the similarity, rather than diversity, in their working groups. This might be part of the explanation of why there are difficulties to fit in for women, non-whites, HBTQ-persons and other who are 'not similar' persons. It is also the reason why it is so painful to be excluded. Additionally, these explanations relate a lot to gender, but it is also important in our view to seek to understand these articulations of resistance in terms of health and well-being among firefighters. We also claim that applying this health perspective brings new understandings and explanations of the reasons *why* change is happening at such a slow pace within the firefighter discourse and in some instances, not at all. It is simply because the health and wellbeing among the majority of firefighters is also at stake.

Further research

The resistance to change within the firefighter discourse is linked both to the hindrance that firefighters identified to their health and well-being and to the policy initiatives that try to open up and influence the future of firefighting. The most important challenge to tackle in the future therefore appears to be how to change the firefighting discourse to be more inclusive and yet maintain the good health and well-being that exists among most firefighters. It is striking how firefighters in our study describe the dependence of the community and the close networks in the firefighter discourse. This suggesting the importance of addressing social and relational aspects of health in future research about firefighters. Furthermore, although our focus in the studies has been the large group of firefighters in Sweden, it has become apparent that minorities like women and 'others' do not have the same conditions from a health perspective. Individuals who were excluded and not part of the community became invisible in the firefighter discourse. Here is a knowledge gap that needs to be filled to understand how to proceed with the ongoing change work.

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References

- Aasa, U., Brulin, C., Ångqvist, K.-A., & Barnekow-Bergkvist, M. (2005). Work-related psychosocial factors, worry about work conditions and health complaints among female and male ambulance personnel. *Scandinavian Journal Caring Sciences, 19*, 251-258.
- Acker, J. (1990). Hierarchies, jobs, bodies: A theory of gendered organizations. *Gender & Society, 4*(2), 139-158.
- Acker, J. (2006). Inequality regimes: gender, class, and race in organizations. *Gender & Society, 20*, 441-464.
- Adriaenssens, J., De Gucht, V., Van Der Doef, M., & Maes, S. (2011). Exploring the burden of emergency care: Predictors of stress-health outcomes in emergency nurses. *Journal of Advanced Nursing, 67*(6), 1317-1328.
- Ahola, K., Honkonen, T., Isometsä, E., Kalimo, R., Nykyri, E., Aromaa, A., & Lönnqvist, J. (2005). The relationship between job-related burnout and depressive disorders—results from the Finnish Health 2000 study. *Journal of Affective Disorders, 88*(1), 55-62. doi: 10.1016/j.jad.2005.06.004
- Ahola, K., Honkonen, T., Isometsä, E., Kalimo, R., Nykyri, E., Koskinen, S., & Lönnqvist, J. (2006). Burnout in the general population – Results from the Finnish Health 2000 study. *Social Psychiatry and Psychiatric Epidemiology, 41*, 11-17. doi: 10.1007/s00127-005-0011-5
- Alonso, J., Angermeyer, M. C., Bernert, S., Bruffaerts, R., Brugha, T. S., Bryson, H., & Vollebergh, W. A. M. (2004). Prevalence of mental disorders in Europe: Results from the European Study of the Epidemiology of Mental Disorders (ESEMeD) project. *Acta Psychiatrica Scandinavica, Supplement, 109*(420), 21-27. doi:10.1111/j.1600-0047.2004.00327.x
- American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders. 5th ed. Arlington, VA: American Psychiatric Association.
- AMV, Arbetsmiljöverket, (2016) [Swedish Work Environment Authority]. *Kunskaps sammmanställning, Kvinnor och mäns arbetsvillkor. Arbetsmiljöstatistik Rapport 2016: 2.*
- Annandale, E., & Hammarström, A. (2011). Constructing the 'gender-specific body': A critical discourse analysis of publications in the field of gender-specific medicine. *Health, 15*(6), 571-587.
- Antonovsky, A. (1996). The salutogenic model as a theory to guide health promotion. *Health Promotion International, 11*(1), 11-18. doi: 10.1093/heapro/11.1.11
- Appleton, J. V., & Cowley, S. (1997). Analysing clinical practice guidelines. A method of documentary analysis. *Journal of Advanced Nursing, 25*(5), 1008-1017.
- Arnetz, B. (2012). "Det här är inte vilket yrke som helst!" *Yrkespåford stress, hälsa och prestation hos operativt verksamma inom brandförsvaret, försvarsmakten, kustbevakningen, polisen och tullverket.* [Occupational stress, health and performance of operatives in the rescue services, the armed forces, the coast guard, the police and the customs]. Resultat från nationell enkätkartläggning. Department of Public Health and Caring Sciences, Uppsala University, Sweden.
- Axelsson, A. (2009). *Handlingsprogram för ökad jämställdhet och mångfald i det kommunala säkerhetsarbetet* [Action Program for Increased Gender Equality and Diversity in the Fire Service]. Retrieved from https://www.msb.se/Upload/Insats_och_beredskap/jamstallldhet_mangfald/handlingsprogramjamstallldhet.pdf?epslanguage=sv (accessed, 2017-06-01).

- Bacchi, C. (2016). Problematizations in health policy: questioning how 'problems' are constituted in policies. *SAGE Open*, 6(2), 1-16.
Doi:/pdf/10.1177/2158244016653986
- Backhans, M. C., Burström, B., Lindholm, L., & Månsdotter, A. (2009). Pioneers and laggards—Is the effect of gender equality on health dependent on context? *Social Science and Medicine*, 68(8), 1388-1395.
- Backteman-Erlanson, S., Padyab, M., & Brulin, C. (2012). Prevalence of burnout and associations with psychosocial work environment, physical strain, and stress of conscience among Swedish female and male police personnel. *Police Practice and Research*, 14(6), 491-505.
- Baigent, D. (2001). One more last working class hero A cultural audit of the UK fire service UK: Fitting in.
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management*, 43(1), 83-104.
- Bauer, G., Davies, J.K., & Pelikan, J. (2006). The EUHPID Health Development Model for the classification of public health indicators, *Health Promotion International*. 21, 153-159.
- Benedek, D. M., Fullerton, C., & Ursano, R. J. (2007). First Responders: Mental Health Consequences of Natural and Human-Made Disasters for Public Health and Public Safety Workers. *Annual Review of Public Health*, 28, 55-68.
- Berger, W., Coutinho, E. S. F., Figueira, I., Marques-Portella, C., Luz, M. P., Neylan, T. C., Marmar, C. R., & Mendlowicz, M. V. (2012). Rescuers at risk: a systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social Psychiatry and Psychiatric Epidemiology*, 47(6), 1001-1011.
- Blommaert, J., & Bulcaen, C. (2000). Critical discourse analysis. *Annual review of Anthropology*, 29(1), 447-466.
- Brülde, B. (1998). Vad är hälsa? Några reflektioner kring hälsobegreppet. [What is health? Some reflections on the concept of health]. In *Filosofiska Meddelanden. Gröna serien*, Nr 58. Göteborg: Göteborgs universitet.
- Burr, V. (2003). *Social constructionism*. (2nd. Ed.) New York: Routledge.
- Calnan, M. (1987). *Health and illness: The lay perspective*. New York: Tavistock Publications.
- Carrigan, T., Connell, B., & Lee, J. (1985). Toward a new sociology of masculinity. *Theory and Society*, 14(5), 551-604. doi:10.1007/BF00160017
- Cartwright, S., & Cooper, C. L. (2009). *The Oxford handbook of organizational well-being*. USA: Oxford University Press.
- Chetkovich, C. (2004). Women's agency in a context of oppression: Assessing strategies for personal action and public policy. *Hypatia*, 19(4), 122-143.
- Chouliaraki, L., & Fairclough, N. (2010). Critical discourse analysis in organizational studies: Towards an integrationist methodology. *Journal of management studies*, 47(6), 1213-1218.
- Cohen, J. (1988). *Statistical power analysis for the behavior science*. Hillsdale: Lawrence Erlbaum Association.
- Comcare. (2008) *Working Well: An organisational approach to preventing psychological injury*, Comcare, Canberra.

- Connell, R. (1987). Hegemonic masculinity and emphasized femininity. In: *Gender and Power: Society, the Person, and Sexual Politics, 183-188*. Cambridge: Polity Press.
- Connell, R. W. (1995). *Masculinities*. Berkley and Los Angeles: University of California Press.
- Connell, R. W., & Messerschmidt, J. W. (2005). Hegemonic masculinity: Rethinking the concept. *Gender & Society, 19*(6), 829-859.
- Connell, R. (2009). Gender in personal life. Chapter 6. In: *Gender Short Introductions* (2nd Ed.). Malden: Polity Press.
- Cook, B., & Mitchell, W. (2013). *Occupational health effects for firefighters: The extent and implications of physical and psychological injuries*. Australia: Centre of Full Employment and Equity.
- Corrigan, M., McWilliams, R., Kelly, K. J., Niles, J., Cammarata, C., Jones, K., & Wartenberg, D. (2009). A computerized, self-administered questionnaire to evaluate posttraumatic stress among firefighters after the World Trade Center collapse. *American Journal of Public Health, 99*(3), 702-709.
- Courtenay, W. H. (2000). Constructions of masculinity and their influence on men's well-being: a theory of gender and health. *Social Science and Medicine, 50*(10), 1385-1401.
- Crowe, M. (2005). Discourse analysis: towards an understanding of its place in nursing. *Journal of Advanced Nursing, 51*(1), 55-63.
- Dahlgren, J. (2007). *Kvinnor i polistjänst: Föreningen Kamraterna, Svenska polisförbundet och kvinnors inträde i polisyrket 1957-1971*. [Women in the police service. Comrades Association, the Swedish Police Union and women's entry into the police force 1957–1971]. (Doktors avhandling) Historiska studier. Umeå universitet, Umeå.
- Dallner, W., Elo, A. L., Gamberale, F., Hottinen, V., Knardahl, S., & Lindström, K., et al. (2000). Validation of the general Nordic questionnaire (QPSNordic) for psychological and social factors at work. Copenhagen: Nordic Council of Ministers. No, 2000. Nord 12.
- Danielsson, M., & Lindberg, G. (2001). Differences between men's and women's health: The old and the new gender paradox. In: Östlin, P., Danielsson, M., Diderichsen, F., Härenstam, A. & Lindberg, G. (Eds.) *Gender Inequalities in Health. A Swedish Perspective*. Cambridge, Harvard University Press.
- Declercq, F., Meganck, R., Deheegher, J., & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in emergency personnel. *Journal of Traumatic Stress, 24*(1), 133-136.
- Del Ben, K. S., Scotti, J. R., Chen, Y.-C., & Fortson, B. L. (2006). Prevalence of posttraumatic stress disorder symptoms in firefighters. *Work and Stress, 20*(1), 37-48. doi:10.1080/02678370600679512
- Doyal, L. (2001). Sex, gender, and health: the need for a new approach. *BMJ: British Medical Journal, 323*(7320), 1061.
- Egan Sjölander, A., & Gunnarsson Payne, J. (2011). *Tracking discourses: politics, identity and social change*. Lund: Nordic Academic Press.
- Elmqvist, C. (2014). Emergency care in the encounter between patients, next of kin and different professionals at the scene of an accident and at the emergency department. *International Emergency Nursing, 22*(4), 273-273.

- Ericson, M. (2004). *Brandman och man. Om aktualisering av kön i brandmannayrket* [Being a fire fighter and a man. An account of gender in the profession of a firefighter]. Räddningsverket och Institutionen för Genusvetenskap, Göteborgs Universitet, Sweden.
- Ericson, M. (2011). *Nära inpå: Maskulinitet, intimitet och gemenskap i brandmäns arbetslag*. [Close to: Masculinity, intimacy and community in the firefighters work team]. Sociologiska Institutionen, Göteborgs universitet.
- Ericson, M. (2014). Firefighters as exceptional: heroism, nationalism and masculinity in times of suburban riots and anti-racist protests. *NORMA*, 9(3), 178-190. doi:10.1080/18902138.2014.951175
- Ericson, M., & Mellström, U. (2016). *Masculinities, Gender Equality and Crisis Management*. London: Routledge.
- Eriksson, K. (1991). *Pausen: en beskrivning av vårdvetenskapens kunskapsobjekt*. Stockholm: Almqvist & Wiksell.
- Eriksson, K. (1996). *Hälsans Idé*. Stockholm: Almqvist & Wiksell.
- Folkman, S., & Lazarus, R. S. (1988). *Manual for the ways of coping questionnaire*. Palo Alto, CA: Consulting Psychologists Press.
- Fairclough, N. (1989) *Language and Power* [Language in Social Life Series]. London: Longman
- Fairclough, N. (1992). *Discourse and social change*. Cambridge: Polity Press
- Fairclough, N. (1995). *Critical Discourse Analysis*. Boston: Addison Wesley.
- Fairclough, N., & Wodak, R. (1997). *Discourse analysis: A multidisciplinary introduction*. London: Sage.
- Fairclough, N. (2003). *Analysing discourse: Textual analysis for social research*. New York: Routledge.
- Folkman, S., & Moskowitz, J., (2000). Positive affect and the other side of coping. *American Psychologist* 55, 647–654.
- Fritz, C., & Sonnentag, S. (2006). Recovery, well-being, and performance-related outcomes: The role of workload and vacation experiences. *Journal of Applied Psychology*, 91(4), 936-945. doi:10.1037/0021-9010.91.4.936
- Gadamer, H.-G. (1996). *The enigma of health: The art of healing in a scientific age*. Stanford: University Press.
- Gagliardi, P. (1992). *Symbols and artifacts: Views of the corporate landscape*. New York: Aldine De Gruyter.
- Gherardi, S. (1995). *Gender, symbolism, and organizational cultures*. London: Sage.
- Glans, H., & Rother, B. (2007). *Bära slang som en man En bok för aktivt jämställdhetsarbete inom kommunal räddningstjänst*. [Carrying the hose like a man? An account of equality work within the rescue service]. Karlstad, Sweden: Räddningsverket.
- Glasberg, A. L., Eriksson, S., & Norberg, A. (2007). Burnout and 'stress of conscience' among healthcare personnel. *Journal of Advanced Nursing*, 57(4), 392–403. doi: JAN4111 10.1111/j.1365-2468.2006.04111.x
- Gough, B., & Robertson, S. (2009). *Men, masculinities and health*. Critical perspectives: Palgrave Macmillan.
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse*

Education Today, 24(2), 105-112. doi:http://dx.doi.org/10.1016/j.nedt.2003.10.001

- Graneheim, U. H., Lindgren, B.-M., & Lundman, B. (2017). Methodological challenges in qualitative content analysis: A discussion paper. *Nurse Education Today*, 56, 29-34.
- Greenglass, E. R. (1991). Burnout and gender: Theoretical and organizational implications. *Canadian Psychology/Psychologie canadienne*, 32(4), 562.
- Hallsten, L. (1985). *Utbränd i jobbet* [Burnout at work]. Arbetsmarknadsinstitutet [National Institute for Working Life]. Stockholm.
- Haslam, C., & Mallon, K. (2003). A preliminary investigation of post-traumatic stress symptoms among firefighters. *Work and Stress*, 17(3), 277-285. doi:10.1080/02678370310001625649
- Hearn, J. (2004). From Hegemonic Masculinity to the Hegemony of Men. *Feminist Theory*, 5(1), 49-72. doi:doi:10.1177/1464700104040813
- Holt, D. B., & Thompson, C. J. (2004). Man-of-action heroes: The pursuit of heroic masculinity in everyday consumption. *Journal of Consumer research*, 31(2), 425-440.
- Hughner, R. S., & Kleine, S. S. (2004). Views of Health in the Lay Sector: A Compilation and Review of How Individuals Think about Health. *Health*, 8(4), 395-422. doi:10.1177/1363459304045696
- Häyrén Weinestål, A., Bondestam, F., & Berg, H. (2011). *Från novis till nestor Maskulinitet organisation och risk i räddningstjänsten En aktionsforskningsstudie*. [From novice to nestor Masculinity organizational and risk in the rescue service An action research study]. Myndigheten för samhällsskydd och beredskap, Karlstad.
- Häyrén Weinestål, A., Berg, H., & Bondestam, F. (2014). *Bromance och riskpareringsstrategier : maskulina praktiker och föreställningar i svensk räddningstjänst*. [Bromance and risk-saving strategies: masculine practitioners and performances in Swedish rescue services]. Centrum för genusvetenskap, Uppsala universitet. Stockholm: Makadam.
- Ivarsson, S., Estrada, A. X., & Berggren, A. W. (2005). Understanding men's attitudes toward women in the Swedish Armed Forces. *Military Psychology*, 17(4), 269.
- Johnson, J. V., & Hall, E. M. (1988). Job strain, work place social support, and cardiovascular disease: a cross-sectional study of a random sample of the Swedish working population. *American Journal of Public Health*, 78(10), 1336-1342.
- Johnson, J. V., Hall, E. M., & Theorell, T. (1989). Combined effects of job strain and social isolation on cardiovascular disease morbidity and mortality in a random sample of the Swedish male working population. *Scandinavian Journal of Work, Environment and Health*, 271-279.
- Jonasson, J., & Vänman, E. (2014). En brinnande fråga - Förekomst av stressrelaterade symtom och samband med krav, kontroll och socialt stöd hos brandpersonal i Sverige. (Master thesis) in Occupational health. Umeå University. Department of nursing. <https://www.diva-portal.org> (accessed, 20170605).
- Jørgensen, M. W., & Phillips, L. J. (2002). *Diskursanalys som teori och metod*. [Discourse analysis as theory and method] Malmö: Studentlitteratur.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly*, 285-308.

- Karasek, R., & Theorell, T. (1990). *Healthy work: stress, productivity and the reconstruction of working life*. New York: Basic.
- Kawachi, I., & Berkman, L. (2000). Social cohesion, social capital, and health. *Social epidemiology*, 174, 190.
- Kidd, P.S., & Parshall, M.B. (2000). Getting the focus and the group: Enhancing rigor in focus group research. *Qualitative Health Research*, 10, 293-308.
- Kimmel, M. S., Hearn, J., & Connell, R. (2005). *Handbook of studies on men and masculinities*. Thousand Oaks: Sage.
- Kleim, B., & Westphal, M. (2011). Mental Health in First Responders: A Review and Recommendation for Prevention and Intervention Strategies. *Traumatology*, 17(4), 17-24. doi:10.1177/1534765611429079
- Kumar, S. & G. Mellso. (2013) 'Burnout: Gender Aspects'. In: *Burnout for Experts: Prevention in the Context of Living and Working*. (Ed.) S. Bährer-Kohler. New York: Springer, 99–117.
- Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing* (2nd Ed.). Thousand Oaks: Sage.
- Lawton, J. (2003). Lay experiences of health and illness: past research and future agendas. *Sociology of Health and Illness*, 25(3), 23-40.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer publishing company.
- Lee, R. T., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81(2), 123.
- Lindberg, P., & Vingård, E. (2012). Indicators of healthy work environments – a systematic review. *Work*. 41(1), 3032-8.
- Lindblom, K. M., Linton, S. J., Fedeli, C., & Bryngelsson, L. (2006). Burnout in the working population: relations to psychosocial work factors. *International Journal of Behavioral Medicine*, 13(1), 51-59.
- Lindeberg, S., Rosvall, M., Choi, B., Canivet, C., Isacson, S.-O., Karasek, R., & Östergren, P.-O. (2010). Psychosocial working conditions and exhaustion in a working population sample of Swedish middle-aged men and women. *European Journal of Public Health*, 21(2), 190-196.
- Lindert, J., Müller-Nordhorn, J., & Soares, J. F. (2009). Age and distress of women—results of a representative population-based study. *Archives of women's mental health*, 12(3), 173-181.
- Lipman-Blumen, J. (1976). Toward a homosocial theory of sex roles: An explanation of the sex segregation of social institutions. *Journal of Women in Culture and Society*, 1(3, Part 2), 15-31.
- Lohan, M. (2007). How might we understand men's health better? Integrating explanations from critical studies on men and inequalities in health. *Social Science and Medicine*, 65(3), 493-504.
- Lorber, J., & Moore, L. J. (2002). *Gender and the social construction of illness*. (2 ed). Walnut Creek,: AltaMira
- Lupton, D. (1992). Discourse analysis: A new methodology for understanding the ideologies of health and illness. *Australian and New Zealand Journal of Public Health*, 16(2), 145-150.
- Magnusson Hanson, L. L., Theorell, T., Oxenstierna, G., Hyde, M., & Westerlund, H. (2008). Demand, control and social climate as predictors of emotional

- exhaustion symptoms in working Swedish men and women. *Scandinavian Journal of Public Health*, 36(7), 737-743.
- Maslach, C. (1982). *Burnout: The Cost of Caring*. New Jersey: Prentice Hall.
- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory*. (3rd Ed.). Palo Alto CA: Consulting Psychologists Press.
- Maslach, C. (2001). What have we learned about burnout and health? *Psychology & Health*, 16(5), 607-611.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397-422.
- McLaughlin, S. K. & Beggan, J. K. (2007). Heroes. In: Flood, M. Keagen Gardiner, J. Peace, B. & Pringle, K. (Red), *International Encyclopedia of Men and Masculinities*. London & New York: Routledge.
- Medin, J., & Alexanderson, K. (2000). *Begreppen Hälsa och hälsofrämjande – en litteraturstudie* [The concepts of health and health promotion – a study of the literature]. Lund, Studentlitteratur.
- Mitchell, J. T., & Dyregrov, A. (1993). Traumatic stress in disaster workers and emergency personnel: Prevention and intervention. In: J. P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes*. (905-914). New York: Plenum.
- Monat, A., & Lazarus, R.S. (1991). Introduction: stress and coping-some current issues and controversies. *Stress and coping: an anthology*, 1–15. Columbia University Press.
- Morgan, D. L. (1996). *Focus groups as qualitative research* (Vol. 16) Beverly Hills, CA: Sage publications.
- Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of mixed methods research*, 1(1), 48-76.
- Morse, J. M., Solberg, S. M., Neander, W. L., Bottorff, J. L. & Johnson, J. L. (1990) Concepts of caring and caring as concept. *Advances in Nursing Science*, 13(1), 1-14.
- MSB, Swedish Civil Contingencies Agency, (Myndigheten för samhällsskydd och beredskap), (2007). *Räddningstjänst i siffror*. [Rescue service in numbers]. Retrieved from <https://www.msb.se/RibData/Filer/pdf/20353.pdf> (accessed, 2008-05-21)
- MSB, Swedish Civil Contingencies Agency, (Myndigheten för samhällsskydd och beredskap), (2009). *Om MSB*. [About MSB]. Retrieved from <https://www.msb.se/sv/Om-MSB/> (accessed, 2017-11-01).
- MSB, Swedish Civil Contingencies Agency, (Myndigheten för samhällsskydd och beredskap), (2010). *Räddningstjänst i siffror*. [Rescue service in numbers]. Retrieved from <https://www.msb.se/RibData/Filer/pdf/26045.pdf> (accessed, 2014-03-26).
- MSB, Swedish Civil Contingencies Agency, (Myndigheten för samhällsskydd och beredskap), (2015a). *Räddningstjänst i siffror*. [Rescue service in numbers]. Retrieved from <https://www.msb.se/RibData/Filer/pdf/28203.pdf> (accessed, 2017-10-26).
- MSB, Swedish Civil Contingencies Agency, (Myndigheten för samhällsskydd och beredskap), (2015b). *Om MSB:s arbete med jämställdhet och mångfald*. [About MSB's work on gender equality and diversity]. Retrieved from

- <https://www.msb.se/sv/Insats--beredskap/Jamstalldhet--mangfald/Om-MSBs-arbete-med-jamstalldhet-och-mangfald/> (accessed, 2017-06-01).
- MSB, Swedish Civil Contingencies Agency, (In Swedish; Myndigheten för samhällsskydd och beredskap). (2016). *Utbildning i skydd mot olyckor* [Program for Fire, Rescue and Safety Education]. Retrieved from https://www.msb.se/Upload/Utbildning_och_ovning/SMO/Kursplan/Utbildningsplan%20SMO.pdf (accessed, 20170605).
- Murphy, S. A., Johnson, L. C., & Beaton, R. D. (2004). Fire fighters' cognitive appraisals of job concerns, threats to well-being, and social support before and after the terrorist attacks on september 11, 2001. *Journal of Loss and Trauma*, 9(3), 269-283.
- Månsdotter, A., Lindholm, L., Lundberg, M., Winkvist, A., & Öhman, A. (2006). Parental share in public and domestic spheres: a population study on gender equality, death, and sickness. *Journal of Epidemiology and Community Health*, 60(7), 616-620.
- Nijp, H. H., Beckers, D. G. J., Geurts, S. A. E., Tucker, P., & Kompier, M. A. J. (2012). Systematic review on the association between employee worktime control and work-non-work balance, health and well-being, and job-related outcomes. *Scandinavian Journal of Work, Environment and Health*, 38(4), 299-313.
- Nordenfelt, L. (1987). *On the nature of health*. Dordrecht: Reidel Publishing Company.
- Nordenfelt, L. (1991). *Quality of Life and Health. Theory and Criticism*. Falköping: Almqvist & Wiksell.
- Nordenfelt, L. (2013). Ill Health or Illness: A Reply to Hofmann. *An International Journal of Health Care Philosophy and Policy*, 21(4), 298-305. doi:10.1007/s10728-013-0256-1
- Norlund, S., Reuterwall, C., Höög, J., Lindahl, B., Janlert, U., & Birgander, L. S. (2010). Burnout, working conditions and gender-results from the northern Sweden MONICA Study. *BMC Public Health*, 10(1), 1.
- North, C. S., Tivis, L., McMillen, J. C., Pfefferbaum, B., Cox, J., Spitznagel, E. L., Bunch, K., Schorr, J., & Smith, E. M. (2002). Coping, functioning, and adjustment of rescue workers after the Oklahoma City bombing. *Journal of Traumatic Stress*, 15(3), 171-175. doi:10.1023/A:1015286909111
- Ogus, E. D., Greenglass, E. R., & Burke, R. J. (1990). Gender-role differences, work and stress and depersonalization. *Journal of Social Behavior and Personality*, 5, 387-3
- Olofsson, J. (2012). "Om du är rädd kan du få sitta bredvid mig och hålla handen." – Infantilisering och homosociala omsorgspraktiker inom brandkårens operativa verksamhet. ["If you're afraid, you can sit beside me and hold my hand." - Infantilization and homosocial care practitioner within the fire department's operational activities]. *Tidskrift för genusvetenskap*(1-2), 115-136.
- Padyab, M., Bacteman-Erlanson, S., & Brulin, C. (2016). Burnout, Coping, Stress of Conscience and Psychosocial work environment among Patrolling Police Officers. *Journal of Police Criminal Psychology*. 31, 229-237.
- Paley, J. (2001) An archeology of caring knowledge. *Journal of Advanced Nursing*, 36, 188-198.
- Perrin, M. A., DiGrande, L., Wheeler, K., Thorpe, L., Farfel, M., & Brackbill, R. (2007). Differences in PTSD prevalence and associated risk factors among World Trade Center disaster rescue and recovery workers. *American Journal of Psychiatry*, 164(9), 1385-1394.

- Polit, D., Beck, C., 2006. *Nursing Research: Principles and Methods*. Philadelphia: Lippincott Williams & Wilkins.
- Pörn, I. (1995). Vad är hälsa? I Klockars, K., & Österman, B. (Red.) *Begrepp om hälsa, filosofiska och etiska perspektiv på livskvalitet hälsa och vård*, 14–28. Stockholm: Liber.
- Riessman, C. K. (2008). *Narrative Methods for the Human Sciences*. London: Sage Publications.
- Robertson, S. (2007). *Understanding men and health: Masculinities, identity and well-being*. UK: McGraw-Hill Education.
- Sandvide, Å. (2008). *Våld i särskilda boenden för äldre : språk och sociala interaktioner*. [Violence in special housing for the elderly: language and social interactions], Umeå University, Umeå.
- Schabracq, M. J., Winnubst, J. A., & Cooper, C. L. (2003). *The Handbook of Work and Health Psychology*. (2nd. Ed.), New Jersey: John Wiley & Sons Inc.
- Schaufeli, W., & Enzmann, D. (1998). *The burnout companion to study and practice: A critical analysis*. London: Taylor & Francis Ltd.
- Schutte, N., Toppinen, S., Kalimo, R., & Schaufeli, W. (2000). The factorial validity of the Maslach Burnout Inventory-General Survey (MBI-GS) across occupational groups and nations. *Journal of Occupational and Organizational Psychology*, 73(1), 53-66.
- Setti, I., Lourel, M., & Argentero, P. (2016). The role of affective commitment and perceived social support in protecting emergency workers against burnout and vicarious traumatization. *Traumatology*, 22(4), 261.
- SFS, 2003:778. Svensk Författning: Lag om skydd mot olyckor. [the Swedish Accidents Protection Act]. Stockholm: Justitiedepartementet
- Smith, J. L. (2007). Critical discourse analysis for nursing research. *Nursing Inquiry*, 14(1), 60-70.
- Soares, J., Grossi, G., & Sundin, Ö. (2007). Burnout among women: associations with demographic/socio-economic, work, life-style and health factors. *Archives of women's mental health*, 10(2), 61-71.
- Staland-Nyman, C., Alexanderson, K., & Hensing, G. (2008). Associations between strain in domestic work and self-rated health: A study of employed women in Sweden. *Scandinavian journal of public health*, 36, 21-27.
- Stansfeld, S., & Candy, B. (2006). Psychosocial work environment and mental health—a meta-analytic review. *Scandinavian Journal of Work, Environment and Health*, 443-462.
- Sterud, T., Ekeberg, Ø., & Hem, E. (2006). Health status in the ambulance services: a systematic review. *BMC Health Services Research*, 6(1), 1.
- Streubert, H. J., & Carpenter, D. R. (2011). *Qualitative research in nursing: Advancing the humanistic imperative*. (5nd. Ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Søgaard, A. J., Selmer, R., Bjertness, E., & Thelle, D. (2004). The Oslo Health Study: The impact of self-selection in a large, population-based survey. *International Journal of Equity in Health*, 3, 3.
- Sörlin, A., Ohman, A., Blomstedt, Y., Stenlund, H., & Lindholm, L. (2011). Measuring the gender gap in organizations. *Gender in Management: an international journal*, 26(4), 275-288.

- Taris, T. W., Bakker, A. B., Schaufeli, W. B., Stoffelsen, J., & Van Dierendonck, D. (2005). Job control and burnout across occupations. *Psychological Reports*, 97(3), 955-961.
- Threadgold, T. (2013). Cultural studies, critical theory and critical discourse analysis: Histories, remembering and futures. *Linguistik online*, 14(2).
- Traynor, M. (2006). Discourse analysis: theoretical and historical overview and review of papers in the Journal of Advanced Nursing, 1996–2004. *Journal of Advanced Nursing*, 54(1), 62-72.
- Töyry, S., Kalimo, R., Äärimaa, M., Juntunen, J., Seuri, M., & Räsänen, K. (2004). Children and work-related stress among physicians. *Stress and Health*, 20(4), 213-221.
- Van Der Ploeg, E., & Kleber, R. J. (2003). Acute and chronic job stressors among ambulance personnel: predictors of health symptoms. *Occupational and Environmental Medicine*, 60(suppl 1), 40-46.
- Watson, J., & Smith, M. (2002). Caring science and the science of unitary human beings: a trans-theoretical discourse for nursing knowledge development. *Informing Practice and Policy Worldwide through Research and Scholarship*, 37(5), 452-461.
- Weber, R. P. (1990). *Basic content analysis*. Thousand Oaks, CA: Sage.
- Wiitavaara, B., Lundman, B., Barnekow-Bergkvist, M., & Brulin, C. (2007). Striking a balance— health experiences of male ambulance personnel with musculoskeletal symptoms: A grounded theory. *International Journal of Nursing Studies*, 44(5), 770-779. doi:10.1016/j.ijnurstu.2006.02.007
- Wikman, A., Marklund, S., & Alexanderson, K. (2005). Illness, disease, and sickness absence: an empirical test of differences between concepts of ill health. *Journal of Epidemiology and Community Health*, 59(6), 450-454.
- WMA, World medical association, declaration of Helsinki, (2013). Ethical Principles for Medical Research Involving Human Subjects. *JAMA*, 310:2191-4.
- Wodak, R. (1999). Critical discourse analysis at the end of the 20th century. *Research on Language & Social Interaction*, 32(1-2), 185-193.
- World Health Organization. (1948). Constitution of the World Health Organization. Geneva: WHO.
- World Health Organization. (1986). *Ottawa charter for health promotion: An International Conference on Health Promotion, the move towards a new public health*. Ottawa: WHO.
- World Health Organization. (1998). *Health promotion glossary*. Geneva: WHO
- World Health Organization. (2001). *Strengthening mental healthPromotion*. Geneva: WHO (Fact sheet, No. 220).
- World Health Organization. (2004). *Promoting mental health: Concepts, emerging evidence, practice*. Geneva: WHO.
- Wright, T. A., & Cropanzano, R. (2000). Psychological well-being and job satisfaction as predictors of job performance. *Journal of Occupational Health Psychology*, 5(1), 84.
- Wännström, I., Peterson, U., Asberg, M., Nygren, A., & Gustavsson, J. P. (2009). Psychometric properties of scales in the General Nordic Questionnaire for Psychological and Social Factors at Work (QPS): confirmatory factor analysis and prediction of certified long-term sickness absence. *Scandinavian Journal of Psychology*, 50(3), 231-244. doi:10.1111/j.1467-9450.2008.00697.x

Åhlin, J., Ericson-Lidman, E., Norberg, A., & Strandberg, G. (2015). A comparison of assessments and relationships of stress of conscience, perceptions of conscience, burnout and social support between healthcare personnel working at two different organizations for care of older people. *Scandinavian Journal of Caring Sciences*, 29(2), 277-287.

Appendix A

Interview Guide

Focus group discussion in rescue service stations

Aim/topic

To explore firefighters' health and well-being

To identify health promoting aspects against the background of the firefighters' description of their work

1) Introducing/presentation

Focus group discussion starts with an introduction from the facilitator about its purpose and process.

- Welcome all the participants and introduce yourself and any other team members in the room, explaining their roles.
- Explain the general purpose of the discussion and why the participants were chosen.
- Explain the presence and purpose of audio or video recording equipment.
- Explain the structure of the focus group, the duration (1 - 1½ hours) and outline of ground rules and discussion guidelines, including the importance of hearing everyone, the more participant-led the discussion, the better, speaking one at a time and that the fact the moderator might interrupt to ensure that all the topics can be fairly covered.
- Inform the participants what will happen with the information (data material), that it will be analysed and written up in a report. Inform the participants that no individual will be identified in any output from the research and that while what is said might be quoted it will be done in a way to ensure that it is anonymous.
- Emergency alarm – we interrupt the FGD - without explanation.

2) Introductory questions

- Engage the group by starting with a warm-up round

3) Questions divided into areas

Why firefighter?

- How did you become a firefighter?

Description of the work

- Can you tell us about a regular day at work, what is it like?
- Can you tell us about the emergency work, - about the station work?
- What is important when working as a firefighter?
- What makes you stay at work as a firefighter?

Work environment/Well-being?

- How do you like the work? Well-being?
- What is it that makes you continue to work as a firefighter
- What is it that keeps you going on?
- What makes you feel comfortable and feeling good?

Difficulties at work

- What is the most challenging, hardest thing about being a firefighter?
- We have previously conducted a study in which firefighters have described about critical incidents in the profession. What do you do in difficult events / after difficult events? How do you handle it? What support is available in the work organization?
- We have examined the presence of burnout among firefighters - indicating that firefighters in general are relatively healthy in terms of burnout. What do you think about that? Why do you think it may be that way?

Past - Present – Future and Context

- How would you say that the profession has changed? For the better or worse?
- Surrounding image of the firefighter profession?

- The image of your profession in the media, is it correct? Do you have any thoughts about it? ("Heroic article")

Concluding and summary discussion

- Summary of what has been said, what we have discussed (topics)
- Encourage participants to think about what has been said and reflect on the experience or to add any other comments that have not been heard earlier. Give participants the opportunity to speak with the moderator – assisting moderator individually to ensure that they have said everything that was on their mind (even if they did not say it during the group discussion).

Observe interactions during FGD

- Participants ask each other questions
- Building on each other's ideas
- Changing their opinions
- Affirming each other
- Encouraging each other's memories
- Modifying each other's comments
- Persuading each other
- Reacting to each other's comments
- Initiating new ideas
- Taking opposing positions
- Highlighting subjects you didn't think to ask
- Speaking space