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# Entrepreneurs and Small-Scale Enterprises

*Self Reported Health, Work Conditions, Work  
Environment Management and Occupational Health  
Services*

KRISTINA GUNNARSSON



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### **Abstract**

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This thesis focused on factors contributing to improved work environment in small-scale enterprises and sustainable health for the entrepreneurs.

In Study I, implementation of the provision of Systematic Work Environment Management (SWEM) with and without support was investigated. Two implementation methods were used, supervised and network method. The effect of the project reached the employees faster in the enterprises with the supervised method. In general, the work environment improved in all enterprises. However, extensive support to small-scale enterprises in terms of advice and networking aimed at fulfilling SWEM regulations had limited effect – especially considering the cost of applying these methods.

Studies II, III, and IV focused on entrepreneurs' health, work conditions, strategies for maintaining good health, and utilisation of Occupational Health Service (OHS). A closed cohort of entrepreneurs in ten different trades responded to two self-administered questionnaires on health and work conditions, with five years between the surveys: at baseline, 496 entrepreneurs responded, and 251 entrepreneurs responded at follow-up. Differences were tested by Chi<sup>2</sup>-test, and associations estimated with logistic regression analyses. Qualitative interviews on entrepreneurs' strategies for maintaining good health were included. In Study II, the most frequently reported complaints, musculoskeletal pain and mental health problems, were associated with poor job satisfaction and poor physical work environment. In Study III, consistent self-reported good health, i.e. good health both at baseline and at follow up, was associated with self-valued good social life when adjusted for physical work conditions and job satisfaction. Entrepreneurs' strategies for maintaining good health included good planning and control over work, flexibility at work, good social contact with family, friends and other entrepreneurs, and regular physical exercise.

Study IV concerned entrepreneur's utilisation of OHS. Entrepreneurs affiliated to OHS had either better or more adverse work conditions than non-affiliated entrepreneurs. Medical care and health check-ups were the services most utilised. Affiliation to OHS correlated with use of specific information sources and active work environment management. The entrepreneurs were not consistently affiliated to OHS over the five-year-period.

*Keywords:* small-scale enterprises, SSE, entrepreneur, self-rated health, systematic work environment management, work conditions, social life, Occupational Health Service, OHS

*Kristina Gunnarsson, Occupational and Environmental Medicine, Akademiska sjukhuset, Uppsala University, SE-75185 Uppsala, Sweden*

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*To my family*



# List of Papers

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

- I Gunnarsson K, Andersson I-M, Rosén G. (2010) Systematic Work Environment Management: Experiences from Implementation in Swedish Small-Scale Enterprises. *Ind Health*, 48:185-196.
- II Gunnarsson K, Vingård E, Josephson M (2007) Self Rated Health and Working Conditions of Small-Scale Enterprisers in Sweden. *Ind Health*, 45:775-780.
- III Gunnarsson K, Josephson M. (2010) Entrepreneurs' self-reported health, social life, and strategies for maintaining good health. *Submitted*.
- IV Gunnarsson K, Andersson I-M, Josephson M. (2010) Entrepreneurs approach and utilisation of Occupational Health Service. *Submitted*.

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# Abbreviations

CI	Confidence Interval
ENWHP	The European Network for Workplace Health Promotion
FSF	The Swedish Association of Occupational Safety and Health
IPF	Institutet för Personal & Företagsutveckling
NIWL	National Institute for Working Life
OHS	Occupational Health Service
OR	Odds Ratio
OSHA	The European Agency for Safety and Health at Work
OSHMS	Occupational Safety and Health Management Systems
SD	Standard Deviation
SOC	Sense of Coherence
SSE	Small-Scale Enterprise
SWEA	The Swedish Work Environment Authority
SWEDAC	Swedish Board for Accreditation and Conformity Assessment
SWEM	Systematic Work Environment Management
WEST	Work Environment Screening Tool
WHP	Workplace Health Promotion



# Introduction

## Background

Since the middle of 1990, the number of small-scale enterprises (SSE) has increased, and they are considered important for economic growth both in Sweden and in other countries (1). In the first decade of 2000, more than 98% of all private companies in Sweden were SSE (<50 employees), employing up to 35% of the total work force (2, 3).

Studies on work environment in SSEs consider entrepreneurs' personal values greatly influence the culture of the enterprise (4, 5, 6). If entrepreneurs are interested in health, it will have a good influence on work environment and employees' health (7, 8). However, there is little information about entrepreneurs' own health and the knowledge about health problems and workload among entrepreneurs in Sweden is limited.

## Health

The definition of the concept of health has changed over time. In 1948, WHO defined health as "a state of complete physical, mental, and social wellbeing, and not merely the absence of disease or infirmity" (9). Later, health was considered more as a resource in daily life than a goal in life. In Ottawa charter 1986, WHO developed the definition of health as "Health is, therefore, seen 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 capacities" (10).

The definition of health is classified into two main categories: the biomedical and the humanistic. The biomedical approach is described as health in contrast to disease. The humanistic approach to health is more complex, where health and diseases can be considered as a continuum or as different dimensions. Therefore, it is possible to have a disease at the same time as the individual has good health (11).

In the humanistic approach, a couple of theories can be highlighted. Nordenfelt (12) describes the equilibrium theory, where health is linked with an individual's ability, and disease is consequently linked with disability. Moreover, ability is related to individuals' goals and therefore cannot be identical for different individuals.

Eriksson (13) considers health as an integrated state of soundness, freshness, and a feeling of well being, but not necessarily with the absence of disease or illness. Well being is described as a subjective dimension and illness as an objective dimension, as illustrated by the health cross in Figure 1. Individuals can suffer from illness but have an experience of well being, illustrated in point A. Being free from illness and having feeling of well being is represented by point B. Point C illustrates individuals with feeling of ill being but without illness, and point D relates to individuals suffering from illness and having feeling of ill being (Figure 1). According to Eriksson, health is originally theological-based on the individual's concept of beliefs, hope, and love.

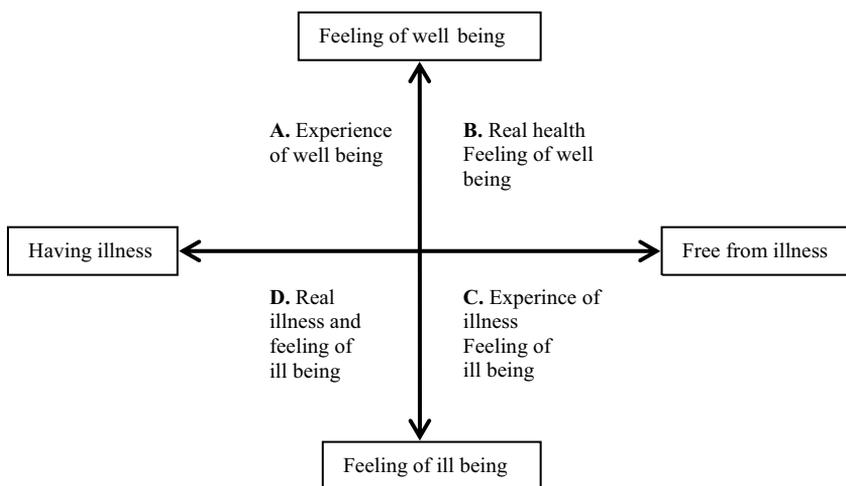


Figure 1. Eriksson's description of health in "Hälsans idé" (13, page 46).

## Work Health Promotion

Having good health is important for individuals as a resource in daily life. The European Network for Workplace Health Promotion (ENWHP), started in 1996 as a part of the EU, have jointly approved the vision "Healthy employees in healthy organisations". In 1997, EU common goals in work health promotion was confirmed in the Luxembourg Declaration on Workplace Health Promotion (WHP) and can be described as "combined efforts of employers, employees and society to improve health and well-being at work by improving work organisation and work environment, promoting active participation, and encouraging personal development" (14). The European Agency for Safety and Health at Work (OSHA) added the

possibility for enabling healthy choices for achieving health and safety at work and highlighted the importance of including a program for safe and healthy work environment together with more general WHP (15). As small-scale enterprises face difficulties in promoting the health of employees, the European Network for WHP adopted a memorandum in Cardiff in 1998 to facilitate health promotion in SSEs (16)

In practice, health promotion at work is described by Hansson and Menkel (17, 18) as including individual and organisational activities, improvements in physical and psychosocial work environment, and with leadership promoting health. The individuals' own ability and motivation for good health are considered important aspects to take advantage of. For improving employees' health, individual health programmes need to be combined with management support as well as a supportive management climate (19). Health promotion as an organisational strategy needs to have distinct and measurable goals in an enterprise. Such goals can be increased efficiency and productivity, increased quality, less sick absence, and fewer rehabilitation cases (20).

Kuoppala (21) has evaluated effects of WHP on physical-, mental- and job wellbeing, work ability and sick leave. Health promotion generally increased job wellbeing, mental wellbeing, work ability, and decreased sickness absence, but had no effects on physical wellbeing and wellbeing in general. Of the different kinds of health promotion, education and psychological methods did not reveal any effects, exercise increased general wellbeing, work ability, and decreased sickness absence. Work redesign increased mental wellbeing and decreased sick absence.

## Work-related complaints

The Swedish Work Environment Authority regularly undertakes surveys about work-related complaints. In the statistics, the whole work force are included and not divided into type of employment, trade, or size of enterprise. In the last published survey (22), 24% of women and 19% of men, of a sample of 21% of employed people, reported work-related complaints. The prevalence of work-related complaints from neck and upper extremities was higher for women than for men, whilst the prevalence of work-related complaints from back and lower extremities was equal for both women and men. For both men and women, reported complaints have decreased since 2006: about 6% of men and 8% of women reporting complaints due to work had changed work tasks e.g. transferred to another workplace in the same enterprise, had reduced work hours, or changed employment to another enterprise. Both men and women reported stress and mental strain, loading work postures, and heavy work as cause of the work-related complaints. There were differences between manual and non-manual work, with manual workers more often reported loading work postures,

repetitive movements, and heavy work as causes for the complaint, whilst non-manual workers more often reported stress and mental strain as causes. Allergies were more common among women and more common among manual workers and anxiety, depression and sleep disturbance were more common among non-manual workers. Generally, women had more mental health problems, including sleep disturbance than men, and female non-manual workers over 50 years old had highest level of sleep disturbance.

## Health in small-scale enterprises

Absence due to sickness is lower in small-scale enterprises than larger enterprises. However, entrepreneurs and employees in small enterprises are not necessarily healthier, instead they are regarded having higher sickness-attendance, as the absence of any employee in small-scale enterprises results in problems in production (5). Employees feel disloyal to both colleagues and the entrepreneur when they stay at home.

Occupational diseases and injuries are more common in smaller enterprises in some trades, e.g. agriculture, building and manufacturing industries (4, 6). The reasons could include a lack of knowledge and low awareness about risks in the work environment and the way these risks affect health.

### **Entrepreneurs health**

Good health can be a prerequisite for managing and developing a small-scale enterprise. There are few international studies on entrepreneurs' health. Two European surveys in 15 countries belonging to the European Union conclude entrepreneurs with 1-9 employees report high levels of fatigue and stress but a low level of job dissatisfaction. However, full-time self-employed report high levels of fatigue, back pain, muscular pain, stress, and job dissatisfaction, but have low level of absence from works (23, 24).

The Unit for Small-Scale Enterprises, Örebro University, Sweden (25), has investigated work conditions and health in small-scale enterprises; some of the investigations have also been aimed at entrepreneurs. Results from one investigation on entrepreneurs' health reveal 30% of a sample of entrepreneurs from different trades report pain and stiffness from neck and shoulders, and 27% from back and lower extremities (26). Other studies from the unit demonstrate risk for health problems caused by high exposure to chemicals, e.g. eczema in hairdressers and dentists (5, 27, 28). An interview study on health and life style of 32 entrepreneurs in different service trades found 68% of the entrepreneurs report good health, 19% report complaints not influencing work ability, and the remaining entrepreneurs report ill-health influencing work ability (29). A separate analysis of entrepreneurs in a population-based study of risk factors for cardiac infarction did not find increased risks for entrepreneurs (30).

A study of Swedish farmers' health and time of retirement found farmers continued to work after 65 years age more than employees sampled from a population register did. No differences between farmers and employees were found with respect to mental disorders, cardiovascular diseases, or musculoskeletal disorders. Accordingly, better health status could not explain farmers' higher age for retiring (31).

## Factors influencing health

### **Long work hours**

Studies on long working hours and health status are contradictory. A study (32) of long work hours and health among employed workforce in EU revealed a correlation between extended work hours and the frequencies of health complaints. Artazcoz (33) highlighted that in men, different health outcomes, e.g. poor mental health status, self-reported hypertension, and sleep disorders are associated with long work hours, but self-rated general health is not. Flexibility of working hours, meaning influencing one's own work hours and deciding when to take holidays or time off appears to have good effect on health and well-being (34, 35).

### **Sense of coherence**

In his salutogenic theory, Antonovsky (36) describes determinants for maintaining health. The focus of the theory is on factors supporting human health and well-being, rather than on factors causing diseases. In the model "Sense of Coherence" (SOC), the importance of the factors comprehensibility, manageability, and meaningfulness to maintain good health are expressed. According to a longitudinal study in a general population in the northern part of Sweden, self-employed women report decreased SOC, whereas, self-employed men do not. One reason could be that men are entrepreneurs in more established trades and female entrepreneurs start enterprises for economic reasons in times of declined labour market (37).

### **Locus of control**

According to Rotter (38), the locus of control is a psychological concept about individuals' perception of what causes events and circumstances in life. The perception of events in life being dependant on individuals' own behaviour or personal characteristics is considered as an internal locus of control: external locus of control is an expression of interpreting events depending on other people or external forces. In a study comparing entrepreneurs with managers, Rahim (39) demonstrates entrepreneurs have higher internal locus of control. For entrepreneurs, high internal locus of control could be an important moderator of stress, as they often do not have

colleagues at work. In his thesis, Millet (40) discusses the meaning of locus of controls in work life, and concludes it is of some importance for rehabilitation and for managing an enterprise.

### **Work engagement**

Work engagement is defined as a positive work-related state of mind characterised by the conceptions vigour, dedication, and absorption. Vigour is expressed as high levels of energy, dedication as being strongly and enthusiastic involved in work, and absorption is expressed as being concentrated and happily engrossed in work (41). Work engagement is in studies by Schaufeli regarded as an antipode of burnout (42, 43). In two studies, Bakker (44, 45) reveals work engagement leads to good job performance, client satisfaction, and more creativity. Work engagement is positively related to good health, high workability, and less self-reported health complaints (43, 46, 47).

### **Work and social life**

Work is important for the individual not only for economic reasons, it also implies social activities and often plays an essential role in life for an individual. The general importance of work in a person's life can be related to the importance of family, leisure, religion, and community. The concept of relative work centrality is not primarily related to the time spent in different areas of life, it is more a question of the belief of the importance of work (48, 49). Although high work centrality is likely to be associated with commitment to work and job satisfaction, very high work centrality might be related to reduced leisure activities, work over load and health problems (50, 51).

Barnett et al (52) describe the expansionist theory, meaning having multiple social roles in life, as important for increased opportunities for social support, and thereby, possibilities for improved well-being and good health. However, even though multiple roles can be beneficial, they can also increase stress, as the quality of individuals' roles is more important for health than the number of beneficial roles. Having multiple social roles provides behavioural guidance in varying situations and can increase psychological well-being (53). According to a study of Nordenmark (54), the number of social roles and an increase of social roles are associated with a lower risk of suffering from insomnia and lingering diseases.

There are different kinds of social life and social support. Cohen (55) describes four different kinds of social support resources: "Esteem support" is described as giving attention to an individuals personal worth and thereby increasing their self-esteem; "Informational support" is giving help to understanding and coping with problems and difficulties; "Social companionship" is to spend leisure time together with others; and, "Instrumental support" such as help with finances or material problems.

Social support based on participation in leisure activities is regarded as having a good effect on health and wellbeing. Sharing leisure activities with other people can facilitate individuals' resistance against adverse stress reactions and provide strategies for coping with stress reactions (56). Studies on participation in leisure interests outside work express the positive consequences of avoiding work-related activities. Having a distance from job-related questions after work, as well as social support, provides more relaxation and helps individuals to reduce sleep disturbance (57, 58). Tucker's study (59) of three different kinds of leisure activities (quiet leisure activities at home, active leisure activities, and doing additional work) and their influence on sleep, recovery, and well-being revealed the nature of the activity was unimportant. Instead, being satisfied with evening activities was associated with better self-rated sleep. However, a comparison on demands of work and leisure activities might have been of greater importance than a comparison between different activities. According to Hyyppä (60, 61), having an active leisure activity is associated with good health and longer life: in leisure activities not only physical activities are included, but also cultural and hobby activities.

In this thesis, good social life was defined as the entrepreneurs' opinion about how they regarded social life in relation to work.

## Small-scale enterprises

Enterprises can be classified by different definitions, by number of employees working in the enterprise or in economic terms. Most common, and used in this thesis, is the definition by number of employees. In some countries, enterprises with up to 250 employees are classed SSE, but in Sweden, enterprises employing up to 50 employees are defined as SSE. As many as 70% of SSE do not have any employees at all, meaning that the entrepreneur (owner) is self-employed, and thereby the only one working in the enterprise. About 25% of SSE is defined as micro-enterprises employing 1-9 people (2, 3).

In this thesis, small-scale enterprises with 0-49 employees were included.

## Entrepreneurs

There is no real consensus about how to denominate a person managing a small-scale enterprise. The name *small-scale enterpriser* sometimes appears in studies from USA, but is confusingly similar to the designation of the small enterprises, "Small-scale enterprise". Terms such as *manager* or *managing director* are also used, but these do not indicate they own the enterprise. Further, the *owner*, which is sometimes used, does not necessarily work at the enterprise. The name *entrepreneur* is discussed by Goss (62),

who considers that even if people both own and work in the small-scale enterprise, they are not necessarily entrepreneurial in their activities. However, the most established name in both academic and popular contexts is *entrepreneur*, therefore, Goss proposed that the continued use of that name. Thus, the name *entrepreneur* was used in this thesis.

In Sweden, there are about 400 000 entrepreneurs of small-scale enterprises; the majority are men (70%), and about 14% are foreign-born (63). Men and women are mostly entrepreneurs in different trades. Men are more often entrepreneurs in building industries, transportation, and manufacturing industries, and women in the health- and medical care, education, and retail. The distribution in different trades concurs with employees' distribution according to gender. Most entrepreneurs (80%) worked as employees in private companies before establishing an enterprise (5, 64, 65, 66).

According to studies of entrepreneurs, they are often considered as having strong views and strong power of initiative. Independence, self-determination and interesting tasks are more important factors than the possibility of earning a lot of money when starting an enterprise. Most entrepreneurs earn less money than employees in the same profession do. However, the possibilities for a better life and personal development appear of great value. Conversely, starting an enterprise could also be an escape from undesired and unacceptable conditions at work. In which case, the entrepreneur often remains self-employed without any thought of employing people. Being self-employed can also be caused by necessity such as through unemployment or outsourcing of work tasks. Stress, long work hours, and economic burden, especially if the entrepreneur has employees, are difficulties reported by the entrepreneurs (5, 29, 65, 66). The demands and influencing factors from authorities and society on entrepreneurs are illustrated in Figure 2.

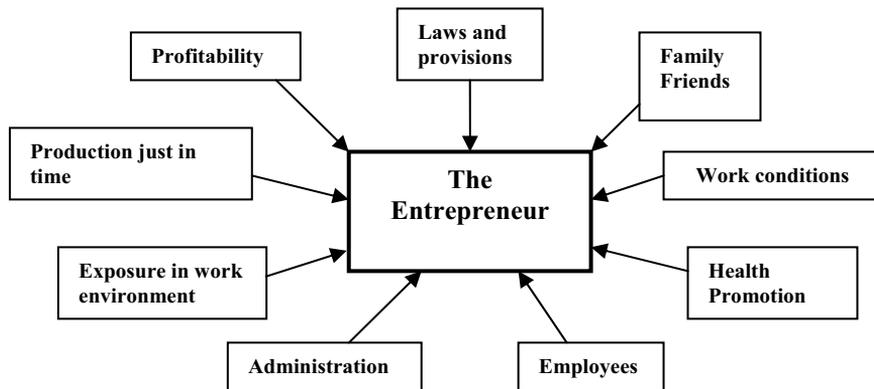


Figure 2. Influencing factors and demands on the entrepreneur

### Entrepreneur types

Entrepreneurs in small-scale enterprises are considered a heterogenic group. To highlight the differences, research in management and psychology has classified entrepreneurs into different categories. Goss (62) describes two dimensions, “vocational attachment” and “managerial orientation” to illustrate four types of entrepreneurs. The first type of entrepreneur, “The traditional style”, has a high level of vocational attachment and low level of managerial orientation, meaning the origin occupation is important, and successful business is regarded as a tool to be able to work with familiar tasks. The second type, “The techno centric style” combines a high level of vocational attachment with a high level of managerial orientation. The entrepreneur tries to develop the enterprise through innovation, marketing, and long-lasting business projects. The third type, “The marketers”, are characterised by low vocational attachment and high managerial orientation. Business goals and profitability are of importance, but how this is achieved is unimportant. Finally, the fourth type of entrepreneurs, “The isolationist style” has both low levels of vocational attachment and low managerial orientation. For this type of entrepreneur, neither profitability or expansion are negligible, having an individual lifestyle is the most important.

Miner (67) also describes four types of entrepreneurs: “Personal achiever”, “Real manager”, “Expert idea generator”, and “Empathic salesperson”. The “Personal achiever” is a person with high achievement motivation, high job commitment, and appreciates the challenges work generates. The “Real manager” is highly motivated to managerial tasks and interested in influence, coordination, and leading employees. The “Expert idea generator” is curious and creative, and interested in developing or

improving products. The “Empathic salesperson” is highly committed to communicative tasks and can easily arouse enthusiasm in employees: they appreciate good relationships with colleagues and customers.

Reynierse (68) identified four similar types of entrepreneurs through the Myer-Briggs Type Indicator: “Extraverted type”, “Intuitive type”, “Tough-minded type”, and “Maladapted type”. The different types have characteristics comparable with three of Miner’s four classifications of entrepreneurs. The “Extraverted type” appreciates good interpersonal relations and places importance on colleagues and customers. The “Intuitive type” is creative and innovative with high visions. The “Tough-minded” type acts in a more rational and objective way, and is more impersonal in contact with employees. Finally, the “Maladapted type” has difficulties in accepting authority; they appreciate independence.

## Work environment in small-scale enterprises

Small-scale enterprises operate in most trades even if they are more common in some trades e.g. agriculture, juridical and economic, retail, building, and manufacturing trades (63). Depending on the trade, the work environment is quite different, which presents a difficulty in making general conclusions about risks in the work environment in small-scale enterprises. Exposure to chemicals and physical risks can be higher in the smallest enterprises, as few people work in the enterprise and they usually have to do different work tasks (4). Johansson (66) proposes the discussion of risks in the work environment should focus on the trade instead of the size of the enterprise.

Several studies on small-scale enterprises demonstrate small-scale enterprises in some trades have more problems related to physical work environment (5, 6, 69). The reasons could be lack of knowledge about occupational risk factors and a problem with organisation of work environment management.

The psychosocial work environment is often regarded as better in smaller enterprises than larger enterprises (5, 70). Employees’ nearness to the entrepreneur means short decision-making processes, which are considered to contribute to a good psychosocial work environment (69). The working teams are smaller, and closer relationship between employees and the entrepreneur are common. The smallest enterprises are described as having a family-like structure, where the personal values of the entrepreneurs are important. However, in such small organisations, employees may have difficulties in expressing opinions that contradict the entrepreneur’s, or lodge complaints about work conditions (71).

The entrepreneur’s control of conflicts in small-scale enterprises is generally as a “benevolent autocracy” (62), meaning there is a border between the entrepreneur and employees. The entrepreneur has kindly relations to the employees, but they are not together outside work. The

entrepreneur is autocratic in all decisions concerning the enterprise, with this behaviour, the entrepreneur can neutralise conflicts before they increase.

### **Entrepreneurs' work conditions**

As entrepreneurs in the smallest enterprises often work with the employees, they are exposed to the same physical factors in the work environment. Additionally, long working hours are characteristics for entrepreneurs (5).

Entrepreneurs in small-scale enterprises are more likely to report job satisfaction than full-time employees are (23, 24). Job satisfaction is also related to how enjoyable and meaningful the work is (72). A study by Hundley (73) demonstrated that job satisfaction for self-employed and entrepreneurs with employees is associated with autonomy and flexibility about how and when to perform work tasks, skill utilisation, and greater job security. Self-employed contractors dependent on a recruitment agency report less job satisfaction than self-employed independent of a recruitment agency or employees do (74). However, the high level of job satisfaction among entrepreneurs disappears when controlling for demographics and work characteristics (75).

### **Improving work environment**

Methods for improving the work environment are discussed in the literature. The entrepreneur's interest in and motivation for improving the work environment and employees' active participation combined with simple and low cost solutions are regarded as cornerstones in increasing health and safety at work.

### **Systematic Work Environment Management**

National provisions claiming implementation of occupational safety and health management systems (OSHMS) are applied in many countries. In Sweden, as in other European countries, the provisions are based on the European Union Framework Directive 89/391. The provision Systematic Work Environment Management (SWEM) regulates safety at work in all enterprises in Sweden, and is in force for all enterprises with employed people. In 2001 and 2003, the provision was revised to be more appropriate for smaller enterprises, and is distinguished by the employer systematically investigating, carrying out and following up activities to prevent ill-health and accidents at work, and for achieving satisfactory work environment (76).

The underlying idea is that both employer and employees actively participate in the work to improve the work environment. In the new provisions, the smaller enterprises are exempt from some documentation requirements (76). Even so, there are many difficulties in implementing the regulation in small-scale enterprises.

Entrepreneurs in small-scale enterprises can also have problems implementing systematic work environment management. Earlier experiences of working systematically in other areas can facilitate implementation of SWEM (77). Results from a review highlighted that, in general, activities aimed at improving work conditions are more concrete than activities intended to develop Occupational Safety and Health Management Systems (OSHMS) (78).

Axelsson (79) discusses entrepreneurs' over-confidence in the small size of the enterprises. Informal attitudes to activities in the work environment renders employees unsure of how to improve work environment. To succeed with activities aimed at improving the work environment, the structure of the work needs to be formalised. The entrepreneur must highlight the importance of good work-environment management in order to involve employees. This is contradictory to Johansson's (66) opinion that even if small-scale enterprise activities aimed at improving the work environment is less formalised, they do not have considerably worse work environment than larger enterprises working in a more formalised way.

In this thesis, systematic work environment was investigated from the different demands included in the provision of Systematic Work Environment Management.

### **Entrepreneurs' motivation and employees participation**

Brosseau found that small-scale enterprises managed by entrepreneurs with a high interest in health and improved work environment, gave healthier employees, increased employee's productivity and product quality, and presented lower costs for worker's compensation (7).

Johansson (66) demonstrated that a motivation model based on expectancy theory could increase the motivation for improving the work environment. The entrepreneurs highly valued primary effects such as comfort and well being, and pleasure in work, as well as secondary effects such as high efficiency, productivity, and profitability. A recently published Norwegian study (80) indicates training programs for managers improve health and safety management procedures and employees' subjective opinion of the work environment. The entrepreneurs' key role in improving health and safety is illustrated in Figure 3.

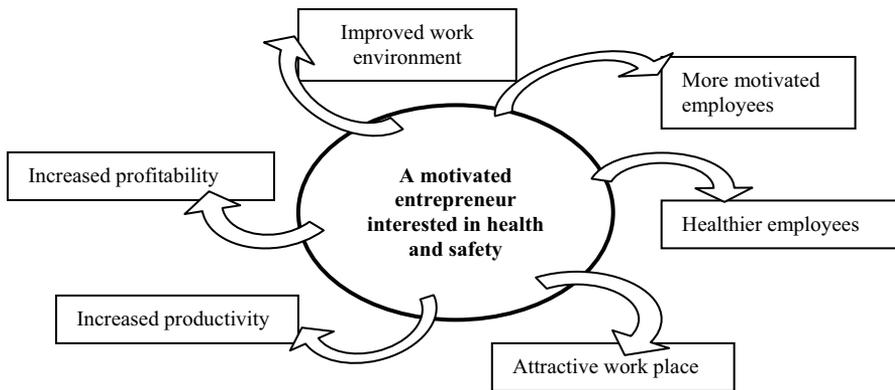


Figure 3. The entrepreneur has a key role in improving health and safety.

Also the employees need to participate actively in work aimed at increasing health and safety at work. Dialogue between entrepreneur and employees increases the knowledge of the work environment and improves the working climate and awareness of risks (4, 69, 77, 81, 82, 83).

### Practical tools

There is a variety of tools and checklists to facilitate improvements in the work environment. Different ways specially aimed at the small-scale enterprises are available; guidelines, virtual networking around health and safety, and web-based information are considered by Lehtinen (84) as practical actions and tools for improving health and safety in the workplaces. Several studies (85, 86) highlights the importance of locally tailored tools and low-cost solutions for improving the work environment, and Itani (87) emphasises the necessity of support from experts when introducing and evaluating activities aimed at improving conditions at work. However, it appears entrepreneurs of small-scale enterprises have neither the knowledge nor motivation to use all these tools without guidance and supportive training (82).

### Regional safety representatives

Regional safety representatives were introduced into working life in 1949. In The Swedish Work Environment Act (88), it is stipulated that in enterprises where more than 50 employees are regularly employed, a safety committee consisting of representatives of both the employer and the employees should be organised. In small-scale enterprises, there is instead a system of regional safety representatives, who visit the enterprises once a year. The dialogues with the entrepreneur and the employees can raise the awareness of risks and improve the work environment. These dialogues combined with education of local safety representatives are regarded as successful in involving

employees in health and safety activities. The regional safety representatives often have broad experience and can suggest low-cost solutions on work environment hazards. The cost of the regional safety representatives' preventive work is often low (4, 89).

## Occupational Health Service

The coverage of Occupational Health Service (OHS) for people actively employed in the labour market in Sweden is decreasing. In the last survey conducted in 2007 by the Swedish Work Environment Authority, the overall coverage was 66%. Depending on trade, employees in small-scale enterprises have 10-55% access to OHS (90). The structure and organisation of OHS, based on the European Union Framework Directive 89/391, are described in the Work Environment Act stating OHS to have broad knowledge of work organisation, behavioural science, ergonomics, medicine, rehabilitation, and technology (88), and is further clarified in the provision of SWEM (76)

There are no statutory requirements for quality standards of Occupational Health Services in Sweden. A voluntary quality system, based on ISO 9001 and leading to a certification issued by the official Swedish Board for Accreditation and Conformity Assessment (SWEDAC), was introduced in 1996 (91). According to information from the Swedish Association of Occupational Safety and Health (92), in 2007, about 80% of FSF's OHS unit members had voluntarily been certified. During 2010, the government intends to tighten the requirements, and OHS organisations will be officially approved through licensing by the Swedish Social Insurance Agency as service providers to the Agency. OHS organisations in Sweden receive no subsidies from public funding, and operate as market-based service providers in the health market competing with other organisations in the same sector. To be attractive to customers is a prerequisite for financial profit and survival under market conditions. There are differing arrangements for the payment of services according to a service contract. Fee-for-service contracts or agreements imply that types of service are paid for as they are purchased and consumed. There are also block arrangements, implying access to a defined range of services and facilities is provided in return for an annual fee, commonly calculated as a standard cost per employee, and agreed between the client company and the OHS organisation. Such arrangements are common and are often supplemented with tariff lists of services that may be provided, although they are not included in the standard package offered (93). Having the smallest enterprises as customers can be insecure for OHS units, as payment per employee gives less profit and can create an economic problem. Providing

services to small enterprises often requires more time per employee than in larger enterprises (4, 94).

Small-scale enterprises join OHS for different reasons. Entrepreneurs' insight into the fact that safety at work and employees' health influence productivity and profitability increases interest in health and safety issues and cooperation with OHS (7). For farmers, chronic illness, size of farm, need of OHS, and vocational or post secondary education are factors associated with joining OHS (95, 96).

Antonsson (4) highlights another problem for OHS. The OHS is expected to be impartial to both entrepreneurs and employees, which can sometimes be complicated as the entrepreneur is generally considered as the client: this can be regarded as a potential cause of moral dilemma. Westerholm (97) draws attention to the importance of OHS professionals being aware of the implications of their own professional advisory role and the action taken by individual staff members and client enterprises. As their first moral obligation, OHS professionals have to ensure the services offered address the most important health needs of the customer/client enterprises and their staff rather than job security and the financial benefits for the service providers (97, 98, 99). In all services offered by OHS, small enterprises are most interested in health check-ups and medical care (4, 5, 100). However, entrepreneurs in small enterprises are often unaware of the kind of services OHS offers, as they usually do not market services particularly to small enterprises. Consequently, entrepreneurs may not find OHS' services useful (6, 101, 102).

Fedotov (103) discusses incentives for the expansion of OHS, as there may be a need for national health and safety programs, where OHS can play a key role and collaborate with other intermediaries inside and outside the enterprise to increase health and safety at work.

In order to increase the quality and utilisation of OHS, evaluation of customer satisfaction could be necessary. Verbeek (104) considers consumer satisfaction as a valuable tool for improving OHS. One proposal is to develop guidelines aimed at facilitating OHS units to evaluate consumers' satisfaction with OHS' services: the evaluation should be aimed at different groups; entrepreneurs, employees, trades, or researchers. This concurs with a study by Sim (105), where the importance of evaluating OHS with a view to improving effectiveness and quality, and enhancing OHS coverage of labour markets. Developing evidence-based or evidence-informed - guidelines for OHS is important (91). Even if this may appear time-consuming, OHS should seek to achieve distinction through working on the basis of best available evidence and recognised professional good practice.

## Network

Entrepreneurs in small-scale enterprises have probably always cooperated with professional networks locally. In studies about networks in wood manufacturing, Ager (106) describes enterprises or organisations in close cooperation with others intending to achieve joint or individual goals such as strategic networks. The strategic networks can be divided into development networks and business networks. In development networks, the enterprises collaborate in promoting technical and production development, whereas, in business network, the cooperation concerns marketing and sales. Professional networks for entrepreneurs provide opportunity to discuss topics of common interest e.g. growth, marketing, technical development, and how to perform activities and jointly discuss and argue with authorities (107). According to Alström (108), professional networks for entrepreneurs could be effective as sources of information about work life and work environment issues. Regional and local networks can be a part of larger organisations at national level. The characteristics for long-living networks are trust, good relations, and that they are useful for the entrepreneurs (4) Therefore, regional or local professional networks may be a way of improving health and safety in small enterprises (109).

# Aims

The overall aim of this thesis was to investigate factors contributing to improved work environment in small-scale enterprises and sustainable health for the entrepreneurs.

Specific aims for each study were:

- I To compare strategies helping small-scale enterprises fulfil the regulations of Systematic Work Environment Management (SWEM) through three different methods.
- II To investigate the prevalence of, and the association between, self-rated health problems and working conditions for entrepreneurs in small-scale enterprises.
- III To investigate the association between self-reported good health and self-valued good social life. An additional aim was to examine entrepreneur's strategies for maintaining good health.
- IV To investigate how entrepreneurs in small-scale enterprises approach and utilise OHS.

# Materials and methods

## Empirical base of the studies

Study I was a part of a collaboration project, which started in 2000, between the former National Institute for Working Life (NIWL) and the county of Dalarna, Sweden, including Dalarna University, to develop attractive work places through research support. In one of the first studies, aimed at obtaining knowledge about the status of work environment management and work environment in small enterprises, NIWL and Dalarna University cooperated with the Department of Occupational and Environmental Medicine, Uppsala, Sweden, regional safety representatives, Företagarnas Riksorganisation (The Swedish Federation of Private Enterprises), and small manufacturing enterprises. Data on the work environment and fulfilling the provision of SWEM were used in the first part of Study I.

Study II, III, and IV originated from the project “Hälsokapitalet i småföretaget” (Health capital in small-scale enterprises) (110), which ran for one year (May 2001-May 2002) in Uppsala county. This was a collaboration between entrepreneurs, researchers from the Department of Occupational and Environmental Medicine, Uppsala, and Institutet för Personal & Företagsutveckling (IPF), the regional social insurance office, Företagarna (The Swedish Federation of Private enterprises), Occupational Health Service, and Länsförsäkringar (an insurance company often used by entrepreneurs in small-scale enterprises). The project group met once a month for seminars and discussions about health and work conditions for the entrepreneurs. A survey about entrepreneurs’ health, welfare, and work conditions, designed by researchers from the Department of Occupational and Environmental Medicine and IPF was sent to entrepreneurs active in Uppsala County.

## Brief presentation of the studies

### Study I

This study compared three groups of small-scale manufacturing enterprises with and without support for implementing the provision of SWEM. Two

implementation methods, supervised and network method, were used. The third group worked according to their own ideas. Twenty-three enterprises participated. The effects of the implementation were evaluated after one year through semi-structured dialogue with the manager and safety representative. Each enterprise was classified on compliance through ten demands concerning the provision. Work environment was estimated by the WEST-method (111), and impact of the implementation on daily work was evaluated through dialogues with employees.

### **Implementation methods**

Of the 11 enterprises participating in the implementation programme, seven enterprises chose the supervised method and four enterprises chose the network method. The implementation programme lasted for one year. The supervised method emanated from a method and material produced by the Department of Occupational and Environmental Medicine at the University Hospital in Örebro, Sweden. The method guided the enterprise in its Systematic Work Environment Management. The method consisted of a book, a CD, and a guiding manual. The book and the CD served as the enterprise's tools in the project (112). Each enterprise started its own work with support from an expert, who was appointed project leader. At every enterprise, all members of staff participated in the meetings arranged over the year (there were four 90-minute meetings).

The idea behind the network method was that several enterprises in a region worked together with the aim of implementing Systematic Work Environment Management in their respective enterprise. Two representatives, one manager and one representative from the staff, from each of the four participating enterprises attended the meetings. The representatives were expected to participate in 10 meetings (of two-hours) during one year. The supporting expert arranged the meetings and was available for each enterprise between the meetings. At the meetings, experts gave lectures on the topic of work environment.

Twelve enterprises worked according to their own ideas and received no visits from the researchers to assist in implementation.

### **Study II, III and IV**

The sample of small-scale enterprises was picked from the customer register of an insurance company. A postal questionnaire was sent in 2001 to 788 entrepreneurs and the response rate was 66% (n=523). Of those not responding, 29 entrepreneurs were not available, 152 had stopped working as entrepreneurs, and 83 entrepreneurs did not respond. Of the respondents, 27 were excluded. Accordingly, the sample consisted of 496 entrepreneurs, of whom 69% (n=340) were men and 31% (n=153) were women. They represented the following trades: agriculture, manufacturing, building

industry, retail, hotel and restaurant, transport, financial, education, health- and medical service and other service activities. Study III and Study IV were based on data from the survey in Study I and data from the follow-up survey sent in 2006 to the entrepreneurs responding to the baseline survey (Figure 4).

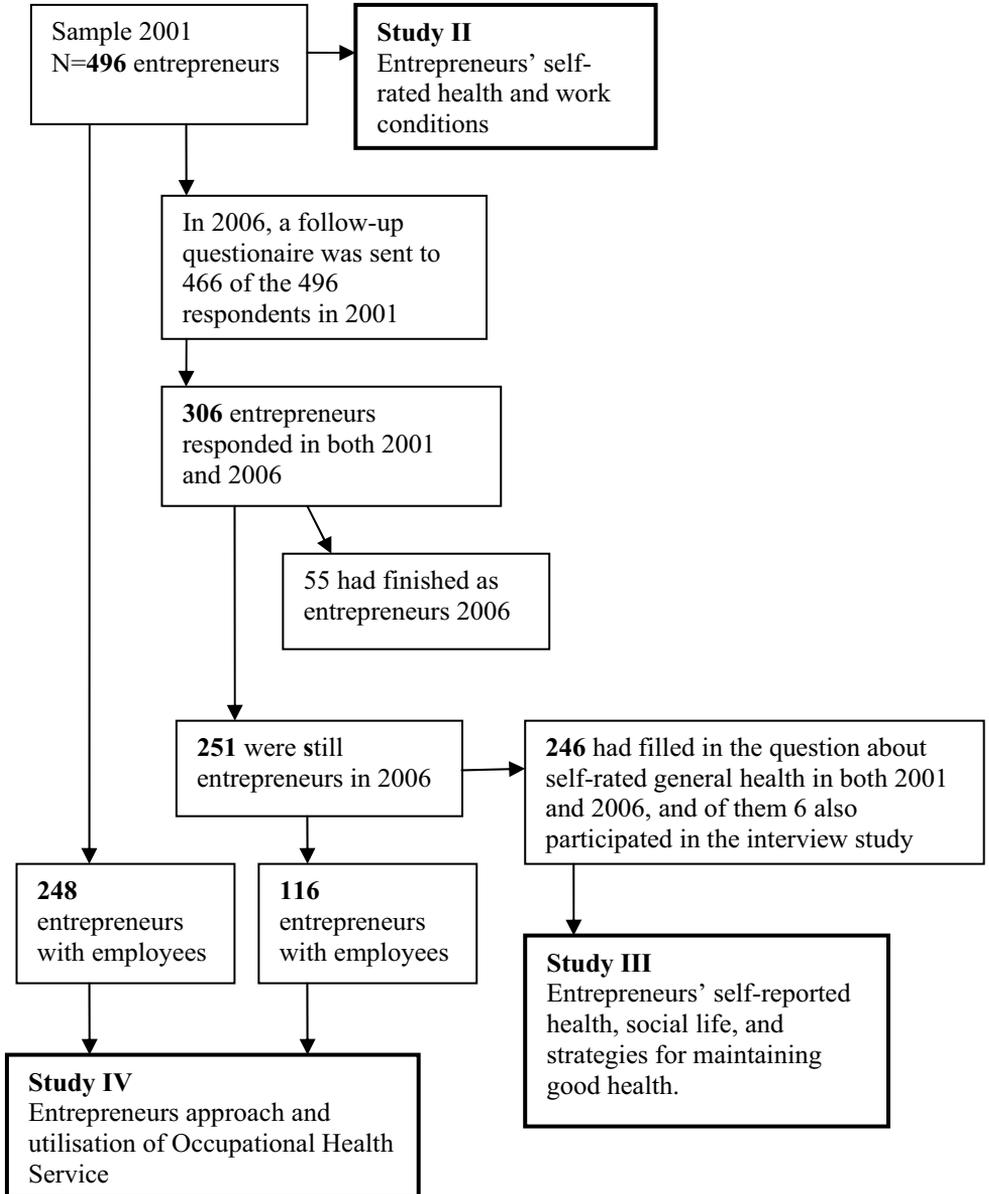


Figure 4. Flow chart of the sample in Studies II, III, and IV.

Study II investigated prevalence and associations between self-rated health and working conditions. For comparison, 1699 employees (63% men and 37% women) in private companies in Uppsala County were chosen from the population survey “Life & Health” (113). In this study, the entrepreneurs were classed as small-scale enterprisers. Even if this was the correct term, it was confusingly similar to the commonly used term for small enterprises: small-scale enterprises. Therefore, entrepreneur was used in Studies III and IV.

Study III investigated the association between self-reported good health and self-valued good social life. Entrepreneur’s strategies for maintaining good health were also examined. The sample consisted of 246 entrepreneurs who had filled in the questions about self-rated health in both surveys. Six of the entrepreneurs were strategically chosen for interviews.

Study IV investigated whether entrepreneurs affiliated to OHS reported adverse work conditions compared with entrepreneurs not affiliated to OHS, if they were consistently affiliated to OHS over a five-year-period, the kind of services entrepreneurs utilised from OHS, if they were more active in performing work environment management or members in professional networks, and, what sources entrepreneurs used for obtaining information about work environment issues.

The four studies are summarised in Table 1.

## Ethical approvals

The Regional Ethical Review Board in Uppsala, Sweden, approved the project about “Entrepreneurs in small-scale enterprises – factors promoting good health and good work environment for entrepreneurs and employees in small enterprises” (Registration no 2006/066).

Study I does not include personal data and is therefore, according to guiding principles from Central Ethical Review Board, not encompassed by the act concerning the ethical review.

## Summary of the studies

Table 1. Summary of the studies, including Title, aim, sample, number of participants, study design, data collection, methods of analyses, and measures.

	<b>Study I</b>	<b>Study II</b>	<b>Study III</b>	<b>Study IV</b>
<b>Title</b>	Systematic Work Environment Management: Experiences from Implementation in Swedish Small-Scale Enterprises.	Self-Rated Health and Working Conditions of Small-Scale Enterprises in Sweden.	Entrepreneurs' self-reported health, social life, and strategies for maintaining good health.	Entrepreneurs' approach and utilisation of Occupational Health Service.
<b>Aim of the study</b>	To compare different strategies helping small-scale enterprises fulfil the regulations of Systematic Work Environment Management.	To investigate the prevalence of and associations between self-rated health and working conditions for entrepreneurs in small-scale enterprises.	To investigate the association between self-reported good health and self-valued good social life, and examine entrepreneur's strategies for maintaining good health.	To investigate how entrepreneurs in small-scale enterprises approach and utilise OHS.
<b>Sample</b>	Manufacturing small-scale enterprises in the sectors: wood, metal, plastic, rubber, and textile industries in Dalarna County	Male and female entrepreneurs from ten different trades in Uppsala County Employees in private enterprises.	Male and female entrepreneurs from ten different trades in Uppsala County	
<b>Number of participants</b>	23 small-scale enterprises	496 entrepreneurs	246 entrepreneurs	248 entrepreneurs
<b>Study design</b>	Implementation study	Cross-sectional	Two-wave study, and interviews Closed cohort	Two-wave study Closed cohort
<b>Data collection</b>	Interviews Measurements Descriptive presentation	Questionnaire	Questionnaire Interviews	Questionnaire
<b>Method of analyses</b>		Descriptive analyses Logistic regression analyses	Descriptive analyses Logistic regression analyses Content analyses	Descriptive analyses Chi <sup>2</sup> -test
<b>Study I: Implementation methods</b>	<i>Implementation methods:</i> supervised method, network method, or working according to own ideas			

<b>Studies II-IV: Exposure measure</b>		Physical work environment, job satisfaction, influence over work, monotonous work	Social life, work centrality, leisure time, physical exercise	Entrepreneurs affiliated to OHS
<b>Outcome measure</b>	Aspects included in Systematic Work Environment Management, work environment exposure, impact in daily life	Self-rated general health, musculoskeletal pain, mental health problems	Consistently good health (reported both 2001 and 2006)	Work conditions, services utilised from OHS, performing work environment management, information sources about work environment, membership in professional networks,
<b>Factors controlled for</b>		Sex, age	Sex, age, physical work conditions, job satisfaction	

# Results

## Study I

One year after the implementation of Systematic Work Environment Management, the enterprises in the supervised method reported slightly more improvements in the fulfilment of the demands of the provision than enterprises in the network method and enterprises working on their own did. The effect of the project reached the employees faster in the enterprises with the supervised method. In general, the work environment improved to some extent in all enterprises.

## Study II

Entrepreneurs stated musculoskeletal pain (women 59%, men 56%) and mental health problems (women 47%, men 45%) as the most frequent health problems and were associated with poor job satisfaction and poor physical working environment. Poor job satisfaction, reported by 17% of the females and 20% of the male entrepreneurs, revealed an OR of 10.42 (95% CI 5.78-18.77) for poor general health. The male entrepreneurs reported a higher rate of health problems and female entrepreneurs an equal rate compared with the sample of employees in the private sector.

## Study III

Consistent good health (reporting good health 2001 and 2006) was reported by 56% of the entrepreneurs. Consistent good health was associated with an increased odds ratio (OR) for good self-valued social life in 2001, when the analyses were adjusted for physical work conditions and job satisfaction (OR 2.12, 95% CI 1.07-4.17). Findings for good leisure time, weekly moderate physical exercise, and a rating of work being less or equally important as other life areas, were similar but not statistically significant when job satisfaction was included in the analyses. Strategies for maintaining good health included good planning and control over work, flexibility at work, good social contact with family, friends and other entrepreneurs, and regular physical exercise.

## Study IV

Only 3% of entrepreneurs without employees and 19% with employees were affiliated to OHS; the affiliation was not consistent between the surveys. Entrepreneurs affiliated to OHS had either better or more adverse work conditions than non-affiliated entrepreneurs. The main tendency of differences in work conditions was the frequency of loading work postures: 22% for affiliated entrepreneurs and 34% for non-affiliated ( $p=0.13$ ). Entrepreneurs affiliated to OHS were more active in the work environment and getting information about work environment management than non-affiliated. The OHS services most utilised were health check-ups, medical care, and ergonomic risk assessments.

# Discussion

The overall aim of this thesis was to investigate factors contributing to improved work environment in small-scale enterprises and sustainable health for the entrepreneurs. The first study included the whole enterprise and focused on strategies for fulfilling the demands in the provision of Systematic Work Environment Management (SWEM). In the second and third studies, the entrepreneurs' health and factors influencing health were investigated, and the entrepreneurs' own opinions about strategies for maintaining good health were examined. The fourth study inquired into the entrepreneurs' approach and utilisation of Occupational Health Service.

## Main findings

Support for implementing Systematic Work Environment Management in the small-scale enterprises had a limited effect. The supervised method had slightly more effect than the network method or working according to own ideas. The results of the WEST measurements indicated the work environment in general improved in part in all enterprises.

With respect to entrepreneurs' health, musculoskeletal pain was the most frequent health problem, followed by mental health problems and poor general health. Musculoskeletal pain and mental health problems were associated with poor job satisfaction and poor physical working environment. The male entrepreneurs reported a higher prevalence of musculoskeletal pain, mental health problems and poor general health than male employees in private companies did. No differences in the prevalence of musculoskeletal pain, mental health problems and poor general health between female entrepreneurs and female employees were observed.

The entrepreneurs' self-valued good social life was associated with good health. Entrepreneurs identified good social contact with other entrepreneurs, activities with family and friends, and physical activities as strategies for maintaining good health.

No differences were found in reported adverse work conditions between entrepreneurs affiliated and not affiliated to OHS. Health check-ups, medical care, and ergonomic risk assessments were confirmed as the most utilised OHS services. Entrepreneurs affiliated to OHS reported more activities in work environment management. Getting information about work environ-

ment from regional safety representatives and employers associations was more common among entrepreneurs affiliated to OHS. The entrepreneurs were not consistently affiliated to OHS or members in professional networks.

## Methodological considerations

### Study I

Several limitations of this study need to be considered. The risks in the work environment, knowledge of the risks and risk prevention differed between the participating enterprises. A more thorough risk analysis with detailed measurements during a longer period might have produced a more convincing result, although the resources available did not make this possible. The inspections by the Work Environment Authority might have influenced the result through their demands of fulfilling the regulations. Another limitation was the small number of participating enterprises, which restricted the analysis of the results.

### Studies II, III, and IV

#### **Sample and response rate**

Generalisation of the results needs to be done with caution. The participating entrepreneurs in this closed cohort were drawn from the customer register of an insurance company often used by entrepreneurs in small-scale enterprises. Entrepreneurs that had taken out insurance could have been healthier, more interested in issues about work environment, and have a more stable economy than uninsured entrepreneurs had. Conversely, some entrepreneurs might have been previously unemployed and therefore constrained to work self-employed, which is an adverse health selection into self-employment. Furthermore, in these studies the proportion of entrepreneurs with employees was higher (47%) than in Sweden in general (70%). The response rate in Study II (66%) and in Studies III and IV (66%) raised the question of the reliability of the results. However, it was considered as acceptable for the target group.

In Study II, employees in private companies were included for comparison and were collected from a population survey in the same area, but occupation, trade, and size of enterprise were unknown. Health as well as working conditions might have differed between smaller and larger enterprises. Studies III and IV included data from the surveys in 2001 and 2006 with responses from the same closed cohort. The strength of the two-wave study design is the indication that good health was maintained during a longer period. The group reporting good health on both occasions five years

apart, and who were still entrepreneurs, was most likely a healthy group that coped with the stressful life as an entrepreneur. Data from the two surveys also indicated consistent work conditions, how they utilised OHS, and activities in work environment management: there were similar results in the analysis of data from both surveys. The low affiliation to OHS was consistent with other studies (103, 114), which strengthened the results of the study.

Studies III and IV had the same shortcomings as a cross-sectional study, it was not possible to investigate causal associations. For this purpose, a larger study group and a longer follow-up time is needed.

### **Self-reported data**

In self-reported data, information bias can occur as recall bias, social desirability response bias or extreme response set. In epidemiological studies, health is often measured by single-item questions about general health and complaints or longstanding illness (115, 116). The questions are considered as having high validity and high reliability and studies about self-rated general health demonstrate the responses are in accordance with later ill health and course of illness (117, 118, 119). The mode of questionnaire administration is important for response rate as well as item response rate. In postal surveys, non-response is often higher than in face-to-face interviews (120).

Self-reported data about work environment could be more questionable as entrepreneurs often consider their own work environment better than average in the trade (121). Entrepreneurs affiliated to OHS might also have more knowledge about work environment management and therefore over report activities in that area.

### **Interview study**

In Study IV, the complementary design with both quantitative and qualitative data could be considered strengths of the study. The interviews were conducted with the intention of studying the entrepreneurs' strategies for maintaining good health and represented six of the ten trades included in the questionnaire study, and had a higher mean age than in the questionnaire study. Data was analysed by content analyses (122, 123, 124, 125). The data was considered trustworthy, as the researchers jointly performed the analyses with respect to how well data and analyses addressed the aim of the study.

## Comments on Systematic Work Environment Management

Even if the provisions of SWEM in 2001 and 2003 were revised to be more suitable for the smallest enterprises, there are difficulties in fulfilling the regulations (3, 4, 77, 121). Small-scale enterprises generally consider themselves having better SWEM than inspectors from the Swedish Work Environment Authority report do (126). An investigation of small-scale enterprises performed by The Swedish Work Environment Authority (121) reveal a lack of knowledge about work environment, risk assessment, and prevention of risks in the work environment.

The enterprises in the supervised method group developed their systematic work environment management slightly more than the enterprises in the network group or enterprises working on their own. The most common improvement in the two groups with the implementation methods was the organisation of routines within the Systematic Work Environment Management, such as risk assessment, devising action plans and constructing a work environment policy. Some improvements in the enterprises with the supervised method could be explained by the method used, as it clearly indicates the kinds of measures needed e.g. to draw up a work environment policy. SWEM should be seen as an integrated part in daily work. Such approaches require changes in the organisation of work: these should not be considered as improvements in particular parts of the work environment. Improving systems is regarded as more complicated than improving risk factors in work environment and need supporting tools especially for that purpose (78, 109, 126, 127, 128).

The enterprises participating in the implementation program could be more interested in developing SWEM for different reasons. Motivated entrepreneurs are regarded as a prerequisite for launching and maintaining improvements in the systems and work environment (66, 81, 129). As there are many different types of entrepreneurs, they will probably have different approaches for improving SWEM and work environment (62, 67, 68, 79). The demands from authorities to systemise and formalise work with improvements in the work environment can be different and unusual compared with how entrepreneurs manage the enterprise (79).

The two enterprises that developed SWEM best had allocated work environment tasks to employees. The basic idea with the provision was the entrepreneur and employees worked together. Including employees in the development of the SWEM and improvement in the work environment is essential, as they are experts in their own work place (77, 83, 130, 131, 132).

Improvements in the Systematic Work Environment Management did not necessarily lead to improvements in the work environment. This raises the question of the effect of the provision in small-scale enterprises as they have limited resources and generally focus on delivery of products and services

just in time. There is a possibility that work environment would improve more by actions directly addressed to problems in the work environment instead of spending time on building systems. Alternatively, a formalised structure of activities for improving the work environment could be more successful and encourage employees to become more involved in the process.

## Comments on entrepreneurs' health

In Study II, male and female entrepreneurs stated musculoskeletal pain (men 56%, women 59%) and mental health problems (men 45%, women 47%) as the most frequent health problems. Generally, women report musculoskeletal disorders, especially neck- and shoulder complaints, more often than men do (133). In the latest survey about work related disorders among the general working population in Sweden, women reported more work related disorders from neck, shoulder and arms, whereas men and women reported work related disorders from low back and legs equally (22). Trade as well as size of enterprise can also affect entrepreneurs' health.

Of the 246 entrepreneurs in Study III, 56% consistently reported good health, i.e. they reported very good/good general health in both 2001 and 2006. Separate analysis of the frequency of general good health in the surveys in 2001 and 2006 revealed equal rates, as for the general population in Sweden (134). Relatively few studies are conducted on entrepreneurs having good health. An interview-study (29) of Swedish entrepreneurs in different trades indicates most (22 out of 32) report good general health. Entrepreneurs' good health can be influenced by facts such as they are freer at work and having more possibilities to use skills, factors of importance for health and well-being. In addition, it could also reflect that healthy individuals have stronger power for starting enterprises.

## Comments on relationships between entrepreneurs self-reported health and some work conditions

### Long working hours

Long working hours were mainly reported by the entrepreneurs in Studies II and III but were not associated with impaired health. The effects of long working hours on health are frequently studied, but there appears to be no studies investigating the association between long working hours and entrepreneurs' health and results from studies of employees are inconsistent. Long working hours can be related to longer exposure to work hazards, less time for recovery and activities outside work, poor life-style, and health

complaints (32, 33, 135, 136, 137). In a review by Van de Hulst (138), no association between long working hours and general health was found. In contrast, specific indicators of long working hours is associated with fatigue and increased risk of cardiovascular disease, but a decreased risk of hypertension: other factors such as flexibility and variability of work hours are related to good health and well-being (34, 35, 137). One explanation for the inconsistent results could be that work implies social activities and often plays an essential role in the life of an individual. People who work long hours can be very committed and engaged in their jobs and work engagement, in the meaning of high levels of energy, enthusiasm for work, and being engrossed in work, which also remains in activities outside work and is associated with good self-rated health (44, 45). The entrepreneurs' possibility to decide over work time may reduce the adverse effects of long working hours. In the interviews in Study III, the entrepreneurs called attention to the opportunity for taking short breaks for recovery: good work planning made this possible.

## Physical work factors

In Study II, monotonous work, poor physical work environment and heavy lifting were associated with musculoskeletal pain. Both physical and psychosocial exposure can cause musculoskeletal complaints and pain. Poor work satisfaction, repetitive and static work tasks, and heavy lifting are additional important factors (133, 139, 140). Entrepreneurs can be exposed to all these factors as they often work directly in production, as well as mental strain and time pressure.

## Psychosocial work factors

### **Job satisfaction**

Among the working conditions in Study II, poor job satisfaction was the strongest related factor for the outcomes of poor general health, musculoskeletal pain and mental health problems. In Study III, consistent good health revealed a high association with job satisfaction. In other studies, entrepreneurs have emphasised being satisfied with work (23, 24, 74). A meta-analysis highlights the growing evidence of the relationship between job satisfaction and mental and physical health (141). To manage an enterprise includes many tasks, both directly in production and in setting up the administrative machinery. Being successful in managing the small-scale enterprise can lead to increased job satisfaction for the entrepreneur. If the entrepreneur is dissatisfied with the role of managing the enterprise, then finding alternative employment can be more difficult.

### **Influence over work**

Few entrepreneurs reported poor influence over work but those who did frequently suffered from poor health; this was in accordance with other studies (142, 143) One reason for being self-employed is independence (5, 26, 29), and therefore, poor influence over working conditions can be frustrating.

### **Comments on relationships between entrepreneurs self-reported health and social life**

The results in Study III, indicated good self-valued social life was related to consistently good self-reported health for entrepreneurs. Entrepreneurs, compared with managers in larger enterprises, do not have the same possibility of receiving social support from colleagues at work. Instead, they may receive support from family members and friends, but it is uncertain if they ask for support on special occasions or if it is more general support (39). The buffering effect of social support against the adverse effect of stress is observed in areas most relevant for a person (55). Among different kinds of social support, informational support and social companionship can be useful for successful managing an enterprise, and instrumental support may be more valuable for newly established entrepreneurs.

Multiple social roles in life are generally important for well-being. Engagement in a variety of activities, such as work, family life, leisure, and physical activities with others generates social support, which in turn promotes good health (51, 54, 56, 57, 59). Physical activities are important for maintaining good health and there is consistent association between physical activities and health-related quality of life (144). Consequently, for maintaining good health and being able to manage the enterprise, it is worthwhile for entrepreneurs to organise and plan work in order to facilitate social contacts, multiple social roles, and good leisure time. This concurred with the entrepreneurs' own opinions about strategies for maintaining good health: they emphasised the importance of having good social contacts with family, friends, and other entrepreneurs.

### **Comments on Occupational Health Service**

In Study IV, the entrepreneurs were not consistently affiliated to OHS. A common assessment of small enterprises could be they are loyal to the OHS unit to which they are affiliated. However, entrepreneurs are aware of the cost in proportion to the value of services obtained, and this could be a

reason for OHS to monitor consumer satisfaction in their effort to affiliate and maintain small enterprises as customers (104).

Two of the services most utilised, reported in Study IV, were health check-ups and medical care: this was in line with other studies (5, 100, 101, 145). Small-scale enterprises are vulnerable to absence due to ill health, as they have few employees and products or services need to be delivered in time. Clearly defined medical care as a service to the smallest enterprises can be valuable asset combined with preventive services (102). Although adverse work conditions would be expected to attract entrepreneurs to affiliate to OHS, this was not supported in Study IV. This could be due to the entrepreneurs' lack of knowledge about the services available from OHS, and capability and experience in these issues (102).

In Study I, the clearest difference in baseline characteristics between the three groups of enterprises with different methods for implementing SWEM, was that enterprises belonging to the group working on their own were more often affiliated to OHS. A result in Study IV was that entrepreneurs affiliated to OHS reported more active work environment management: this finding appeared surprising as entrepreneurs reported health check ups and medical care as the most utilised services from OHS. Affiliation to OHS might have increased interest in working with safety issues and the entrepreneurs could have initiated this by themselves or with support from other safety intermediaries.

Through a consultative method, OHS could increase small-scale enterprises interest in improving health and safety (100, 126). In the SYTY-projekt in Finland (8, 146), a cornerstone was to engage the entrepreneur in risk assessment, prevention of risks, and improving the working environment. In addition, in their work with small-scale enterprises OHS could state economic reasons for affiliating, as prevention is less expensive than treatment (103).

## Comments on networks

The entrepreneurs included in Study IV were more often members of professional networks than affiliated to OHS. Entrepreneurs newly affiliated to OHS had previously been members in professional networks: this presents an opening for OHS to launch networks in health and safety for entrepreneurs in small-scale enterprises.

In Study I, the effect of the implementation of SWEM was delayed in the network group, but they had almost caught up after six months. Although development was delayed, it was considered natural and expected, as it takes time to build up the necessary base in a network through a learning change strategy, which provides a basis for a more lasting change (127).

Networking may be more suitable for entrepreneurs in small-scale enterprises, as a feature of a professional network is the voluntary membership and open structure (107). Issues concerning production are often the main cause for becoming a member in a network; however, health and safety in the enterprise are important issues for networking (4, 106, 108, 109, 147, 148).

New ideas on how to design attractive services could be gained from information on whether entrepreneurs participating in professional networks are more likely to be affiliated to OHS, or, if the network replaces OHS.

## General conclusions and implications for research and practice

### General conclusions

Extensive support to small-scale enterprises in terms of advice and networking aimed at fulfilling the regulations of Systematic Work Environment Management had limited effect – especially considering the cost of applying these methods. It is therefore necessary to develop more simple and cost effective methods. Improvements in the Systematic Work Environment Management did not lead to significant improvements in the work environment. Involving employees in preventive work, and concrete tasks aimed at improving the work environment could be more useful for increasing health and safety at work.

The most frequent complaints by the entrepreneurs included musculoskeletal pain and mental health problems. These complaints were associated with poor job satisfaction and poor physical working environment. Self-reported good health was associated with good social life for entrepreneurs. In addition, the entrepreneurs emphasised strategies, such as planning and control over work and physical exercise as important for maintaining good health.

No differences in adverse work conditions were found between affiliated and non-affiliated entrepreneurs. The services most utilised from OHS were health check ups, medical care, and ergonomic risk assessments. However, entrepreneurs affiliated to OHS were more active in work environment management, and chose more specific information sources about the work environment. Being a member of a professional network appeared an entrance into affiliating to OHS.

### Implications for research and practice

Further research on factors contributing to sustainable health and improved work environment for entrepreneurs and employees in small-scale

enterprises is needed. As causality in these studies could not be ascertained, it would be desirable to undertake further research on the relationships between consistent health and work conditions in a larger study group and over a longer period. In addition, research on the possible long-term effects of the process of work environment management and its link to improvements in the work environment are required.

Involving employees in preventive work and concrete tasks aimed at improving the work environment are valuable for increasing safety at work. Creating opportunities for a good physical and psychosocial work environment with job satisfaction for both the entrepreneur and the employees in the smallest enterprises should be an important task for OHS. Methods for working with small-scale enterprises could be developed in collaboration between OHS and the entrepreneurs and employees in the enterprises. Organising networks for entrepreneurs can be one method for OHS to adopt for improving the work environment and contribute to sustainable health in small-scale enterprises.

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# Brief presentation of the studies in Swedish

Småföretagen (<50 anställda) utgör en viktig del av den svenska arbetsmarknaden. De utgör mer än 98 % av alla privata företag och sysselsätter runt 35 % av den arbetande befolkningen. Det finns i Sverige idag mer än 400 000 småföretagare, varav cirka 70 % är män och 14 % utlandsfödda. Flera småföretagare driver mer än ett företag. Småföretag drivs i alla branscher men de flesta finns inom jordbruk, juridik och ekonomi, handel, byggindustri samt tillverkningsindustri.

## Syfte

Det övergripande syftet med avhandlingen var att undersöka faktorer som kan bidra till bättre arbetsmiljö i småföretagen och en hållbar hälsa för småföretagaren.

## Studie I

Syftet med studien var att studera effekter av implementering av systematiskt arbetsmiljöarbete i små tillverkningsföretag. I studien deltog 23 företag fördelade på tre grupper. Implementeringen utfördes i två grupper av företag enligt två metoder, en handledarledd metod och en nätverksmetod. Som jämförelse användes företag i en tredje grupp som arbetade helt på egen hand. Företagen valde själva vilken metod de ville arbeta efter. Det systematiska arbetsmiljöarbetet och arbetsmiljön utvärderades i varje företag i de tre grupperna före implementeringen och ett år efter implementeringen. Effekten i det dagliga arbetet undersöktes i de företag som arbetade efter handledar- respektive nätverksmodellen. Resultatet visade att förbättringar i arbetsmiljöarbete och förbättrad arbetsmiljö inte skiljde sig nämnvärt mellan grupperna.

## Studie II

Syftet med denna studie var att undersöka småföretagares självskattade hälsa och arbetsförhållanden. I studien ingick 496 småföretagare från tio olika

branscher som besvarade enkäten ”Småföretagarens hälsa och välfärd” år 2001. Svarsfrekvensen var 66 %. Som jämförelse vid undersökningen användes anställda i privata företag från befolkningsundersökningen ”Liv & Hälsa 2000”. De vanligaste besvären småföretagarna angav var besvär från rörelseapparaten (kvinnorna till 59 % och de männen till 56 %) och psykiska besvär (kvinnorna till 47 % och männen till 45 %). Dessa besvär visade samband med dålig arbetstrivsel och dålig arbetsmiljö. Dålig arbetstrivsel rapporterades av 17 % av de kvinnliga småföretagarna och till 20 % av de manliga och visade samband med sämre hälsa. De manliga småföretagarna rapporterade sämre hälsa medan de kvinnliga småföretagarna rapporterade lika hälsa jämfört med anställda i privata företag.

### Studie III

Småföretagare har ofta hög arbetsbelastning. Syftet med denna studie var att undersöka sambanden mellan god självrapporterad hälsa och småföretagarens sociala liv. Dessutom undersöktes vilka strategier småföretagarna själva ansåg vara viktiga för att behålla en god hälsa. I studien har kvantitativa data kompletterats med kvalitativa data från intervjuer. En uppföljande enkät skickades år 2006 till de småföretagare som besvarat enkäten 2001. Den uppföljande enkäten besvarades av 251 personer som fortfarande var småföretagare. Av dessa rapporterade 56 % god självskattad hälsa både år 2001 och 2006 (benämnd hållbar hälsa) vilket var lika vanligt bland småföretagare med anställda som hos soloföretagare. Studien visade samband mellan hållbar hälsa och att ha ett bra socialt liv. Vid intervjuerna framkom att småföretagarna ansåg att planering och god kontroll över arbetet, bra social kontakt med familj, vänner och andra småföretagare samt regelbunden motion var viktiga strategier för att ha en god hälsa.

### Studie IV

Syftet med studien var att undersöka hur småföretagare anslutna till företagshälsovård (FHV) utnyttjar dess tjänster. I studien ingick de småföretagare som besvarade enkäten vid baseline 2001 (n=496) och vid follow-up 2006 (n=251). Anslutningsgraden till företagshälsovård var för småföretagare utan anställda 3 % och med anställda 19 %. De småföretagare som var anslutna till FHV rapporterade varken bättre eller sämre arbetsförhållanden än de som inte var anslutna. Småföretagare anslutna till FHV var mera aktiva i sitt arbetsmiljöarbete och skaffade sig också mer specifik information om arbetsmiljöfrågor t ex från regionala skyddsombud och arbetsgivarorganisationer. De vanligaste tjänsterna som köptes eller

frågor som togs upp med företagshälsovården var hälsokontroller, sjukvård och ergonomiska risker. Anslutning till företagshälsovård och nätverk var inte stabil. En tendens fanns att de som var medlemmar i nätverk senare anslöt sig till företagshälsovård.

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