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# Understanding the organisational impact on working conditions and health

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## Introduction

It has long been known that organisational conditions affect working conditions and occupational health. Working conditions and occupational health are, like a number of phenomena, contextual, and the primary context is the organisation in which work takes place (Susser & Susser 1996). In the last few years, the relationships between the organisation and the individual have become the focus of several empirical studies. However, transferring knowledge on risk factors from traditional occupational health research into prevention requires insight into the organisational context that shapes working conditions and affects health (Burstyn & Teschke 1999; Hagberg et al. 2001; MacDonald et al. 2006). There is still a lack of useful theories and models of how organisational conditions are linked to working conditions and health. The gap between organisational research and health research is still wide in terms of concepts, theories, and methodologies. Furthermore, this new interest in organisational conditions in work and health research has also opened a discussion about how “organisation” should be defined and what level of an organisation is most relevant when analysing its impact on working conditions and health. We need to know the extent, range, and variety of certain organisational phenomena to be able to draw more precise conclusions about what it is in an organisation that affects individuals’ working conditions and health.

This text discusses some ideas for empirical studies aimed at bridging the gap between research on organisations and research on individual working conditions and health. Our own backgrounds are primarily in work and health studies and in studies of variations between groups of individuals in aspects that can be linked to organisational conditions. Consequently, our theoretical understanding is based more on causal mechanisms about how individuals’ conditions can be understood than on case studies, which are the dominant tradition in organisational research. Another difference from mainstream organisational research is that our work is not generally aimed at the exploration of why work is organised as it is. Instead, we are interested in the implications of a given work organisation for individuals’ working conditions and health. This means that we are interested in the effects of organisational practices and actions rather than in their origin.

This approach to work and health studies might be labelled *organisation-oriented work and health research*. The theoretical perspective and choice of research design is in line with what has been called “the new structuralism in organisational theory” (Lounsbury & Ventresca 2003). In this tradition, organisations are regarded as an important means of social stratification, and the focus is on general patterns and systematic conditions. On the other hand, in order to link organisational behaviour to individual behaviour both people and organisations must be seen as actors. The choice of action, for the organisation or for the individual, may be restricted or structured in different ways, but we generally assume that actions are based on choice between alternatives.

There are several conceptual and theoretical challenges when designing studies that try to integrate organisational-level data with working conditions and health data at the individual level. Firstly, there is a wide gap between organisational research and occupational health research in the use of theoretical concepts, in the choice of focal units of analysis, and in data treatment. Secondly, working life is changing rapidly, and old theories and empirical evidence might not be valid in new situations. Thirdly, in relation to intervention and prevention, not all factors that affect working conditions and health may be equally easy to change, and there is thus a need to focus on those factors which the employer and the representatives of the workers may be willing to adjust. Finally, although powerful statistical techniques are available to link organisational and micro-level data, such as multilevel analysis, understanding of the causal mechanisms becomes even more complicated when both individual and organisational conditions must be interpreted.

There are also a number of empirical issues involved in the linking of organisations and individuals. One is the determination of *what* aspects at the organisational level are important, and another is *how* such organisational aspects can be measured and assessed. It is also important to decide *what level*<sup>1</sup> within an organisation is most relevant to a specific study.

The present work is part of a larger research programme and a number of linked projects dealing with organisation, working conditions, and health. The main objective of the research program is to theoretically and empirically explore how work-related health and ill-health are affected by organisational conditions, organisational changes, workplace characteristics, and working conditions.<sup>2</sup> The focus is on psychosocial working conditions, although the impact of organisational conditions is also relevant to ergonomic, physical, and chemical exposures. Changes in organisations are of particular interest. One reason for this is that the relationships between organisations and individuals are easier to detect in volatile times. Another is that change itself is an important characteristic of modern organisations. The research programme also deals with occupational careers and selection mechanisms in working life, important for understanding the determinants of workers' health and well-being.

This report summarises the theoretical background, design, assessment methods, and analytical strategies of a number of studies linked to the research programme. These studies provide a toolbox of theoretical and empirical elements that we have found useful in understanding the link between organisation, working conditions, and health. One of the studies is the Healthy Workplace

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<sup>1</sup> For example, the level of the work group, the department, the work site, the company, or the corporation.

<sup>2</sup> The research programme "Changing Organisations and Work Related Health – a Multilevel and Multidimensional Perspective" is financed through a grant from the Swedish Council for Working Life and Social Research (Grant no. 2001 2890).

study,<sup>3</sup> intended to explore the mechanisms that link organisational structures and changes with working conditions and work-related health in a large sample of organisations and employees. Another is a cohort study<sup>4</sup> with a focus on the health effects of changing working conditions as well as individual conditions. A third study comprises parallel case studies of organisational responsibility and power relations in private and public enterprises.<sup>5</sup> The first two studies use quantitative analytical strategies, while the third uses qualitative methods. All three studies collected individual data as well as data about the organisations, but used different methodological strategies to scrutinise the relationship between organisation and individual. The inspiration for the three studies was the MOA study,<sup>6</sup> the aim of which was the development of methods, adapted to occupational health studies, for the assessment of organisational-level data (Härenstam et al. 2004a).

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<sup>3</sup> The Healthy Workplace study developed from the earlier Work, Lipids and Fibrinogen (WOLF) study, which was performed at the National Institute for Working Life and financed by the Swedish Council for Working Life and Social Research (Grant no. 2001 0333).

<sup>4</sup> The National Working Life Cohort, National Institute for Working Life.

<sup>5</sup> Power over working conditions – case studies in private and public workplaces in different branches (Grant no, 2002–0316).

<sup>6</sup> The full name of the study is “Modern work and living conditions for women and men. Development of methods for epidemiological studies”. It was an interdisciplinary study performed at the departments of occupational health in the universities of Stockholm and Örebro, with financial support from the Swedish Council for Work-Life Research (grant no. 95–0331 and 98–0562), the National Institute of Public Health, and the National Institute for Working Life.

## Aim and structure of the report

The main aim of this text is to discuss the conceptual, theoretical, analytical, and empirical difficulties and options inherent in organisation-oriented studies of work and health. Using the examples of a number of research projects with different specific questions and different empirical designs, we aim to detect some of the most common stumbling blocks and to find some pragmatic solutions to the problems involved in such research.

The text begins with a general background on changed conditions in working life and a section covering the concepts and focal units of analysis. This is followed by a review of empirical research linking organisational conditions to psychosocial working conditions and to employees' health, including studies of job stress and studies of how organisational change affects individual working conditions. As a result of this review, a summary of the organisational dimensions most frequently used in research is presented.

The next section comprises a discussion of the theory and methodology suitable for organisation-oriented work and health research. Definitions of "organisation" and "organisational change" are also suggested, and methodological challenges and analytical tools are discussed. Following this section is a presentation of how the links between levels and between different aspects of organisational conditions and individual conditions can be interpreted.

Next comes a description of our experiences of the three specific empirical studies previously mentioned, with their different research questions, focal units, and methods being used as illustrations of the methodological problems that need to be addressed in the search for a theory.

The final section discusses some specific problems with the integration of organisational studies and health research, and draws conclusions regarding prevention and intervention.



## Theoretical background

One argument for the development of concepts, theoretical models, and methodological tools for studies of the organisational impact on psychosocial working conditions and health is that working life is changing. Work practices and the organisation of work are greatly interdependent. Thus, when the organisation of work in society changes, our understanding of how work practices and working conditions affect health must be re-examined. We cannot take the validity of theories founded on old empirical studies of organisation of work and work practices for granted.

Another motive for methodological and theoretical development is that since the late 1960s, research into organisations has been detached from research into work and health. Barley and Kunda (2001) advocate bringing work back into organisation research. Our message is similar, but comes from the opposite starting point; knowledge about organisations needs to be integrated into work and health research in order to increase our understanding of how work affects people in contemporary working life. Both these arguments are expanded on below.

A third argument for an organisation-oriented approach concerns implementation of the results of research. Since an individual's work environment is formed by both job tasks at the individual level and conditions at the organisational level, the relationship between these two aspects needs to be better explored. Knowledge about the situational or organisational factors involved in the shaping of healthy job assignments and working conditions would be of great value in the prevention of job stress. The workplace is – in contrast to occupations – a specific social context for the employee, meaning that the workplace is an arena in which preventive actions can be implemented. Furthermore, organisations are economic entities in addition to being social contexts. The main power over how work is organised lies in the hands of the employers, a right sanctioned by legal regulations within the limits of work environment and labour law regulations. This means that managers must be involved in any practical application of knowledge about how work should be organised in order to promote workers' health, and the focus for interventions must be these physical and legal entities, that is, workplaces or organisations.

### **A changing working life**

Many of the sociological and psychological theories of work currently in use were developed during the 1960s and 1970s (Blauner 1964; Emery & Thorsrud 1969; Gardell 1971; Hackman & Oldham 1976; Herzberg 1966; Karasek 1979; Katz & Kahn 1978; Kornhauser 1965; Lazarus 1966; Lysgaard 1961; Trist 1978; Volpert 1974). The organisational conditions studied in these models have been described as rather stable and possible to foresee during a lifetime (Sennett 1998, p. 16). Theories and concepts used for the understanding of associations between work

conditions and health are based on how work is organised in a traditional industrial labour market. This means, for example, fixed boundaries to work in both time and space, division of manual and non-manual work, vertically and horizontally fragmented work processes, and regulated employer-employee relations (Barley & Kunda 2001). It was usually also assumed that workers spend a very long time, sometimes their entire working lives, within the same organisation (Tilly & Tilly 1998).

Work organisations and workplaces change rapidly due to economic, political, and ideological changes, changes in production systems, and changes in the composition of the workforce. Organisations continuously change in order to adapt to the market and to society: “organisations that do not change are dead” (Addleson 2000). It has been proposed that changes have become more frequent and extensive since the early 1990s (Clegg & Walsh 2004; Fay & Lührmann 2004; Prastacos et al. 2002). The transformation of contemporary society has recently been described as causing changes in the principles for organisation of work that have long characterised the industrialised labour market (Castells 1996, p. 477; Pfeffer & Baron 1988; Rifkin 1995, pp. 221–248). Entrants to the labour market encounter challenges and health hazards which are qualitatively new.

Working life has changed in many aspects and within several arenas that should be taken into account when exploring the effects on the workers. Firstly, there have been structural changes such as privatisation, divisionalisation, centralisation of ownership to large corporations, outsourcing, and other changes to inter-organisational relations that have altered the power relations within the market. Secondly, employer-employee relations have also changed, with increasing differentiation of conditions for workers occupying different positions between the core and the periphery. As a consequence, the prerequisites for the Occupational Health and Safety Act have changed and the intentions of the legal regulation seem to be increasingly more difficult to live up to (Larsson 2000, p. 218 f.). Finally, the very character of production has shifted, with the dominance of manufacturing industries giving way to service work of different kinds. This means that a displacement has occurred from the physical working environment to the more psychosocial aspects of the organisation of work. In this respect, the problem of responsibility is less evidently connected to the employer. Particularly when the responsibility for tasks and assignments is located further down in the organisations and the ambitions of the individual, the psychosocial work environment is also influenced by such things as the capacity of the working group to manage conflicts, the changed relationships between employees and customers or clients, and so on (Allvin & Aronsson 2001). There seems to be a consensus that work-related changes entail processes of individualisation and flexibilisation (Atkinson 1984; Sennett 1998; Purcell & Purcell 1998). Through this process of modernisation, and changes of technology, production processes, and labour relations during the last thirty years, the foundation of our understanding of how work affects workers has drastically changed. If we accept that organisations are changing increasingly more rapidly, this will make knowledge about organisations

more important. It will also be necessary to explore whether it is change in itself that affects workers' conditions or if it is the specific form and content of the new organisational form that is important.

### **Scientific paradigms, concepts, and focal units of analysis**

Organisation research and work and health research have been segregated since the late 1960s (Barley & Kunda 2001). Our main understanding of how work is organised (such as studies of bureaucracies) and of how work affects workers (health, motivation etc.) is based on field studies of work practices and organisations performed in the first half of the twentieth century. During this period of transformation into a society of industrialisation, organisation theory was tightly linked to the study of work practices (scientific management studies, human relations movement, job design theories, and motivation theories<sup>7</sup>), and field studies were the main approach. In the 1970s, organisational researchers became more interested in how organisations adapt to their environment, particularly in terms of markets and new technologies (e.g. Systems Theory). Furthermore, as research tended to use more general and abstract concepts and explanations, the gap between work practices and theory increased.

Specialisation among scientists also contributed to the divide between organisation research and research on work and health. According to Barley and Kunda (2001), different disciplines started in the 1970s to organise themselves in different academic fields, with different journals and conferences. Most organisation researchers turned to business schools while industrial sociologists stayed in universities. Others were located in technical high schools with a primary interest in job design and technology. Many occupational psychologists became interested in Human Resource Management with a business perspective while others turned to job stress research with a biopsychological or public health perspective (Xie & Schaubroeck 2001). Thus, there is a gap between those who have a contextual perspective, a business logic perspective, a technological perspective, and an individual perspective on the associations between the organisation of work, working conditions, and health.

Today, research on organisations and working conditions is carried out in many disciplines and within a number of different discourses. Theories focusing on aspects of working life are based on several paradigms, each with different focal units of analysis and varying outcomes of interest, and using different concepts and assumptions. The focal unit of analysis in occupational health theories is mostly the individual, assuming individual differences to be more relevant to individual responses than the characteristics of the organisation in which the work is performed. Many organisational psychologists also use the individual as the main focal unit of analysis.<sup>8</sup> Perceptions, attitudes, and behaviour are stressed, and

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<sup>7</sup> For a review, see Barley and Kunda (2001).

<sup>8</sup> For a review of organisational psychology theories with different focal units of analysis, see Burke (2002, pp. 156–164).

the organisational context is neglected (Klein & Kozlowski 2000; Schnake & Dumler 2003; Xie & Schaubroeck 2001). If, on the other hand, characteristics of the context (such as management and reward systems) are explored as determinants of individual responses, aggregated individual data are mostly used (Bliese & Castro 2000; Bliese & Halverson 2002; van Yperen & Snijders 2000). That is, variables at the individual level are used as determinants of other variables at the individual level and the context is thus not studied as a separate unit of analysis.

Other theories focus on groups of individuals, assuming groups having qualities that differ from the sum of the individuals within a group (Boalt Boëthius 1983; Bion 1961; Festinger 1954; Moscovici 1972; Rice 1969; Trist & Sofer 1959; Cole et al. 2002; Bakker et al. 2003). Another paradigm explores regularities in performed efficiency averaged across individuals, assuming that individuals conform alike to roles given by the organisational structure; work within this paradigm includes studies of work design according to action regulation theory (Hacker 1982) and studies of production process design (Christmansson 1997; Buchanan 1979; Karlsson 1979). The unit of analysis is the task itself. By designing out individual differences in the production process, reliability is supposedly achieved and thereby higher efficiency. Finally there is a paradigm that excludes the individual by focusing on the organisational structure and its effect on organisational roles, based on the assumption that neither the organisation nor the role is affected by which individual is holding the role (Parsons 1956; Pugh 1988).

Different paradigms uncover regularities of their unit of analysis, whether it is the individual, the task, the group, or the organisational structure, but not how units interact (Roberts et al. 1978), a factor which may help explain the increased gap between organisation research and work and health research during the last few decades. We argue that, in line with the suggestions of researchers such as Barley and Kunda (2001), modern research on organisations, working conditions, and occupational health is diversified and disintegrated. Specific knowledge from one research area cannot easily be used to illuminate findings from other fields. It has been argued that organisational research is inherently cross-level, since it involves studying relationships among phenomena at different levels (Rousseau 1985). Consequently, cross-level research on organisational effects on individual behaviour and working conditions challenges traditional disciplinary boundaries (Roberts et al. 1978). That is, research on the labour market, on organisations, on psychosocial, ergonomic, and occupational hygiene conditions, and on occupational health and segregation processes has to be integrated (Hagberg et al. 2001; MacDonald et al. 2006). Problems arising from mixed-level research are mainly conceptual and theoretical, since the choice of focal unit for analysis as well as of definitions of appropriate levels for measurement has to be based on underlying theory (Galtung 1969; Rousseau 1985). Still, it is hard to find theories aimed at exploring the associations between phenomena at the organisational level and working conditions and health at the individual level. Thus, in order to strengthen the field of research into the organisational impact on working conditions and

health, there is a need for a better integration of concepts and theories from different disciplines.

The changing working life and the discrepancy between scientific disciplines during this volatile period of working life call into question the validity of old theories and research strategies in exploring the organisational impact on employees' conditions. Even if the theoretical models are found to be valid, there might still be a need for improvements of operationalisations of the key concepts in order to fulfil the intention of the models.

## Examples of studies of organisations, working conditions and health

In this section, we give an overview of research with different focal units of analysis. The selection is not based on a systematic review of all literature in the field; instead, we present examples of studies that we have found illustrative. We begin with studies which link data at both organisational and individual levels.

### **Studies linking organisational data with working conditions and health**

Work and individual health studies that explore the impact of higher-level organisational conditions on psychosocial working conditions are rare, even though this methodology has been recommended for such purposes (Kalleberg 1994; Klein & Kozlowski 2000). A few studies have used multilevel analyses to explore the organisational impact on working conditions and health at the individual level.

The magnitude of organisational effects differs between the studies, possibly as the samples or organisations vary. In a Swedish study, it was found that the variance in ten different aspects of working conditions that was attributed to the organisational level was between 9 and 66 per cent (Härenstam et al. 2004a, b). In a Dutch study, the proportion of the variance attributed to the organisational level was 9 per cent for job strain and 12 per cent for well-being. In another Swedish study of a broad sample of organisations, 20 per cent of the variance in job control and 12 per cent of the variance in job demands was attributed to the organisational level (Bolin & Marklund 2006; Höckertin & Härenstam 2006).

Multilevel analysis of data from two or more levels in working life has so far mainly been applied when exploring the importance of individual and group level interaction by analysing individual values and group means. One example of the use of group means at the organisational level is a Swedish study of human service organisations (Söderfeldt et al. 1997). This study showed that organisational conditions had an impact on job demands and control that affected the employees' health. Furthermore, a Dutch study of a sample of 260 employees in 31 working groups in a national bank also applied multilevel analysis when exploring the health effects of job demands and control. The results showed that job demands and control should be conceptualised as having both group and individual foundations (van Yperen & Snijders 2000). Similar results were found in a further Dutch study of 1,489 employees in 64 units in 16 health care institutions. Karasek's Job Demand and Control model (JD-C) was partly confirmed by finding interaction effects at group level and individual level (de Jonge et al. 1999). Other examples of multilevel studies exploring the interaction between groups and individuals by applying group means at the second level concern workload and support (Bliese & Castro 2000; Bliese & Britt 2001). Other studies include efficacy and social exchange between leadership and employees (Chen & Bliese 2002; van Engen et al. 2001; van Veldhoven et al. 2002).

Although multilevel research is relevant when combining data at different levels in the same analysis, there are many other studies that accomplish this using more traditional statistical techniques. One example, from Sweden, is an organisational-level investigation performed by interviewing managers at more than a thousand workplaces (the Swedish Establishment Survey) about their working conditions, using individual-level data from the Swedish Survey of Living Conditions (le Grand et al. 1996). Among a broad range of results, this study showed the importance of the gender-segregated labour market for the understanding of career prospects: the higher the proportion of female employees among the staff, the fewer the development possibilities for both women and men (le Grand et al. 1996, p. 70). Further, development possibilities were shown to be better in organisations with many vertical levels than in organisations with few (le Grand et al. 1996, p. 81). In another Swedish study of a large sample of organisations and employees, it was found that employees at organisations where the size of the workforce had changed had an increased risk of cardiovascular disease (Westerlund et al. 2004a).

Similarly – but in contradiction to many theories – employees' influence seemed to be stronger in more hierarchical organisations than in flatter ones (le Grand et al. 1994). Another analysis of the same data showed some significant effects on sick leave of characteristics at the organisational level (Edling 1996). Lack of loyalty between workers and employees and formal rigid control mechanisms both negatively affected sick leave.

In a Swedish study, organisational data from the FLEX II survey was used to test the importance of organisational characteristics on working conditions and employees' health (Wikman 2001). The correlation between general organisation factors and health was low, indicating a need for more concrete and low-level organisation variables than were used in this study (Wikman 2001).

In a study of 67 prisons in Sweden, data at both the organisational level (on e.g. size, staff structure, and management) and at the individual level (on working conditions, stress, and health) were used (Härenstam et al. 1988). It was shown that at prisons where managers trusted higher levels of management in the Swedish Prison Service and received support from them, employees reported more satisfaction with psychosocial working conditions and had lower sick leave rates and cortisol levels than did staff at prisons lacking mutual trust and support at managerial levels.

In a study of the working conditions of Swedish professionals, information on both levels was analysed, although assessed solely at the individual level. The results demonstrated that different kinds of organisational changes had different impacts on the working conditions of the employees (Härenstam & Bejerot 1995; Bejerot et al. 1998a).

A large panel survey on organisations and employees in the Netherlands was performed by TNO Work and Employment. More than 3,000 companies participated, and approximately 11,000 employees out of 45,000 selected employees answered a questionnaire in 1998. Company level data were collected by means

of telephone interviews with managers. The results showed, for example, that companies that combine innovative processes with job enrichment and/or team-work had the best financial results and the worst working conditions. Surprisingly, they also found that companies with occupational health and safety policies did not have better working conditions (Dhondt & Kraan 2001). A French survey of the effects on workers of organisational changes concluded that after the recession in 1993, there was an increase in change strategies based on internal and external transactions, aiming at a quicker response to market demands. The result seems to have been a slow-down of job enrichment, higher job intensity, and fewer development possibilities, particularly for blue-collar workers (Greenan & Mairesse 2003). Before the recession, change strategies were more often directed at quality issues that might have a more positive impact on the quality of work.

Although there are several studies that investigate organisational impact on working conditions and health by using data from different levels, it is not easy to summarise the results from different studies. There is still too little research on important aspects such as the magnitude of the organisational impact, and on which organisational aspects are most important. However, there is a growing field of research from different research disciplines. The following sections present short overviews and summaries from different research fields, along with suggestions as to how an organisation-oriented approach to work and health research might contribute to knowledge about the issues raised.

### **Job stress and work organisation**

Job stress research is often labelled as research into work organisation, even if the organisation as a focal unit is seldom studied as a separate level of data. In both occupational health research and job stress research, classifications of industries, occupational titles, and socio-economic groups have been used as substitutes for exposures at an organisational and aggregated level. The general idea is that health risks originate from occupational activities as such, regardless of circumstances at the establishment level. However, it is also known that companies and administrations organise work differently even within the same industrial sector and similar production or service obligations. This generates differences in work environments and health risks (Warr 1994; Vahtera et al. 1999). Despite this, a number of international reviews have pointed at the fact that, to a high degree, occupational health research has kept its focus on individual risks and risks at the group level (Cox 2000; Johnson & Hall 1996; Susser & Susser 1996; Rantanen 1999; Westerholm & Marklund 2000).

Many theoretical models and concepts have been developed in job stress research, but the dominant model during the last few decades has been the Job Demand and Control (JD-C) model of Karasek (1979) and Theorell (Karasek & Theorell 1990). The model originates from and combines two different theoretical and empirical traditions with different focal units. One is stress theory, which has generally been used in studies of how demands at work affect workers, that is,



with the individual as the focal unit. In particular, this tradition has studied how excessive work affects health through the production of stress hormones in the body (Selye 1974). The other tradition originates from classical alienation theory (Blauner 1964), in which the main focal unit is the work organisation. The main feature of the JD-C model – and also an explanation for its success – is that the two scientific traditions are combined.

The JD-C model is based on two dimensions; job demands and job control, or decision latitude. In the JD-C model, demands are defined according to stress theory, as psychological stressors (e.g. workload) present in the work situation (Selye 1974). However, job demands have also been studied in work-life sociology, where they have been described as a product of engineering techniques and as being insatiable or unappeasable (Lysgaard 1961; Tilly & Tilly 1998). The dimension of control is constructed from two factors: decision authority and skill utilisation. The theoretical roots of control (decision latitude) are found in sociological theories developed in the 1960s and 1970s. The theories of decision authority that have influenced our understanding of the concept concern alienation (Blauner 1964) and participation (Dahlström 1966; Lysgaard 1961; Emery & Thorsrud 1969; Trist & Sofer 1959; Gardell 1980). Decision authority represents the abilities of the employees to influence the design of work as well as the working conditions. Skill discretion is defined as the employees' opportunities for using the breadth of their skills (Karasek & Theorell 1990). Examples of theories related to skill discretion, concerning complexity at work and qualification level in job tasks, were developed by Kohn and Schooler (1983), Volpert (1974), Hacker (1982), and Braverman (1974). All these theories identify the organisation of work as an important determinant of the decision authority and skill discretion of the workers, and their concepts have been developed as a result of empirical studies of organisations and work practices.

When the dimensions of the JD-C model are assessed by questionnaires, they inevitably reflect the job characteristics as perceived by the worker. However, the model is intended to measure objective work conditions. The authors of the model draw attention to processes at what they call the macro level that affect the psychosocial work conditions of individuals. They want to “link causes based in the environment and causes based in the individual, but with environmental causes as the starting point” (Karasek & Theorell 1990, p. 9). It is therefore theoretically assumed that psychosocial work conditions are multivariate phenomena decided by processes at different organisational levels. Theorell and Karasek (1996) wrote that “decision latitude is determined to a great extent by the content of work in the occupation, whereas the demands and social support to a greater extent reflect local work site conditions and individual perception” (p. 18). However, there are few empirical studies of the distribution and variety of psychosocial risk factors between workplaces, and the way in which they are linked to organisational structures and management technologies.

The validity, the operationalisations, and the theoretical and conceptual understanding of the JD-C model have been debated and tested (see for example de

Jonge & Kompier 1997; Kasl 1996; Kristensen 1995, 1996; Peterson 1994). Many researchers have studied the variance between occupations and also confirmed that there are systematic occupational variations. These observations have been used in the construction of a job matrix (Johnson 1993; Fredlund et al. 2000), based on means for different occupations in order to avoid common-method variance. There has so far been little interest in exploring whether the dimensions included in these models are in fact rooted in “upstream” conditions such as the organisation of work, or in other characteristics of the workplace as suggested.

Many empirical studies have shown that high demands in combination with low decision authority, few opportunities for learning and development, and low social support constitute a working situation that is hazardous to health (Karasek & Theorell 1990). However, it could be questioned whether the JD-C model remains accurate and functions in accordance with its hypothesis in today’s working life. An “active working situation”, with high control and high demands, has been shown to be related to ill-health, in contrast to the predictions of the JD-C model (Eaker et al. 2004; Krantz 2001; Krantz & Östergren 2002; Vahtera et al. 1996; Vikenmark & Andersson 2002). This puzzling finding might be better understood with an organisation-oriented approach. If knowledge about the organisation (meso-level) is added, it is possible to explore whether active job situations are hazardous to health only in specific types of organisational contexts. For example, it might be the case that in organisations with specific forms for control and responsibility distribution, job demands are internalised to the extent that employees no longer use the influence that they might have in order to moderate the demands. It is also possible that individuals in work organisations with decentralised responsibilities will become exposed, vulnerable, and on their own the task of balancing contradictory demands from employers, customers, and service receivers. Decentralisation and the different sources of demands also make the use of collective forms of influence more difficult (Lindgren 2001; Johnson 1989; Lysgaard 1961). Some studies have tested different aspects of demands, and it has been suggested that, for example, emotional demands should be used when studying human service work (de Jonge et al. 1999; Söderfeldt et al. 1996; Marshall et al. 1997). Studies of both organisations and employees regarding how control is distributed and exercised and how different aspects of demands are balanced by workers’ control in a broad sample of organisational structures would increase knowledge on the generalisability of the JD-C model to all types of organisations.

Another issue that should be further explored is whether the JD-C model is generalisable to all individuals. It might be the case that modern forms of organisations are hazardous mainly to persons with a performance-based self-esteem (see e.g. Hallsten et al. 2005). Thus, the validity of the JD-C model to all types of organisations and individuals should be investigated, preferably in multilevel studies (Morrison & Payne 2003).

A second field of research into psychosocial factors and job stress focuses on the group rather than the individual. For example, the composition of the group in

terms of gender, education, age, personality, and valuation of work has been shown to have great impact on job satisfaction, performance, and health (Appelberg et al. 1996; Blau & Schwartz 1984; Fields & Blum 1997; Konrad et al. 1992). It has even been suggested that there is “emotional contagion” within groups, which might explain some of the variance in burnout and sick leave rates (Bakker et al. 2003). Consensus in a group has been shown to have a protective effect in times of strain (Bliese & Britt 2001), and intra-group conflicts seem to affect the performance of a group (Cox 2003). An organisation-oriented approach would in this case be suitable for studies of whether social relations in groups are mainly a matter of the composition of individuals in groups or if they stem from the new forms of social interaction in certain types of organisations which have an impact on how individuals act and react in stressful situations.

A third area of job stress research investigates the relationship between the individual and more general labour market conditions. In the last two decades, research on the connection between organisation and individual has broadened to cover a wider range of organisational aspects as well as a wider range of individual conditions. There is increasing interest in the impact of labour market and organisational strategies on workers’ health and well-being. Organisational strategies have been shown to affect the composition and extent of work, the scheduling of work in time and space, and a wide range of work environment conditions and job contracts (see for example, Altman & Deiß 1998; Karasek & Theorell 1990; Sverke et al. 2000). Phenomena such as downsizing (Isaksson & Johansson 2000; Stjernberg & Tillberg 1998), job insecurity (De Witte 2005; Hellgren & Sverke 2003; Greenhalgh & Rosenblatt 1984; Sverke et al. 2002), temporary employment (Aronsson et al. 2002; Isaksson & Bellagh 2002), and being in a “locked-in” position in a non-preferred job (Aronsson & Göransson 1999) are examples of this broadening of the field of job stress research. For example, it has traditionally been taken for granted that a permanent employment contract is always better for the employee than a temporary one. However, recent studies indicate that is not always the case (Bardasi & Francesconi 2004; De Cuyper & De Witte 2006; Silla et al. 2005). In this type of job stress research, knowledge of the organisational context would add valuable information on how labour relations are mediated in the interaction between the worker and his or her colleagues and supervisors at the workplace.

To conclude, there has been a huge interest in psychosocial factors and job stress during the last few decades. However, this research field mainly seems to apply a variable-oriented approach, where more and more sophisticated models and assessments of working conditions at the task or individual level are used. Most studies of job stress have the individual as the main focal unit of analysis; the organisational context is often ignored, or measured at the individual level only. Although associations between work organisation factors and health have been shown in a large number of job stress studies over the last few decades, organisations as such have not been studied, and so it is not possible to assess the magnitude of organisational impact or what organisational aspects are most

important for working conditions and health. An organisation-oriented approach to job stress research would contribute to knowledge about the validity and generalisability of established theoretical models and the operationalisations of key concepts in these models, as well as increase knowledge of the mechanisms that create healthy and hazardous job situations. This is particularly important for the understanding of some puzzling findings in earlier job stress studies.

### **The impact of organisational change**

Studies of the effects of organisational change are very common, particularly during the last decade. The vast majority of studies conclude that organisational changes have a great impact on employees' working conditions and health (Härenstam et al. 2000; Landsbergis et al. 1999; Purcell & Purcell 1998; Rantanen 1999; Warr 1994). Health problems seem to be more sensitive to various aspects of organisational change than to many other organisational characteristics such as hierarchy or formal decision-making (Härenstam et al. 2005).

Despite this interest in organisational change, the concept is seldom explicitly defined or related to a theoretical foundation. Organisational change has even been suggested as a category that is taken for granted, without empirical or theoretical argument (Quattrone & Hopper 2001). Organisation researchers have defined the concept as "an emergent and iterative process of self-organisation within communities of practices, rather than the outcome of a predetermined strategy or the top-down design intervention of experts" (Caldwell 2005, p. 98). Organisational change has also been defined as reconstruction of the entire organisation (Prastacos et al. 2002). In a review by Burke (2002, pp. 129–131), several ways to classify organisational change are described, for example whether the changes are planned or unplanned, and whether they are first-order (evolutionary) or second-order (revolutionary) change. Burke also refers to classification of organisational change by *what* is changed, *how* and *why* changes are implemented, and contextual factors (*who*, *where*, and *when*) (Burke 2002, pp. 132–133). Organisational changes have also been classified as "internal adjustments", "environmental alignments", and "future-anticipating". These have different consequences for the implementation of changes (Lundberg 1990).

Empirical studies of consequences for employees use a wide range of indicators of change. Some studies measure the concept in relation to a well-defined period of basic reconstruction of the organisational chart and the production system including management strategies and individual roles (Prastacos et al. 2002). Other studies include the individual's change of department or work obligations as well as the recruitment of new members (Tsutsumi et al. 2002).

Changes occur among a number of organisational aspects of work, such as power structures, integration of the work process, management strategies, responsibilities for job performance and results, information technologies, and demands of competence (le Grand et al. 1996; Sandberg 1997). Researchers do not seem to agree about the effects. In Sweden, the consequences of changes for

the workers have sometimes been presented as positive and favourable, that is, in concordance with the idea of healthy work (LO 1991; Brulin & Nilsson 1995). However, work-related changes involving processes of individualisation and flexibilisation have been shown to have negative effects, at least on parts of the workforce (Allvin 1997; Atkinson 1984; Härenstam et al. 2004a; Ministry of Industry, Employment and Communications 2000; Sennett 1998, pp. 46–63; Purcell & Purcell 1998). The variance in results from different studies might be due to the broad variety of definitions of organisational change as well as to whether the emphasis is on positive or negative effects. Studies of organisational change within business and management oriented research often search for positive effects such as performance, productivity, innovation, and skill development (see e.g. Balogun & Jenkins 2003; Baines & Langfield-Smith 2003), while studies within job stress research often focus on negative effects (Bordia et al. 2004; Karasek 1990; Kaminski 2001; Grossi et al. 1999; Kivimäki et al. 2001; Westerlund et al. 2004; Tsutsumi et al. 2002).

Although several studies have shown that organisational change is important for individuals' health and well-being, relatively little is known about the consequences of specific changes (Mustard 1997). Working conditions and health are affected by a number of aspects of change, such as “skilling” and “deskilling processes”, routinisation processes, control and incentive strategies, flexibilisation, and development strategies (Kallinikos 2001; Dhondt et al. 2000; Tilly & Tilly 1998; Härenstam et al. 2004a). Some studies argue that demands for flexibility at work involve possible health risks resulting from changes in job contracts and problems with determining new work time arrangements (Aronsson et al. 2002; Ertel et al. 2000; Åkerstedt et al. 2000). In Sweden, a number of studies have linked the increased rate of sick leave to a rapidly increasing workload (Aronsson et al. 2000; Ministry of Industry, Employment and Communications 2000).

In one Swedish sample, approximately two thirds of the employees at 80 workplaces had experienced organisational changes (classified using interviews with managers) during the previous year (Härenstam et al. 2004b). Multilevel analyses showed that organisational change was associated with changed working conditions. The impact of change was mainly negative, particularly in the public sector. Both externally-assessed and self-rated psychosocial and physical work conditions were affected. However, different types of organisational changes had different impacts on working conditions, and there were indications that male and female, well-educated and less well-educated, and younger and older workers reacted differently to the changes (Härenstam et al. 2004b).

A large Swedish study in the Stockholm area found an association between self-reported experience of organisational change and symptoms of ill-health, particularly psychological distress (Arbetshälsorapport 1999). Changes measured in this way were also an important factor in explaining differences in health when the same group was followed up four years later (Härenstam 2001). Another Swedish study showed negative health effects of organisational instability assessed by

researchers on the basis of interviews with managers and union representatives (Westerlund et al. 2004a, b).

Le Grand et al. (2001) argue that the magnitude and speed of change is less dramatic than is often assumed, and that different groups are affected very differently by changes. Raised levels of qualifications in the workforce have not meant increased demands for qualification within occupational groups (ib). An increase in the number of workers employed on short contracts occurs in parallel with increased longevity of employment contracts in general. The often-claimed general increase in the intensity of work can be demonstrated, but the differences between occupational groups are large (ib). Changes in the labour market and in the workplace do not seem to have the same effect on all employees. There are signs of increased differentiation of work conditions between certain groups of the workforce (Altman & Deiß 1998; Dore 1997). Polarisation, marginalisation, and negative forms of mobility in and out of work based on gender, age, ethnicity, and social class have all been demonstrated in recent studies in Sweden (Hemström 2001; le Grand et al. 2001; Härenstam & the MOA Research Group 2005; Marklund & Wikman 2001; Marklund & Toomingas 2001; Bäckman & Edling 2001). The last decade has seen a dramatic increase in work-related stress and sick leave in female-dominated areas such as teaching and hospital services. Surveys of the EU countries indicate increases in work demands and time pressures in most nations (European Foundation 1997). It is still an open question whether these changes in working conditions and health are caused or mediated by organisational changes, or if they are an effect of other causes either at higher levels (for example, within the labour market, society, or welfare systems) or changes in attitudes, demographic factors, and so on in the workforce.

Another less well-known aspect of change is related to how occupations change over time with respect to social status, gender composition, professional independence, and career opportunities. The assumption is that individuals in degenerative or declining occupations are more likely to report health problems than those in expanding or prospering occupational groups (Johnson & Hall 1996). There are indications that it is the same group of unskilled workers that move from periods of unemployment into low paid, insecure, temporary employment with poor working conditions (Fryer & Winefield 1998; Dooley & Catalano 1999; Dore 1997). Furthermore, changes in working conditions observed over time in surveys of representative samples may be explained by changed composition of occupation in the workforce rather than as indications of improvement or deterioration of working conditions (Burr et al. 2003).

It could be hypothesised that while change as such can create feelings of insecurity, distrust, and threat for some groups, others might experience increased opportunities and freedom (Härenstam et al. 1999a; Wiklund et al. 2000). From a broader perspective, changes in working life may also have consequences for the identity of the individual (Sennet 1998). Identity is formed both in relationships between people and in the relationship to work tasks. Individuals establish and develop conceptions of themselves at work. Work defines who we are, and what

worth we have. It has been shown that when important life values are threatened, the risk of mental ill-health will increase (Brown 1996).

An organisation-oriented approach to studies of the impact of organisational changes on working conditions and health would contribute to a deeper understanding of the mechanisms involved. Organisational changes are implemented at physical workplaces. Thus, in order to understand what types of organisational changes are detrimental or health-promoting, there is a need for deeper studies of how conditions at the meso level affect work practices, working conditions, and organisational behaviour (Caldwell 2005). With such an approach it is also possible to separate effects of organisational changes from other causes or processes. Further, there is a great interest in acquiring knowledge of how changes can be implemented in order to achieve both efficient production and healthy working conditions. Organisational changes which involve participation by the workers have been shown to have less negative effects on the individual regardless of the magnitude of such changes or the speed of the process (Callan 1993; Karasek 1990; Korunka & Vitouch 1999; Parker et al. 1997).

### **Work organisation and work design**

Traditional research on organisations has predominantly focused on aspects other than workers' health and working conditions and is not always relevant in this area. It has been suggested that most such research is now conducted within the field of management studies at business schools, rather than within sociology and work psychology as previously (Lounsbury & Ventresca 2003; Björkman 1997). It should be mentioned however, that there is a tradition of sociological and psychological organisation research in Sweden, as well as in other countries, where this integration has been more in focus. Gardell studied the specific link between the organisation of production and individuals' work satisfaction back in the late 1960s (Gardell 1971). In a classic study, Emery and Thorsrud described the role of workers' influence in industrial settings (Emery & Thorsrud 1969). Stjernberg (1977) investigated how increased democratisation of office work affected individuals' working conditions as well as work organisation. Aronsson studied how the organisation of work affects health (1976, 1980, 1985). In an international summary of this research tradition, Srivastva (1975) found that while a number of different aspects of organisational conditions and change had been shown to affect work satisfaction and health, other aspects of psychosocial working conditions were less well-studied.

Studies of work design of production systems seem to integrate data on the organisation of work with data on working conditions more frequently (Christmansson 1997; Forslin 1990; Melin et al. 1999). This research has mainly explored technical systems in manufacturing industries. Another large research area within the field of work design covers the health effects of chemical, physical, and ergonomic exposures, mainly using experimental studies, intervention studies, and detailed analyses of specific job tasks.

The classic sociotechnical system perspective focuses on the combination of the technical system, i.e. organisation of equipment and layout of the production process, and the social system, i.e. the social organisation of the people who operate the technology (Trist et al. 1963; Trist 1978; Buchanan 1979; Sandberg 1982). This tradition within organisation research takes the social system and the workers into account. The task of management is to create a sociotechnical system in which the technical and social systems are combined in an optimal and mutually-supportive way. This research tradition was most prominent some decades ago, and most studies were performed in manufacturing in the traditional industrial labour market. A very important study was performed in the mining industry (Trist & Bamforth 1951, in Thompson & McHugh 2002). When new mass production methods were introduced, work was more fragmented, which led to lower commitment and higher absenteeism. The researchers' solution was to accept the technology but vary the methods of work and introduce higher self-regulation and collective bonuses. The results showed that management choice could be exercised in favour of methods that took greater care of socio-psychological needs, while still obeying economic and technical constraints.

In the critical tradition of organisation studies there is a growing interest in the consequences of new organisational models. New management doctrines such as Total Quality Management (TQM) and Human Resource Management (HRM) are characterised by a value-based management that motivates workers to high performance and loyalty to the ideals of the organisation. At the same time, research has shown that first-line managers have less and less time for being leaders as their time has to be spent on administration (Ellström & Kock 2004).

There has also been great interest in the so-called individualisation process or self-regulation of work (Allvin 1997; Garsten & Jacobsson 2004), which has been suggested as means of increasing the responsibilities for the workers. The power over the situation has at the same time been centralised to the strategic level of organisations and to the customers. New, subtle forms of control are increasingly mediated by customers, and seem to lead to increased emotional demands on workers (du Gay & Salaman 1992). It has been suggested that the increase in team-based organisation has replaced visible control with a more value-based control that can be even harder and more effective (Barker 1993). It seems also that people of low status are losing influence in cross-disciplinary teams (Lichtenstein et al. 2004; Lindgren 2001). However, this field of organisation research has mainly used qualitative case-studies, and there is little evidence so far of the effects of new management doctrines in broad quantitative studies within organisation research. Recent research exploring differences between organisations has primarily focused on economic outcomes such as productivity, economic growth, efficiency, and incentives (Szulkin 1999; Le Grand et al. 1996; Barth 1994; Hultin & Szulkin 1999), as well as employment relations (Kalleberg & Mastekaasa 1998; Kalleberg & Rave 1992) and employee behaviour, motivation, and commitment (Kalleberg & Mastekaasa 1994; Nicholson & Goh 1983).



It has been suggested that ecological psychology, particularly behaviour setting theory (Barker 1968; Wicker 1979), addresses the link between individual conditions and organisations (Rousseau 1985).<sup>9</sup> However, this theoretical perspective has mainly been used to study specific problems of organisational change such as understaffing and selection processes. Most of the well-known organisational theories, such as contingency theory (Woodward 1965), transaction-cost theory (Williamson 1975), agency theory (Fama 1980), new institutionalism (DiMaggio & Powell 1983), and organisational culture theories (Schein 1985; Peters & Waterman 1982), are not intended for studies of working conditions and workers' health.

In recent years, studies of organisational cultures and the effect of the global economy on companies have gained great interest (Castells 2000; Fenwick & Tausig 1994; Hofstede 1980, 1991; Røvik 1998; Sandberg 1997). However, the issues brought up have mainly been studied at a relatively high organisational level rather than at the workplace level (Czarniawska & Sevón 1996; Dhondt et al. 2000; Klein & Kozlowski 2000) and, further, these studies do not focus on working conditions and health.

In summary, a broad range of aspects of organisations have been studied in a number of different ways within various fields of research. There is certainly still room within work and health research for greater utilisation of the knowledge about contemporary organisations that has been gained from these fields. In order to succeed in this challenging task there is a need to bring work practices back into organisation research as well as to bring organisations into work and health research (Barley & Kunda 2001). The next section describes some dimensions used in earlier organisation research and summarises results from studies of the impact on working conditions and health.

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<sup>9</sup> For further description of ecological psychology, see also Westlander (1999) and, for descriptions of organisational ecology, Ahrne and Hedström (1999).

## Aspects of organisations

In order to study the associations between organisational characteristics and workers' health and working conditions, it is necessary to decide which dimensions of organisations in contemporary working life should be studied. This issue is, to a high degree, dependent on the underlying theory as well as on the pragmatic question of which aspects are actually possible to assess at the different levels of data that are needed. Finally, to gain valid knowledge on the linkage between organisations and individuals, a methodology for the assessment of organisational characteristics has to be developed.

There is a long tradition of empirical studies of organisational impact on working conditions, but, as mentioned earlier, many were based on knowledge of a traditional industrial labour market. A number of organisational dimensions have been used in this kind of organisation research. As there exists many different ways to define these aspects there are good reasons to discuss and clarify them.

Traditionally, organisations have been described in terms of structures and processes (Bakka et al. 1999). Most specific aspects can be classified both as structures and processes, even if the main focus differs. A third category, culture, has been of interest during the last few decades. When organisations are described as structures, patterns of relations, stability, regularities, and order are of interest. On the other hand, when organisations are described as processes, there is an interest in dynamics, change, driving forces, conflicts, and tensions. When organisations are described from a cultural perspective, aspects like ideologies, attitudes, norms, metaphors, rhetoric, motivations, and management are important. However, these categories are not completely disjoint; a given phenomenon (for example, management) can be described from a structural, processual, or cultural perspective, and organisational structures and cultures can be used for the exploration of processes. The choice of a structural or a processual perspective depends on the specific research question and has consequences for both the design of the study and the set of aspects of organisation that are explored. Studies of processes need a time perspective, while studies of structures can be designed as catching on-the spot accounts. Both structures and processes are of interest when investigating the organisational impact on working conditions and health.

Comparative studies of organisations have mainly adopted a structural perspective. In the 1960s, an ambitious research project known as the Aston Programme was initiated for the identification of empirical dimensions for comparative studies of organisations (Pugh et al. 1963, 1969a, b; Pugh 1988). The programme proposed two main aspects at the organisational level: contextual and structural variables. Contextual variables included ownership, size, technology, location, resources, and dependence. Structural variables included structuring of activities (for example specialisation, standardisation, and formalisation), concentration of authority (for example centralisation of decision making and autonomy of the organisation), line control of workflow (for example subordinate ratio and recor-

ding of role performance), and relative size of the supportive component (for example percentages of clerks and other non-workflow personnel, and vertical span) (Pugh 1969b). These dimensions were used in various analyses resulting in a taxonomy of structures of organisations that were labelled as different types of bureaucracies (Pugh 1969a). The Aston Programme and the methods developed by this research group have had a great impact on comparative organisational studies in many countries (Pugh 1988).

Earlier research on work organisation and working conditions has suggested a number of dimensions which may be important as health risks and health promoters. Some of these are summarised below; for a more thorough description, see for example Szulkin (1996).

### **Dimensions of power and control**

#### *The structure of power*

Structures of power, exertion of authority, and influence have long been among the most scrutinised aspects in organisation studies (Crozier 1964; Minzberg 1979; Lysgaard 1961; Pugh et al. 1969a). Weber's thoughts on bureaucracy have had great influence over organisational sciences and their view on power, where formalisation and hierarchical structuring are seen as central aspects (le Grand et al. 1996; Szulkin 1996). This classic work in the sociological tradition is still partly relevant, but, due to the modernisation of working life, when the issues are explored today then empirically and theoretically rendered problems must also be taken into consideration (Ahrne & Hedström 1999; Johansson 2002). The issue of power and authority has relevance to the issue of differences between formal and informal structures, and also to the matter of change and conditions of change.

In many ways, the conditions of employees are determined by the way in which power is distributed and executed, particularly with regard to workers' control over their own work. The imbalance in influence over the organisation of work between owners, managers, and employees has been a critical theme in industrial relations (Aronsson & Sjögren 1994; Karasek & Theorell 1990; Lysgaard 1961; Szulkin 1996). It is also known that to understand the power structures within organisations, they must be viewed in relation to the social context of the workplace (Ahrne 1991).

#### *Management technologies, control systems, and reward systems*

Management strategies are strongly influenced both by ideological trends and by the current state of the market (Altman & Deiß 1998; Dore 1997; Björkman 1997; Furusten & Lerdell 1998). Even if the content and the technology of management strategies are relatively stable over time they tend to shift in focus and the metaphors used for the diffusion of them also change (Bäckström 1999). The organisation and management of work has increasingly come to be seen as a means of competition in itself – in industrial production as well as in the service sector. The survival and productivity of companies are dependent on their ability to make the most of all types of resources. Meeting the demands of customers, introducing

new technologies, and having hard-working and skilled employees are some of the most important means of competition.

Management technologies can be roughly divided into two categories: hard and soft technologies. Among the hard technologies are direct supervision and outcome control using, for example, administrative, IT-supported information systems for the measurement of results, costs, and productivity (Szulkin 1999). Examples of soft technologies include dialogue between superiors and subordinates, development meetings, participatory approaches, management by ideas, and a corporate culture enhanced by normative strategies and incentives for high motivation and commitment to the organisation (Alvesson 1993; Morgan 1986; Czarniawska & Sevón 1996; Schein 1985).

The dominant management trend means that production is organised into flows, buffers are at a minimum, hierarchies are flat, responsibilities are decentralised, and the contents of jobs are extended (Womack et al. 1990). These trends may have dual outcomes. According to critical management studies, the prevailing Human Resource Management systems often lead to the hard technologies being directed at the less well-educated, replaceable groups, while the soft technologies are targeted at the core of the workforce (Legge 1995). There is, however, a growing trend towards the implementation of standardised systems for assessing production in different ways. Total Quality Management (TQM) has been adopted by many organisations and seems to have a large impact on work performance and workers' autonomy (Bejerot & Hasselbladh 2002).

Alongside control systems, there exist reward systems, or incentives, intended to influence employees' results and behaviour. Incentives have mainly been studied in relation to employee motivation, commitment, and loyalty (Szulkin 1999). Apart from economic incentives, other aspects such as career prospects and group membership have been of interest in research (Kalleberg & Rave 1992; Kanter 1977).

### *Standardisation and formalisation*

Interest in standardising and formalising production and in the relations between these two aspects has varied over time. Regulation as an instrument for management control was a strong trend in large parts of the labour market for a long time (Weber 1920/1983; Minzberg 1979). Standardised production is one of the characteristics of mass production of goods. Another application of standardised routines concerns quality control. A common trend in companies during the last decade has been to standardise quality procedures by making them conform to rules and standards such as the ISO-9000 quality certification (Dhondt et al. 2000). Both standardisation and formalisation are important aspects in studies of working conditions, particularly regarding workers' autonomy. Standardised and formalised production within a hierarchical order has been shown to have negative consequences for workers (Littler 1982). More recent studies do not give support to such generally negative effects, but show instead that formalisation of

rules and routines can have a beneficial effect as a protection against arbitrary treatment of workers (Szulkin 1999).

## **Dimensions of technology and organisation of work**

### *Integration and fragmentation of work*

Division of work has long been regarded as an important dimension when studying working conditions in organisations (Blauner 1964; Kornhauser 1965). The fragmentation of the work process by vertical and horizontal division of labour has been described as one of the main tools for controlling employees, while its opposite, the creation of an integrated work process by means such as job enrichment, has been regarded as a tool for the empowerment of workers (LO 1991; Brulin & Nilsson 1995). Horizontal division of work, in particular, has implications for physical demands and work postures as well as for mental demands at work. Consequently, increased integration in the work process has been called for in order to increase variety in physical and mental demands; however, this relationship has been questioned by recent research on individualisation processes in contemporary working life (Landsbergis et al. 1999; Legge 1995; Keenoy 1992). Increased functional or horizontal integration, by organising work in flows and processes, is one of the characteristics of the lean production concept (Womack et al. 1990). The increased use of horizontal integration has been described as tearing down the walls between occupations (Sandberg 1997). Vertical integration, on the other hand, covers the ways in which planning and work are integrated or separated in complex chains. Increasing vertical integration may affect work content as well as relationships between hierarchies. Vertical and horizontal segregation are also key dimensions in theories of gender segregation of work (Kanter 1977; Abrahamsson 2000).

### *Distribution of work in time and space*

One naturally important aspect of the organisation of work, with a number of implications for workers, is when and where tasks are performed. There is a growing trend for employees to work atypical hours and at different places. The consequences of telework and distance work for work and health have been much discussed in research over the last decade (Ertel et al. 2000). Other issues of great interest in stress research are irregular work schedules, shift work, and night work, which have all been shown to affect health negatively (Åkerstedt et al. 2000; Knutsson et al. 1999). Nevertheless, atypical distribution of work in time and space has allowed companies to become more flexible and to meet the demands of their customers (Giertz 2000).

### *The use of and dependency on technologies*

Technologies in general, and information and communication technologies (ICT) in particular, are powerful instruments for controlling work processes and are important driving forces for rationalisations and organisational changes. Communication and information technologies also influence learning opportunities and

social relations within an organisation. A number of researchers have explored these issues from a gender perspective (Wahl 2003; Sundin 2001; Sundin & Berner 1996). New technology puts new demands on the workforce in terms of competence, self-direction, and flexibility (Docherty & Nyhan 1997; Forslin & Thulestedt 1993; Houtman et al. 2002). It has been shown to have both health-endangering and health-promoting effects, depending largely on which work postures and skills are required (Aronsson et al. 1988; Karlqvist 1997; Wigaeus Tornqvist et al. 2000). Particular risk factors associated with ICT include exposures such as electromagnetic fields, postural strain, and repetitive job tasks in visual display work (Bergqvist & Floderus 2000; Punnett & Bergqvist 1997).

#### *Flexibility, innovation, and development*

Strategies for increasing flexibility and innovative capacity are not just important tools for companies' growth but also for changes in the work process, particularly with regard to employees' skill discretion, learning opportunities, and job intensity (Atkinson 1984; Landsbergis et al. 1999; Huzzard 2000; Purcell & Purcell 1998). Flexibility and innovation have been discussed as responses to changes in technology and in customer demands as well as to increased competition in a globalised market (Dhondt et al. 2000; Ekstedt 2002; Greenan 2003; Lorenz & Valeyre 2005; Wheelwright & Clark 1992; Wikman 2001). Several strategies for flexibility have been described by researchers, including numeral, financial, and functional flexibility (Atkinson 1984; Kallinikos 2001), while contemporary methods for increasing innovative capacity include investments in ICT and in workers' expertise, decentralisation of responsibilities, and intensification of external relations (for example, with customers) (Dhondt et al. 2000; ITPS 2001).

### **Dimensions of industrial relations and management**

#### *Participation and work environment policy*

Employee participation, directly or via a union, has long been of great interest in studies of working life (Heller et al. 1998; Huzzard 2004). Particularly in Scandinavian countries, democratic values and codetermination via dialogue between parties have characterised how work environment issues and power relations at the workplace have been regulated since the 1960s. Systematic work environment management is now the main strategy for the management of work environment issues. However, implementation of systematic work environment management and access to occupational health services, safety committees, and safety representatives differ between industrial sectors and between small and large organisations (Frick et al. 2005). Studies of the effects of different strategies and systems for employee participation regarding such matters as work environment issues are rare.

#### *Contractual relationships*

Regulation of the employer-employee relationship has been regarded as a major mechanism for social stratification (Tilly & Tilly 1998) as well as for the distri-

bution of work-related ill-health in the population (Aronsson 1999b). As different kinds of temporary employment contracts become widespread throughout the world, researchers are becoming more and more interested in studying the consequences for workers' health (Dhondt et al. 2000; Quinlan et al. 2001). Among the main driving forces for the increase in temporary employment terms are increased competition, changed customer relations, and the prevailing trends of flexibilisation (Aronsson 1999b; Ekstedt 2002). There is now a growing interest in studying the consequences of the psychological contract, that is, the ways in which the employer and the employees perceive the expectations, conditions, and outcome of the relationship between them (Milward & Brewerton 2000; Rousseau 2001; Schalk et al. 1998).

### *Composition of the workforce*

The question of the characteristics and composition of staff is another long-standing area of interest in organisation, work, and health research. Work life has been looked upon as an area where segregation and inequalities are constructed and reinforced (Tilly & Tilly 1998, p. 172). Gender, ethnicity, age, health status, educational level, and class segregation-integration have been discussed (de los Reyes 2001; Bygren 2001; Bond 1999). While the traditional classification of the workforce in studies of work and health has been based on either a division between blue and white-collar workers or a more finely-graded classification of socio-economic status, and the classic theories of work are based on this class perspective on the labour force (Goldthorpe 1968; Braverman 1974; Littler 1982; Thompson 1983), researchers have recently become greatly interested in a gender perspective. There are now a number of studies showing that gender segregation is very important when it comes to understanding of variance in psychosocial and physical working conditions and career prospects, and the association with health (Josephson et al. 1999; Leijon et al. 2004, 2005; Preston 1999; De Zwart et al. 2001; Punnett & Herbert 2000; Kalleberg & Reskin 1995). Gender segregation is one of the most evident characteristics of the labour market (Melkas & Anker 2001; Westberg 1998). In many countries, female workers are often found in the service or health care sectors and in low-paid jobs with repetitive tasks and low control over work (Punnett & Herbert 2000). As individuals tend to cluster by gender and ethnicity to certain types of jobs and positions, labour force composition in terms of these classifications should be regarded as an organisational characteristic.

These issues are a complicated task for empirical research as there are strong selection mechanisms involved. It has been shown that women and minority workers are overrepresented in the worst forms of contingent job contracts (Mitter 1986, p. 139), but, at least in Sweden, the issue of ethnicity has so far been very little studied as an organisational aspect, either in occupational health research or in organisation research. However, the ways in which job tasks are matched with individuals, that is, the ways in which organisations are manned, are extremely important when exploring the impact of organisations on working conditions and

health. Nevertheless, it must be remembered that from the company point of view, staffing structure is mainly regarded as a means for growth and profit, and the main concern is employing the “right” categories of workers in relation to staffing costs and the demands of the production process.

### *Leadership*

The ways in which managers at different organisational levels behave has been of great interest in science and management literature as well as in the public debate on the causes behind the large differences between companies in terms of work-related ill-health (SOU 2002:5). Aspects of interest have included the relationship between management style and such things as creativity and organisational culture (Arvonen 2002; Ekvall et al. 1995). Studies of workers’ health have also shown the importance of social support from superiors (House 1981; House et al. 1988; Siegrist 1996). Management behaviour has often been seen as depending on the personality and education of the manager. However, some recent studies have shown that prerequisites for the execution of leadership seem to be a very relevant issue when studying working conditions and health, both for managers themselves and for their subordinates (Holmquist 1997; Lantz 1995; Lantz et al. 1993; van Engen et al. 2001). The role of leadership has also been an important issue in gender research (Kanter 1977; Nyberg & Sundin 1997; Wahl 1996).

## **Organisational context**

### *Market dependency*

The market context is of great importance to an organisation. It can be regarded as both a resource for growth and the main source of demands on an organisation, thus influencing what happens within the organisation. One critical point is whether it is possible to predict the market situation. There are studies showing that organisations which constantly adjust their products and services to customer demand tend to delegate decisions and responsibilities to lower organisational levels (Minzberg 1979). However, when resources are lacking and the threat from the market is high, organisations tend to centralise their decisions (Minzberg 1979; Szulkin 1996). Results from one study showed that some indicators of the company-level market position had an impact on musculoskeletal disorders (Warren 2001). Similarly, a study by Fenwick and Tausig (1994) indicates that economic factors at the macro level have an impact on job stress, albeit mainly indirectly, through changes in work conditions.

### *Size of organisation*

Organisational characteristics are highly influenced by the size of the organisation. Large organisations tend to have a higher degree of formalisation and bureaucratic and hierarchical organisation (Pugh 1969a). However, a large organisation can also allow decentralised structures of power (Pugh 1969a; Minzberg 1979; Szulkin 1996). Large organisations, particularly in the private sector, seem to have lower rates of layoffs and resignations than smaller ones (Kalleberg &



Mastekaasa 1998). Many studies have also shown that sick leave rates are substantially higher in large organisations than in small ones (SOU 2002:5).

#### *Type of trade and operations*

The role of what is actually produced has to a surprisingly small degree been seen as a powerful dimension when studying work organisations and working conditions during the last few decades. Earlier organisation research was mainly performed on industrial production (Blauner 1964; Emery & Thorsrud 1969; Gardell 1971; March 1965), although there were some exceptions (see e.g. Perrow 1965; Bidwell 1965; Cressey 1965). However, more recently, empirical research and theories on Human Service Organisations have been developed (Hasenfeld 1983). According to Hasenfeld, HSOs are characterised by their mandate to protect and promote the welfare of people. Furthermore, the core of their work is the relationship between the worker and the client, as work is performed in direct contact with the people that the organisations are intended to protect or help. HSO theory stresses the moral foundation of work, rooted in an ideology that reflects the value of human welfare. If human relations are considered as the work object, this has implications for many aspects of work, particularly for psychosocial working conditions (Bejerot et al. 1998b).

Even if welfare production differ from other types of production, management trends in the public sector have been transferred from industrial production without adjustment to differences in production and demands from employees or customers (Røvik 1998).

A new categorisation of organisations, addressing the questions of what is produced, the organisation's market position, and its requirements in terms of knowledge and technology, has recently been developed (Giertz 2000). This classification system has been useful in studies of the distribution of "good" and "bad" jobs (Härenstam & the MOA Research Group 2005).

## Conceptual and methodological issues

If we postulate that many countries are in a transition period from one type of industrial labour market to another, the need becomes clear for models and tools for use in studying the effects of the transformation *per se*, as well as for examining the impact of new or changed conditions in working life. In the introduction, we outlined the requirements for the development of theoretical models and analytical tools in studies of organisations and their impact on working conditions and health. In this section we offer some suggestions. Firstly, we present a tentative definition of organisation and organisational change that we regard as applicable for organisation-oriented work and health research. Secondly, we discuss some methodological challenges that have implications for the design of organisation-oriented work and health studies. We then outline possible mechanisms and pathways in the chain between organisations and individuals that need to be explored. Finally, we describe some analytical tools that we have found useful.

### **A tentative definition of organisation**

When trying to bridge the gap between organisation research and occupational health research, problems soon arise with the use of methodological and theoretical concepts. There is a lack of consensus over how concepts are used as well as a lack of standardised definitions of the phenomena which are important for this integrated research field. The concepts and interpretations used in organisational psychology differ from those employed in business economics and management theory. Opportunities for cross-discipline conversation on these issues need to be identified in order to create better science and more effective interventions.

Thus, the aim of a definition is to be useful for empirical studies. The basic focus is on work organisations although the definition may also be useful for other kinds of organisations. It should deal specifically with the relationship between the individual and the organisation and it should allow integration between micro and macro levels as well as integration between organisational theories and theories of occupational health.

The first step is to use a wide perspective that demands an open rather than a closed definition. This requires a common denominator that allows different questions to exist together and that allows different levels of analysis. It also means that we favour a holistic definition that is not based on a specific school of organisation theory. Neo-institutional theory may be useful for the study of macro-level institutional questions, while contingency theory may be useful for the study of technological aspects. The idea is also to include formal as well as informal aspects of an organisation and to capture the fact that actors at different levels of an organisation may be understood from different rationalities.

The following general definition meets these requirements: *An organisation is a social entity which acts through its individual members but at the same time constitutes a structure that is partly independent of the unique individuals.*

An organisation consists of two parallel structures. One is the formal structure that is the result of coordination of the activities of individuals. This coordination makes the organisation independent of the unique individual, who can be replaced by another individual. The informal structure on the other hand is constituted by interpersonal relationships that are dependent on aspects of unique individuals, such as attitudes, interests, competence, and status. Organisational action is therefore a process in which the individuals affect the formal structure, at least in the long run. To call it a social entity is to indicate that any organisation is constantly recreated in the relationship between the formal and the informal structure and its members. The organisation is part of a larger social context which includes the other organisations and institutions that it relates to. Social institutions, in the sense of traditions and social customs, constitute normative, cognitive, and regulative influences that affect all parts of the organisation.

As a consequence of seeing an organisation as consisting of several analytical dimensions, the relationship between the organisation and the individual can have a number of different focuses.

### **Definitions and operationalisations of organisational changes**

As described earlier, there is no consensus on how to define organisational change in research on its consequences for workers. Thus, there is a need both for a clear definition of what is meant by *organisational change* and for suggestions on how the concept can be operationalised and assessed in empirical studies. Our definition of an organisation can serve as a starting point for defining and measuring change. In order to assess organisational changes in empirical studies, we must begin with defining *where* changes are implemented, that is, we must define the boundaries and levels of the organisation to be studied. *Where* is a spatial concept dealing with both time and space. Thus, the time perspective has to be defined, and there must be a point of reference in order to evaluate whether a change has occurred and whether a change has consequences. In order to study the consequences of changes, we need to define *who* is encompassed by the changes. The *who* question concerns individual employees, groups of employees, managers, and the organisation itself. Finally, and most importantly, there is a need for definitions of *what* should be labelled as organisational change. By trying to answer the questions about *what*, *where*, and *who* is involved in change, different aspects of change and its consequences can be defined and measured.

We suggest that two concepts are used; *organisation change* and *organisational changes*. In this way, both change over time (evolutionary change) and restructuring of the total organisation during a distinct period of time (revolutionary change) can be studied (see e.g. Burke 2002). The two varieties of change should be distinguished from one another. An important point in this context is that the

measurement of change needs a point of reference. It is sometimes only possible to understand what has changed in an organisation by comparing it to other organisations; if there are volatile changes in the social discourse, the members of an organisation may regard their organisation with new eyes even if it has not changed much. Similarly, systematic changes in an organisation that mirror concurrent changes in other organisations can be hard for its members to detect.

We propose that *organisation change* is used only for planned changes, with a distinct beginning and end, of the entire organisation or workplace. This means that the change is temporarily and spatially defined and that it should reflect a restructuring of the organisational form as well as of the production system. Such events, classified by Burke as revolutionary change, are probably rarer than evolutionary changes in, for example, management technologies, adjustments of staff size, and the like (Burke 2002).

Conversely, we propose that the definition of *organisational change* should be broad, in the sense that all kinds of changes of the organisation itself are included. However, we suggest that in order to be defined as organisational change, changes should relate to at least some of the structural aspects of the organisation, and not deal only with changes of individuals or adjustments of self-image. Further, in studies of data at both organisation levels and individual levels, it is reasonable to define organisational changes as only those that are *intentionally implemented at the organisational level* in order to make a difference in the organisation. Examples of structural changes in organisations are changes in the organisational form, in formal and informal power and responsibility structures, in technology, in the production process, in coordination, in management strategies, in personnel and recruitment policy and practices, in staff size, in the composition of the workforce, and in the division of labour.

As a consequence, we do not regard the recruitment of a new manager or a few new workers, individual adjustments of work assignments, or internal mobility as organisational changes in this respect unless these activities are part of a conscious restructuring. This means that it is important to separate changes of work practices at the worker level from changes in organisations; that is, we need to be clear when we define the focus of analysis — the organisation or the individual worker. This is particularly important in studies of causal relations between levels. Work practices and working conditions might be an effect of organisational change, but they can be changed by other causes as well, and the opposite direction of causality is also possible. In fact, it has been suggested that new organisational forms are an effect of new technology, organisational routines, and work practices (Barley & Kunda 2001). Becker and colleagues (2005) argue for studying organisational routines as the most important unit of analysis on a micro level in order to understand organisational change. These different approaches mean that we need to be more precise about causal relations when studying changing organisations and changes of work practices and working conditions. The preferred method for exploring such causal relations is a multilevel approach.

In order to avoid inflation by common method variance, different sources for data on organisational changes and for data on its consequences at the worker level should be used. Data on organisational changes can, for example, be collected by administering interviews and questionnaires to managers and other key people who represent an organisation, or by examining an organisation's documents. Data on the consequences for the employees on working conditions and health can be assessed by self-reports, interviews, or observations at the worker level. Another motive for using sources at the organisational level to provide data on organisational changes is that people in different positions may define organisational changes very differently. Preliminary analyses of questionnaire data on organisation change during the last year of the Healthy Workplace Study showed that just over half of the 4,000 employees worked at workplaces where a significant proportion (more than 30 per cent) of supervisors responded differently (yes or no respectively). The correspondence between employees' self-reports and the determinations made by the researchers from interviewing managers were only 53 per cent.

Our definition of organisational change as intentionally implemented changes at the organisational level means that changes that do not have an effect on work practices or perceived changes at the individual level are also included, and so it becomes an empirical question as to whether a given change has implications for work practices. If organisational changes were defined at the worker level then it would not be possible to draw conclusions about the effects of different aspects of organisational change. This is important, as organisational changes need to be separated from other types of changes that occur in organisations.

When studying organisational processes there is often an interest in relating individual conceptions of change to factual structural changes or managerial strategy changes, but this is not always an easy task. Single individuals can have a vast influence on the informal structures of an organisation. It often happens that the expected effects of organisational change at group level fail to manifest due to the presence or influence of an informal leader or key figure. Thus the removal or exchange of such a key figure can be regarded as organisational change with respect to the informal structure of the organisation. From an organisational perspective this may not be of central importance, but from a psychosocial perspective it can signify the difference between success and failure to identify the mechanisms and/or clarify what is linking organisational dimensions with working conditions.

Another issue of interest is whether planned organisational changes are implemented from a business perspective or, for example, a work environment perspective. The latter are often referred to as health promotion interventions rather than organisational changes (see e.g. Askenazy 2001, Barrett et al. 2005). However, in relation to organisational changes implemented from a business perspective, it is relevant to know *how* changes are implemented in order to increase our understanding of their impact on working conditions and employees' health.

In summary, it is important to separate evolutionary changes from revolutionary changes in empirical studies of the impact on working conditions. It is also important to have a point of reference in order to locate changes in time and space. Thirdly, levels of focal units should be kept separate in empirical studies. As mentioned, we regard an organisation as a social entity that is something more than the sum of its individuals. In order to study causal relations or interactions and processes within an organisation, it is necessary to separate information reflecting conditions at one level from information reflecting those at another. This means that the sources of information on organisational changes should be distinct from the sources of information on the impact of changes; otherwise it will be impossible to draw general conclusions about either the links between the different levels of an organisation and the employees or the direction of causal relations.

Finally, in order to develop deeper knowledge of both negative and positive effects, there is a need for a description of the circumstances of change and for clear definitions of *what* aspects within organisations are being studied, whether such aspects stem from the formal or the informal structure of an organisation, or the technological, managerial, or institutional dimensions. However, we propose that *organisational change* should refer only to changes that are intentionally implemented, in order to separate these from other types of change processes, such as changing work practices at the worker level or voluntary internal mobility. We also suggest that *organisation change* as a concept is used only for changes which involve restructuring the formal structure of the entire organisation, with a distinct start and end in time. Most changes are, however, evolutionary and/or consist of changes of certain aspects of the organisation.

*We suggest that to be defined as organisational change, change has to be intentionally implemented and relate to at least some of the structural aspects of the organisation.*

In order to assess organisational change, it is necessary to define both the organisational entity to be studied (organisational boundaries, levels, and units) and the time perspective (that is, *where* organisational changes are implemented). Further, when studying the effects of change, it is necessary to define the employees encompassed by the changes (the *who* question). Finally, the specific types of organisational change must be defined and operationalised (the *what* question) and a point of reference must be found that is not only the single individual's perception of change.

### **Methodological challenges and implications**

As mentioned previously, several conceptual and methodological challenges are involved in incorporating work organisation measures into occupational health research (Kalleberg 1994; Hacker 1993; Frese & Zapf 1988). Examples of these challenges include the time perspective on the effects of organisational changes, the definition and demarcation of an organisation and the levels and units within

the organisation, the linking of workers to an organisation, and finally the choice of relevant organisational dimensions and clear definitions, applicable throughout the entire labour market, of these dimensions.

### *The time perspective*

The structures of organisations are generally considered to be rather viscous, with change occurring slowly (Stinchcombe 1965; Ahrne & Papakostas 2002). The degree of stability, however, depends both on the time perspective and on how change is defined. In most organisational studies the time perspective is very short and the data is based on what happens at one point in time. Time is often “frozen”, and organisational development is tracked backward or forward in a search for differences. Differences in an organisation’s history are seen as change and differences in its relationship to other organisations are seen as variations that need to be explained. Depending on the time perspective, different change processes can be detected, and the character of a given process may be interpreted either as an externally induced change or as an internal process of disentanglement between dimensions. This also leads to different views on the speed of change in the organisation. Change is consequently a relative phenomenon. Studies of change must take this fact into account in their design, and the time perspective should be considered in relation to the specific research question.

A longitudinal design has long been regarded as essential when investigating the health effects of different exposures. However, research into work-related health has typically been cross-sectional, a methodology which is insufficient for the understanding of those mechanisms of the labour market which affect individuals and their behaviour. Cross-sectional studies do not propose solutions to causal problems, nor do they provide insight into them. The measurement of change raises another problem in that the individual must rate cause and effect simultaneously, and must provide retrospective data. Thus, there is a methodological need for longitudinal research in order to get a deeper insight into which relationships constitute causality. In work and health research it is highly important to consider longitudinal designs in order to understand the individuals of the modern labour market (Frese & Zapf 1988; Zapf et al. 1996). One example of an issue which should be investigated in this way is whether health leads to particular job characteristics, or whether certain job characteristics influence health and well-being.

The existing body of literature concerning longitudinal research can be divided into two branches of research. Many studies are life-long panel studies reflecting individuals’ entire working careers and long-term health status. Often these studies range over a very long time period, with many years between their stages (Östlin 1989). Other studies use shorter time periods to reflect the changing environment of the labour market. A number of them examine the relationship between health or well-being and different organisational variables such as job characteristics (de Jonge et al. 2001), job insecurity (Hellgren et al. 1999; Hell-

gren & Sverke 2003), stressors (Frese 1999), and social support (Marcelissen et al. 1988).

More sensitive instruments are needed to find the characteristics of the modern labour market. Short time periods are vital for capturing the essence of the changing working life. One year is a suitable time period, long enough to reveal any differences between the instances of data collection but short enough to measure single events rather than a mixture of many different processes (see also Frese & Zapf 1988). However, if the number of data collections is limited to two, then other processes will be missed. For example, selection processes will be difficult to capture using only two data collections within one year. There is an obvious need for panel data studies covering a long time period but with short data collection intervals. The cost of such a study would of course be enormous, but it would be feasible if the panel was initially studied once a year and then, after a while, at longer intervals.

#### *The demarcation and level problem*

When seeking information about an organisation, the issue of finding data that is at the right level in relationship to working conditions and employees' health cannot be avoided in organisational research. In studies of psychosocial working conditions it is reasonable to believe that the lowest organisational level at the local work site (such as group or department) is the most relevant. However, higher levels have been shown to have an impact on conditions at the lowest levels, particularly in large organisations and corporations (Nielsen 2000). Another methodological challenge arises from the need for operational definitions of organisational levels and units as well as for an understanding of how they are linked. It is a matter of organisational clarity in a hierarchical and functional sense. In large organisations in both the private and public sectors there is often a split between the strategic level and the production level (Ahrne & Hedström 1999; Czarniawska & Sevón 1996; Larsson 2000; Røvik 1998; Olson & Sahlin-Andersson 1998; Sjöstrand 1999). In some other companies, however, the organisation of strategic and economic decision-making is integrated with the organisation of production and the responsibility for the work environment. Such differences between companies also complicate comparative analyses of the impact of management on employees' working conditions and health. Consequently, the choice of measures, organisational levels, units of measurement, and analytical tools is crucial for the exploration of such associations (Bryk & Raudenbush 1989; Klein & Kozlowski 2000; Rousseau 1985).

A related issue is the question of how to define a work organisation in contemporary working life. The boundaries of organisations seem to be increasingly blurred and changeable, as an effect of outsourcing, divisionalisation, mergers, temporary organisations, and the trend of separating ownership and management (Augustsson 2001; Ekstedt 2002; Mayhew et al. 1996; Quinlan et al. 2001). In modern organisations, particularly service organisations, actors such as customers, contractors, and authorities outside the organisation often have an influence on



conditions within the organisation. Consequently, both intra- and inter-organisational relations are affected by the position of the establishment in relation to other companies and customers (Augustsson 2001; Härenstam & MOA research group 2005; Walters & Frick 2000). This means that organisation-oriented work and health research needs to take the effects of an organisation's external relationships into account.

#### *The connection problem*

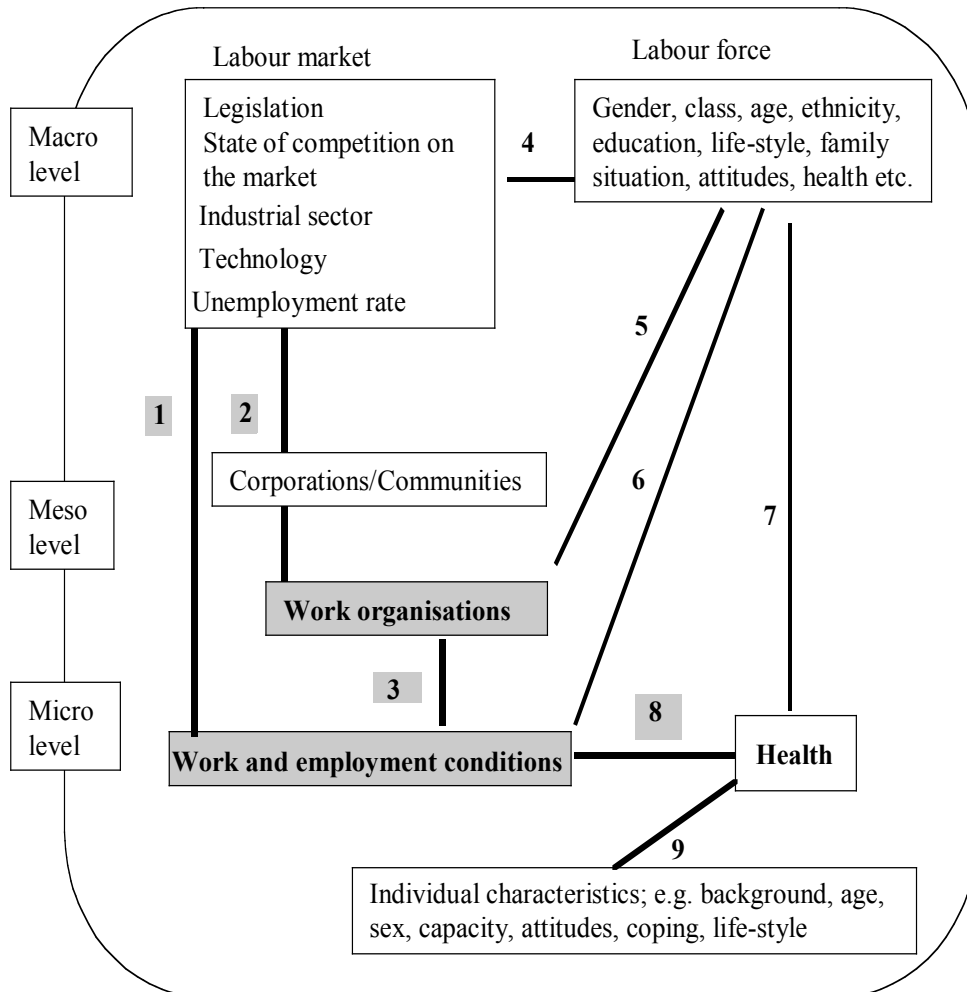
Another challenge concerns the linking of individuals with organisational units and levels. The changing boundaries of organisations and the separation of different organisational levels and functions lead to difficulties in defining which workers should be regarded as belonging to an organisation and which should not (Quinlan & Mayhew 2000). In many establishments with a matrix or project organisation, individual employees could have different superiors for different aspects of their work. Workers in the same organisational unit might work in different places or even different regions or nations, and employees and their managers may work a long distance away from each other. In such organisations there are particular difficulties when trying to measure organisational characteristics and link them to data on working conditions and health at the individual level. It has even been argued that the concept of working environment is less applicable to the new working life, with its loose and/or multiple links between people and physical environments (Allvin & Aronsson 2001). Since participation in multiple intra- and inter-organisational interactions complicates definitions of organisations as hierarchies (Augustsson 2001), the concept of inclusion is useful (Rousseau 1985). Segmental involvement of individuals in social groupings has been labelled as partial inclusion (Allport 1962).

The complications described above may lead to the conclusion that the modern world of working life and health is too complicated and nonspecific to allow for causal and structural theoretical formulations. Some writers have suggested that interpretative and communication-based theories are more relevant than theories based on regularities, causes, and structures (Berman 1983; Habermas 1991; Bauman 1991; Turner 1990). There may be good reasons to study organisations and working conditions in terms of communication processes, but our aim in this article is to show that the complexity and increasing disintegration of working life does not necessarily lead to the disintegration of theory. On the contrary, we will argue that a structural theory which borrows elements from both organisation theory and health studies is capable of creating a better understanding of working life, to the degree that important factors from both areas can be integrated and made intelligible. The following sections discuss the most important ingredients of such a theoretical understanding.

#### **Pathways and mechanisms**

Health promotion in working life would be greatly benefited by the use of increased knowledge of early indicators of changes in risk factors in linking these

with societal and organisational processes. Such knowledge is provided by data on changes in work organisations in addition to data at the individual level. A more complete model, designed to describe a chain of mechanisms, would also have a societal level, incorporating such things as unemployment data and the state of competition on the market. Such a model is presented in Figure 1. The numbered lines represent potential causal relations between the labour market and organisational structures and individuals as well as selection effects. The main structures and relations in our analyses are marked in grey and bold figures.



**Figure 1.** An integrated model of the mechanisms involved in health-promoting and health-endangering processes in a changing working life.

A number of empirical studies indicate that structural changes at macro level have an impact on job stress (Fenwick & Tausig 1994; Quinlan et al. 2001; Warren 2001). This entails that the “upstream” perspective (implying that reasons for ill-health are sought for in structural conditions) is amplified in studies of the causes of health/ill-health and the health trend (Diderichsen et al. 1991). Furthermore, the individual must also be taken into account as an actor in the labour market. An

individual's attitudes, experiences, capacity, and other characteristics certainly influence his or her situation in working life.

Selection of individuals into and out of different industrial sectors, organisations, and specific jobs is an important aspect when incorporating several levels into studies of the mechanisms involved in health-promoting and health-endangering working conditions (Marsden 1994; Szulkin 1996; Tilly 1998, p. 31; Tilly & Tilly 1998, p. 170). It is a matter of who is found in "good jobs" and who is found in "bad jobs" (Altman & Deiß 1998; Dore 1997), and of the extent and distribution of "good" and "bad" jobs in working life (Aronsson 1999).

Strategies aiming to adapt work to the worker at the structural level have been recommended by political and scientific assemblies in order to decrease stress and work-related ill-health in contemporary society (Frick et al. 2000; ILO 2001; Levi et al. 2000). Contextual, comprehensive, and ecological approaches to stress and prevention strategies have all been suggested (Israel et al. 1996; Rantanen 1999; Susser & Susser 1996). The ability to target preventive measures in working life at the "right" level requires knowledge of conditions in the labour market, in the workplace, and at the individual level (Cox 2000; Härenstam & the MOA Research Group 2005; Israel et al. 1996).

Research on prevention has shown that the most useful strategy is often an analysis of actors and actions. Thus, there is a need for theories and empirical evidence dealing with how positive change is stimulated and how different actors in the work organisation may cooperate to create such processes.

The model presented in Figure 1 is suggested as an explanation of why a period of significant transformation in working life is accompanied by an increased mobility of companies, job tasks, and workers which might lead to increased differences in health between different groups of the workforce. It is a matter of complex relations between the macro, meso, and micro levels. The structures involved are shown as boxes and the relationships between them as lines. An organisation-oriented work and health approach should be theoretically based on each of the structures, with the aim of empirically exploring the relationships between the structures. These relationships can be studied as causal relations in both directions and as selection processes. The proposed relations are marked in Figure 1 as numbered lines, and expanded on below. The figure is complex, as it involves many structures and relations at several hierarchically-ordered levels of information. However, the focal units and relationships of primary interest are organisations and working conditions, the relationships between them, and their relationships to the labour market context and to health outcomes. The other boxes and lines show structures and relations that should be taken into account in order to understand the proposed relations explored in the analyses. (The numbers in the paragraphs below refer to the numbered links in Figure 1.)

1. *Changed work and employment conditions as a result of changes in the labour market.* Associations between the labour market and working conditions exist, albeit often indirectly through organisational changes. One example is that priva-

tisation of welfare services might lead to changes in working conditions as a result of changed client relations and economic incentives. Selection processes are also of interest; for example, increased unemployment rates and increased competition in a globalised market might lead to increased worry among workers, which in turn might lead to decreased job mobility and also, indirectly, increased health risks (Szűcs et al. 2003). This then increases the number of people staying in “bad” jobs (Aronsson & Göransson 1999).

*2. Changed organisation of work as a result of changes in the labour market.* The investigation of how and why organisations change is a relevant research question not only in management studies but also in occupational health research. It is reasonable to believe that, in line with contingency theory, organisations react to changes in the labour market (such as deregulation, increased competition in the market, and changed technology) by organising work differently. Higher-level institutions must also be considered, for example the local or regional communities (such as counties and community associations) that local public authorities are dependent on, and the larger corporations that more and more establishments are beginning to be organised into. It is plausible that such institutions act as interpreters of change at a societal and labour market level. They might not only restrict the degrees of freedom for management at the local establishment but also constitute both a resource for the local establishments and a link for the transfer of information from the lower-level establishments to the political system.

When changes occur in the context of organisations (for example, in the state of the market, legislation, technology, or globalisation), some establishments might disappear while others grow in number, in accordance with organisational ecological theories (Hedström 1999). If such a selection mechanism leads to a systematic change in the distribution of companies with healthy or hazardous working conditions, then it is relevant to studies of changes of health in a working population. If companies with good working conditions are more prevalent, then more employees will be offered healthy working conditions (Härenstam et al. 2001). On the other hand, if, for example, the contract companies with the worst working conditions are those that win the most contracts (perhaps by having the lowest price in the procurement process) and thus increase their market share, then health risks and job-related ill-health would increase among the workforce.

*3. Changed work and employment conditions as a result of organisational change.* It is self-evident that when work is organised differently working conditions and contractual relationships such as job contracts and reward systems will change. However, the processes involved are relatively unexplored in contemporary research into working life. In changing organisations, production will often change, and some job tasks might disappear while others may be created or become more frequent.

4. *Selection of segments of the workforce.* Changes in the labour market, for example changes in social welfare and education systems, might result in some sections of the labour force experiencing a decrease in their employability and participation in employment, while other sections experience an increase. If employability, participation in the labour force, and unemployment rates change systematically in different segments of the labour force with different health risks (for example groups with different socio-economic status, gender, ethnicity, or age), then this would change the prevalence and distribution of ill-health in the workforce. For example, decreased levels of sick leave benefits as well as increased periods of employers' liability might lead to individuals with health problems being excluded from the workforce, resulting in a healthier workforce overall. Such a process could wrongly be interpreted as the workforce having improved their health. As another example, an increase in the pensionable age would lead to an increased proportion of older workers in the workforce and thus, since older workers have higher rates of long-term sick leave, a corresponding increase in national sick leave rates.

5. *Selection of specific segments of the labour force into "healthy" and "unhealthy" organisations.* Organisations undergoing change might dismiss parts of their staff and employ other groups in a systematic way: that is, if organisations with healthy working conditions are also more likely to dismiss employees with a higher risk of ill-health and/or systematically employ groups with good health, then differences in working conditions will increase. Given the increased use of different selection methods such as health checks, personality tests, sick leave history, and drug tests, it is important for studies of the associations between working conditions and health to take this form of selection into account in order to draw valid conclusions about the direction of effects.

6. *Changed working conditions as a result of changed labour force characteristics.* The demographic composition of the workforce has a direct, albeit non-causal, association with working conditions. Given the same job tasks, working conditions will differ between groups that are differently composed in terms of staff characteristics, since, for example, work ability and vulnerability to risks differ by age, gender, education, and experience.

Matching of job tasks with individuals is another relevant aspect that should be explored. Changed work and employment conditions might lead to attractive job tasks and job contracts being assigned to employees with certain characteristics, while other employees are only offered job tasks that require less qualification and looser job contracts. If these matching processes become more prevalent, they would lead to increased differences in both working conditions and health among the workforce. Furthermore, changed attitudes and preferences among the workforce might lead to some jobs being avoided while others become more attractive.

7. *Changed health status as a consequence of changed labour force characteristics.* The demographic composition of the workforce, as well as lifestyle factors and factors outside working life, has direct associations with health. Given the same job tasks, the impact of working conditions on health will differ in groups that are differently composed in terms of staff characteristics, since, for example, sick leave rates and morbidity differ by age, gender, education, experience, lifestyle, and factors characterising the life situation outside paid work. In studies such as comparative studies between companies or countries, the composition of the workforce with regard to such factors must be taken into account in order to interpret changes of health status as a consequence of changes in working life.

8. *Effects of changed working conditions on health.* The overwhelming majority of occupational health research has focused on the association between working conditions (i.e. exposures) and health. It is self-evident to most researchers in the field that there are causal relations between a large variety of occupational exposures and health. If the distribution of health-promoting and health-endangering job tasks changes, then this would lead to changes in the health state of the working population. For example, if monotonous assembly job tasks increase and knowledge-intensive, highly-qualified job tasks decrease, then health risks and job-related illnesses would increase among the workforce.

9. *The impact of individual characteristics and behaviour on the health status of the individual.* We are not interested in all determinants of ill-health, but the effects on health of individual characteristics and behaviour must be recognised when exploring the organisational impact on health.

In summary, the model suggests a great variety of different direct and indirect associations as well as several selection mechanisms which may be involved in changes of health in the work force. We have intentionally omitted arrows from the model, since causal links could exist in many directions. If the perspective on work and health at the individual level is the main outcome, then we are most interested in causal links from the organisational level to the employees. However, organisational structures and management strategies can be an effect of changed work practices at the individual level (Caldwell 2005; Becker et al. 2005; Barley & Kunda 2001). Traditional studies of the associations between working conditions and health at the individual or aggregated levels (as described under paragraphs 7 and 8 above) are not sufficient for the understanding of the causes of and the mechanisms involved in health-promoting and health-deteriorating processes. A broadened perspective is important for comparative studies of workers' health covering several companies or several nations. Proposed contextual effects and compositional effects (Diez-Roux 2002; Duncan et al. 1998) must be explored in order to correctly understand the influences on work-related health.

The different relations between levels shown in Figure 1 might be helpful for the integration of knowledge from different disciplines and paradigms. A single

study cannot cover all these different associations between levels and phenomena. However, studies of different types can be positioned in this overview and thereby facilitate the integration of knowledge from a broad variety of studies which share an interest in exploring the organisational impact on working conditions and health. The many possible pathways listed in Figure 1 also illustrate the complexity inherent in exploring the links between work organisation and health.

Research questions also differ between studies, meaning that a number of different analytical strategies are needed. In the next section, we present some methods that we have found useful.

### **Analytical tools**

The gap between work and health research and its production-oriented organisational counterpart needs to be bridged by studies that utilise knowledge from both arenas (Bliese & Jex 1999; Kalleberg 1994; Peterson 1994). Since an employee's total work environment is formed by conditions in the workplace and at an individual level, these two levels should be combined into a single analysis of working conditions and work-related health, particularly as organisations are hierarchically-nested systems. One of the reasons for the new interest in combining organisational characteristics with individual working conditions is the increased statistical use of multilevel analysis (Bliese & Jex 2002). This technique allows the separation of variation arising from organisational level from that arising from individual level. However, the use of other, more conventional statistical methods may still allow an integration of organisational and epidemiological knowledge about work and health. A few recent studies have already combined data at organisational and individual levels. Although such studies are still rare, they all indicate that labour market, organisation, and work group factors are of relatively great importance at the individual level. Even given the availability of statistical techniques such as multilevel analysis, there is still a need to further develop statistical tools adapted to studies of both organisations and employees (Bliese & Jex 1999; Bryk & Raudenbush 1992; Coglisier & Schriesheim 2000).

A second analytical methodology employs multivariate holistic methods such as cluster analysis (Bergman et al. 2003). This type of statistical technique is particularly useful when exploring multifaceted phenomena such as complex patterns and new combinations of organisational characteristics or working conditions (Härenstam et al. 2004a; Leijon 2006). It is an explorative method that has not been very common outside French sociology (see e.g. Bourdieu 1984) and development psychology (Bergman et al. 2003) until quite recently. Traditional variable-oriented approaches focus on the identification of specific risk factors once other aspects have been taken into account, by, for example, studying interaction effects and including confounders in the models. This type of technique is not very helpful when trying to identify types of organisational change or overall patterns of working conditions. One arena in which cluster

analysis has been used is in marketing, when trying to identify segments of customers in order to support product development and marketing. This type of statistical methodology can help find emerging and new organisational settings in working life as well as patterns of work and living conditions and target groups for prevention.

A third strategy is to perform longitudinal research. This approach has long been regarded as essential when investigating the health effects of different exposures, but research into work-related health has typically been cross-sectional. The use of longitudinal designs opens up the potential for causal analysis and the use of Structural Equation Modelling (SEM). Bollen (1989) argues that three prerequisites must be fulfilled to find a causal relationship. Firstly, two variables must be associated with each other. Secondly, a direction of the relationship must be established in order to understand the causality. The direction may go either way, and it may also be reciprocal, but it has to be known. Finally, the relationship must be isolated from the influence of other variables. Thus, if a relationship between two variables, A and B, is to be viewed as causal we must know that a relationship between them actually exists, we must know which variable causes the other, and we must know that it is no other variable but A which causes B (or vice-versa). These criteria are difficult to meet in research, especially with the designs that are usually used. While the first criterion, the existence of a relationship, can be shown quite easily by most studies, the second criterion, the direction of the relationship, requires a longitudinal design so that it is possible to know what variable precedes the other, and the final criterion, isolation, is practically impossible to fulfil in work-related research, regardless of design.

The information gathered through a cohort study forms a rather complex data structure. However, this complex data structure provides analytical opportunities that would otherwise have not been available. SEM techniques facilitate a wider understanding of the causality between two variables, since they make it possible to acquire information about directions of relationships. Additionally, considering the fact that data is collected over time, SEM is valuable because of the possibility of performing cross-lagged analyses.



## Differential research design – some examples

There are a number of research strategies for combining organisational aspects with data on working conditions and health. One method is to introduce health aspects into research on organisations, using qualitative studies and case studies. A second approach focuses on processes of selection into and out of working life or the contractual relations that link individuals with organisations (see for example Tilly & Tilly 1998; Rousseau 2001). This approach is particularly dependent on a longitudinal design and on representative samples. A third method is to incorporate organisational measures into quantitative studies of working conditions and health.

One specific design challenge concerns the sampling strategy. In empirical, quantitative studies of both organisations and individuals, the definition of the boundaries of work organisations and the choice of focal unit for analysis are not only important in terms of design and sampling strategy, but also in terms of interpretation and generalisation of the results. Consequently, the sampling strategy has implications for the possibility of using the results as a basis for intervention and prevention.

Kalleberg (1994) has outlined two possible sampling approaches for studies that include both organisations and individuals. Both strategies have advantages and disadvantages. The first approach involves choosing a representative sample of the labour force, and then collecting data on the organisations where these employees work. The main disadvantage of this strategy is that the study population will include very few employees per organisation, which makes it difficult to explore intra-organisation differences. The other approach involves sampling a broad range of organisations, and then selecting employees at these work sites. This strategy is the best choice for multilevel analysis, since representative samples of both organisations and individuals can be executed and the sample is a truly nested sample. One disadvantage is that individuals with loose ties to work sites will be underrepresented (Kalleberg 1994). In both approaches, the questions of how the organisations are defined and how the organisational boundaries are decided, with regard to which employees are included, are crucial for the interpretation of results.

Investigation into the interaction between structures for production, financial systems, and the work environment, or the identification of mechanisms in organisational change, requires methods and study designs that differ from common linear or causal research logic. These complex research questions and the amount of control the investigator has over the events examined must lead researchers to set aside questions like “how much” or “how many” in favour of basic questions like “how” and “why”.

In general, case studies are the preferred strategy for addressing “how” and “why” questions. This is because such questions deal with operational links needing to be traced over time, rather than mere frequencies or incidence (Yin 2003). When the contextual conditions are part of the focal unit and the boun-

daries between phenomenon and context are not clearly evident, the case study is a means for exploring and explaining relations within the focal unit. With multiple sources of evidence, the case study as a strategy for converging data in a triangulating fashion is a pragmatic, rather than idealistic, approach to gaining knowledge about central relations within a contemporary phenomenon.

The next three sections summarise research questions, study design, and methods from three ongoing empirical studies. The studies have different research questions and focal units for assessments and analyses. Thus, they are designed in different ways, and have different sampling procedures, assessment methods, and analytical methods. The research questions, design, sample, methods, and analytical strategies are described in detail elsewhere (Marklund et al. 2006). All three studies originate from and are inspired by an earlier study of modern work organisations, the MOA study (Härenstam et al. 1999b, 2004a). The first example, “The Healthy Workplace Study”, was designed to focus on the organisation, although data was also collected on the individuals working in the organisations. The second example, “The National Working Life Cohort”, is a three-wave cohort study primarily dealing with how individuals react to change in working life and private life. In this case, organisational change is measured through the individuals. The third study, “Case studies of organisational responsibility”, primarily deals with the mechanisms of power and responsibility within a number of organisations. The main focus is on the relationships between individuals and organisations, using data collected from both individuals and organisations.

### **Organisation as the focal unit: The Healthy Workplace Study**

The overall aim of the Healthy Workplace Study is to explore the significance of organisational conditions and individual characteristics on the variation between organisations in working conditions and employees’ health. It thus requires a large and broad sample of organisations, and of employees within these organisations. The main research questions in the study are: How much does organisation matter for psychosocial working conditions? What organisational level in the formal structure is most important for individual psychosocial working conditions? Which organisational factors have an impact on psychosocial working conditions? Are different organisational factors important for different groups of employees?

Most of these research questions deal with the relationship between organisational conditions and individual working conditions, that is, arrow 3 in Figure 1 (p. 38). Thus, the study was designed to allow for multilevel analyses, and data on individuals and organisations were collected separately. The design makes it possible to examine whether individual working conditions vary between organisations as well as between individuals. The optimal design is a two-step sample collection, with a representative sample of organisations being collected in the first step and a random sample of individuals within these organisations being acquired in the second step.

The Healthy Workplace Study was carried out in two regions in central Sweden. The specific criteria for selecting the units of an organisation to be studied were that a unit should have one address and one responsible manager, and should constitute a separate cost unit. These organisational units were defined as workplaces. The study included around 4,200 employees, in 90 workplaces nested within 32 establishments.

Data on individual health and working conditions was collected using a questionnaire containing items concerning terms of employment, the physical and psychosocial work environment, work-family balance, and health. Data on the organisation was collected during the same time period, by interviewing managers and by collecting documents. Interviewees were chosen for their ability to answer the questions and not according to their formal position. The interview was structured in three parts, measuring aspects of the structure of the workplace, the production and the production process, and the personnel, reflecting two levels of organisation: the parent organisation level and the establishment level. The focus of the interview was on objective and factual information rather than on attitudes, opinions, or values, and the aim was to use information as specific and concrete as possible to reduce the degree of subjectivity. The majority of the questions had closed-ended response alternatives ranging from “low” to “high”. Since very different organisations were included in the sample, and the intention was to compare organisations, some questions had to be “translated” into concepts that were applicable to and meaningful for the specific industries. The management rhetoric and the concepts used by managers to describe the organisation and the production process also differed between sectors and industries. To guarantee that the same criteria were used for all organisations, each answer was classified by two researchers.

The interview questionnaire administered to the managers contained more than two hundred variables that were reduced into indexes to make empirical testing possible. These were based on factor analysis of empirical findings and theoretical assumptions in line with previous research. Examples were indexes on the formal structure of organisations such as centralisation and horizontal integration of the production process, but new dimensions such as flexibility strategies and new forms of control were also used.

Several analytical strategies were used for different purposes. Firstly, comparative descriptive analysis of the organisations was performed. The results showed a wide range in the ways in which the organisations were structured, and descriptive analysis was necessary to give more precise information about these differences. Established classifications of organisation, such as types of operations and ownership, were used for comparative analysis. The focal unit in this part of the analysis was the organisation itself.

The data set also made it possible to investigate whether the organisation of work was determined by the position of the organisation in the market and in the production chain. This was measured using such factors as dependence on other organisations and customers, and competition in the market, which was assumed

to have an effect on management technologies, business strategies, and frequency of organisational changes. Whether an organisation was a subcontractor fighting for a contract in competition with others or was the dominant establishment on the market with a large market share was assumed to be of importance for working conditions and health of employees.

The second main strategy was the use of multilevel analysis to explore the organisational impact on working conditions and health by combining data at the individual level, the workplace level, and the establishment level in the same analysis. Firstly, variance was separated, indicating which organisational level had the largest impact on the creation of good working conditions and health. Secondly, explanatory factors at each level (for example, dimensions of organisational structure, types of changes, types of operations, and ownership) were added to the model. Examples of traditional formal structure such as degree of centralisation and new dimensions of organisational structure such as flexibility and individualisation were tested, and the variance in psychosocial working conditions that can be attributed to different levels of organisations (Bolin & Marklund 2006) as well as the impact of ownership on these associations were explored (Höckertin & Härenstam 2006).

The initial results indicate two important findings. Firstly, in agreement with earlier multilevel studies, psychosocial conditions are organisationally-dependent to a high degree (Bolin & Marklund 2006; Höckertin & Härenstam 2006). Some 10–20 per cent of the variation in psychosocial conditions was attributed to different levels in the organisation. Another finding was that there were differences in terms of the different aspects of psychosocial conditions, and partly in terms of ownership, branches, or types of operation (Bolin & Marklund 2006; Höckertin & Härenstam 2006).

### **Individuals as focal units: The National Working Life Cohort**

The main purpose of the National Working Life Cohort study is to explore how health and well-being are affected by work career and changes in employment and work conditions. Such questions require large and representative samples of individuals, and data from several points in time on their links to the labour market and specific workplaces, and on any changes. The study covers different aspects of how individuals' ambitions and plans change over time, and how this might affect working life behaviour. The key research questions are: How do organisational changes affect the health and well-being of employees? How does the degree of freedom of the individual, and his or her opportunities for adjustment of work to own capacity vary by gender, age, and socio-economic status? In times of organisational change, do employable individuals respond differently from less-employable individuals in terms of exit, voice, and loyalty? How does the work-life balance relate to health and well-being and what impact do organisational changes have on this balance?

Most previous research on work and health is based on cross-sectional survey data collected at one point in time. This gives a high risk of selection bias, since individual mobility cannot be properly studied, but it also fails to pay sufficient interest to change in itself. Surveys regarding change often simply present subjects with a set of retrospective questions regarding their experience of recent changes, or ask them to describe their employment history; information about actual environmental change is rarely used to explain differences in health risks.

The cohort study comprises a representative sample of 5,009 Swedish individuals aged between 25 and 50 at the time of first data collection. The survey consists of a telephone interview and a follow-up postal questionnaire at each collection point, a procedure intended to maximise the response rate. Data is collected once a year, initially for three years. The 250 questions cover demographic data, organisational changes, life events and life balance, labour market situation, attitudes towards work, and health and well-being. Furthermore, it is possible to connect information from other sources to the material; the cohort study is supplemented with organisational information and sick leave data from data registers, thus following Kalleberg's (2001) second approach to organisational research. This study makes it possible to study individuals, organisations, and selection processes in the labour market over time. It primarily covers relationships within the micro level but also relationships between the meso and micro levels; in Figure 1, these correspond to arrows 3, 5, 6, 7, and 8.

### **Mechanisms as the focal unit: Case studies of organisational responsibility**

Organisational strategies for power and control are changing. The archetypical unitary hierarchy, which has long been the defining characteristic of organisations, is giving way to more decentralised and horizontal systems, particularly among organisations in the newer industries (Scott 2004). Several studies have reported the tendency of large companies, in both the public and the private sector, to make a split between the strategic level and the production level (see e.g. Ahrne & Hedström 1999; Czarniawska & Sevón 1996; Larsson 2000; Rövik 1998; Sahlin-Andersson 1996; Sjöstrand 1999). The relevant organisational level and organisational characteristics and demarcation are questions of importance for modern organisational work and health research. Additional aspects of interest are the ways in which different actors cooperate in organisations, for example, cooperation between different groups of employees, and relations and collaboration between employees and management and labour unions (see e.g. Augustsson 2001; Walters & Frick 2000). Another central issue is whether and how external actors and clients outside the local workplace can influence the day-to-day working conditions.

Case studies are the best method for understanding the mechanisms of power and responsibility in organisations. A common misapprehension about case studies is that the results are descriptive and only apply within a certain context. We argue that, on the contrary, case studies can generate profound insights into

the mechanisms of power and responsibility in contemporary working life, and support the overall knowledge of the organisational impact on working conditions by providing a broad view of the mechanisms spanning the micro, meso, and macro levels. Further, a thorough description of the findings of a case study can generate models with a wider resonance (cf. Czarniawska 2004, also summarised by Flyvbjerg 2004).

Two case studies are used to explore mechanisms of power and responsibility within organisations. These case studies developed from the Healthy Workplace Study (described above), which encountered several problems motivating deeper investigation. These problems included how to define an organisation, how to characterise the interaction between formal and informal organisational structures for production and financial systems and the work environment, and which organisational level is most appropriate to examine in the search for psychosocial conditions. The definition of the work organisation and the choice of adequate organisational level will both have consequences for the empirical interpretation of what constitutes the psychosocial work environment, and hence for future interventions and preventive measures (Rousseau 1985; Mastekaasa 1992; Klein et al. 1994; Nielsen 2000).

The following questions constitute the main framework for the two studies: How does employer responsibility coincide for tasks of production, operations, accounting/finance, and HR services? How should a work organisation be defined or demarcated when the focus is on psychosocial working conditions? How do the different actors within organisations interact in shaping psychosocial working conditions? How is information about psychosocial working conditions determined and distributed within organisations and how are sources and arenas for dealing with psychosocial problems created and sustained?

The first of the two case studies is intended to explore mechanisms of power and responsibility over working conditions within private multinational industrial and service organisations. The second study is intended to approach a similar complex of problems in male-dominated and female-dominated authorities in the public sector. In the search for mechanisms of power and responsibility we presuppose that power is exercised from “innumerable points” (Flyvbjerg 2004), in an interaction between unequal and mobile relations. The focus in a study of such mechanisms is on the relationships between employees, managers, unions, and external actors. Both studies primarily cover relationships within the micro and meso levels presented in Figure 1, but will eventually seek to also encompass the macro level.

The case studies take a “bottom-up” approach. Initially, randomised samples of employees from among the core operative staff of the chosen organisations are interviewed using a modified version of the “critical incident” method.<sup>10</sup> This

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<sup>10</sup> The psychologist John Flanagan developed this technique when studying the qualities necessary to endure extreme psychological stress (Flanagan 1954). Herzberg later developed the technique further for use in the analysis of workers’ satisfaction in manual labour (Herzberg et al. 1965).

method focuses on incidents or critical periods experienced by the interviewees, periods which are scrutinised later in the studies whether they are related to the psychosocial work environment or not. Eriksson and Larsson used this technique in Sweden for studying workplace and organisational conditions along with satisfaction in manual labour among professional groups (Eriksson & Larsson 1974), as well as among university students (Eriksson & Larsson 1986).

Following this initial phase, other members of the organisations are chosen for continuous semi-structured interviews. Selection of interviewees for the second phase includes actors referred to by the first-phase interviewees. The second-phase interviews are aimed at generating a more detailed picture of the problematic situations from a work environmental point of view. The advantage of this technique is that it focuses on material of interest for the actual psychological and social aspects of the work environment and avoids *a priori* fixed ideas about the interviewees' experiences of work, or the managers' active management of responsibilities. The disadvantage is that the analysis is very demanding, so the number of interviewees must be limited, and there is also the question of contextual consistency.

An early finding in the analysis of the critical incident material is that experiences from critical incident periods at the operative level of the studied organisations have a different time dimension than at the managerial level (Ylander & Leijon 2006). We experienced a few puzzling examples regarding incidents that had occurred two or more years previously; personnel from the operative level spoke about them in terms of the present, while, at the managerial level, the executives spoke of the same events as if they were already taken care of some years ago. The managerial perspective is, for understandable reasons, future-oriented and so there was a "lag" of at least two years between the time perspective of the managers and that of the employees. This phenomenon amplified the experiences for the employees, while the management did not undergo the same critical experience.

Apart from the immediate insights into the mechanisms of power and responsibility in private and public organisations we also expect to find several implications for future studies. The complex web of processes and the different phenomena and new occurrences that we expect to find and scrutinise in the two case studies are a promising contribution to organisation-oriented work and health research.

## Implications for future studies

The aim of this report has been to provide a discussion of methodological developments aimed at broadening the research perspective to integrate contextual effects into studies of the associations between working conditions and health. We have presented a summary of the theoretical background, and described three relevant studies, each with different research questions and design, but all inspired by and originating from the MOA study, the empirical results of which have been presented in an earlier report (Härenstam et al. 2004a). Our conclusions are based on experiences from these four studies. Earlier in this report, we pointed at theoretical and methodological challenges for future studies, and in this last section we summarise our experiences and conclusions so far.

The empirical studies that have been described all focus on contextual understanding of the relationships between the organisation and the conditions of its members. As two of them have access to longitudinal data, selection processes can also be explored. One of these, a cohort study, uses a representative sample of individuals from whom data is collected once a year for three consecutive years. This is in line with suggestions that selection mechanisms are best captured in studies of representative samples of individuals in which data on organisations are added in a second step (see e.g. Kalleberg 1994). More complex organisational processes, particularly in fields where new phenomena are expected to be found, are best explored using case studies and qualitative methods. These studies, performed in close relationship to each other, may allow us to examine a number of the relations summarised in Figure 1 above.

The studies also apply different assessment and analytical methods. A single study alone cannot solve the problems of generalisation, hypothesis testing, the description of a wide range of different phenomena, and a deeper understanding of new and previously-known occurrences and processes within the realm of complex systems. A mixed methodological approach has been suggested as appropriate to use when testing elements in an emergent theory (Creswell 2003, p. 215–216), and, further, performing different studies in a sequence has the advantage of allowing the use of experiences from one study in the next.

### **Integration of individual and organisational information**

We have shown in this report that it is possible to integrate individual and organisational information. Two of the main methodological strategies used in the MOA study have proved to be useful in this, and both have been implemented in the Healthy Workplace Study. One is the use of cluster analysis or other primarily explorative and descriptive multivariate strategies to investigate how individual working conditions are structured by organisational conditions. The results from the MOA project show that there exist “clusters” of organisations in which the conditions for the employees are similar, and whose conditions differ considerably from those of other clusters (Härenstam et al. 2004a).



The other strategy is to use multilevel analysis. This methodology has proved to have two main advantages. The first is that it is capable of differentiating the total variance in working conditions and work-related health that can be attributed to organisational factors from that which can be attributed to individual factors. The results show that organisational conditions do play an important role, in some cases a more important role than individual factors. This is in agreement with earlier research, also using multilevel analysis (Bliese & Castro 2000; de Jonge et al. 1999; van Yperen & Snijders 2000; Bolin & Marklund 2006). The second, and equally important advantage is that interactions between organisational factors and individual factors can be explored, allowing investigation of the specific organisational conditions that may affect how individual characteristics influence working conditions or health. Results from the MOA study showed that women had more organisational obstacles than men in centralised, top-level-controlled organisations, and that men experienced less control than women at workplaces where women constituted the majority of the workforce (Härenstam et al. 2004a). Further, men generally experienced more negative consequences of organisational change than women, except in organisations where the changes were characterised by the lean concept (Härenstam et al. 2004b). Thus, when causal analysis can be employed, multilevel analysis has proved to be of great use. What is new here in relation to earlier research is that we have analysed substantial information both at the individual level and at the organisational level.

If the relationship between organisational conditions and conditions of the individual is to be interpreted, then the sampling procedure is crucial. Both the MOA study and the Healthy Workplace study follow the recommendations by Kalleberg (1994) of selecting organisations in the first step and individuals in the second. In both cases, the organisations were chosen to cover a broad variety of organisations and to reflect a representative sample. The Healthy Workplace study included all individuals in the chosen establishments, and even individuals who had since left the organisations were asked to answer the second questionnaire, since the comparison of background data and conditions at both occasions for “leavers” and “stayers” allows selection processes to be explored.

One of the challenges for future studies described in the first chapter of this report concerns the need for knowledge of selection processes in order to understand how good and bad jobs are linked to changes in working life. Such analyses will be performed on the longitudinal data in both the Healthy Workplace Study and the National Working Life Cohort study. The latter was set up using a longitudinal design in order to answer questions concerning the health effects of rapidly changing organisational conditions. This design, involving three years’ annual collection of data from a large representative sample of adult Swedes, has great advantages for determining causal mechanisms at the individual level. In particular, it allows investigation of the ways in which an individual’s family-work balance is adjusted due to changes in both family life and demands at work. Detailed information about individual reactions to organisational change has been of value for the understanding of the impact of change on different groups of the

workforce. The longitudinal design is also in line with the general idea that individuals should be seen as actors rather than as victims of external conditions.

One important conclusion is that quantitative comparative studies based on questionnaires administered to workers and managers should be complemented by case studies and qualitative information. The mechanisms of decision-making, informal structures, and leadership cultures are examples of issues that are not easily studied in large-scale quantitative designs. Definition of the organisation and the relevant “level” comprises a complicated research issue in itself, necessitating the use of different qualitative methods to study a smaller number of organisations in more detail. Systematic research based on case study design is likely to be the most fruitful way of solving some of these problems (Fishman 1999). Case studies are also more useful for answering questions about the long-term development of a specific organisation and about how the organisation is affected by changes in local, regional, national, and international financial, commercial, and labour market conditions, and how such processes in turn affect individuals.

Another suggestion for future studies is to explore the actual conditions and prerequisites for leadership. In both studies presented here, we found indications that operative managers had restricted authority and resources in relation to their responsibility, particularly in the welfare sector. The pressure is increased by high numbers of subordinate employees, limited resources, diffuse leadership mandates, increased economic responsibilities, and direct customer demands, which may constitute a health risk for managers and their employees. Similar observations have been made by other researchers as well (Holmqvist 1997; Holmberg & Strannegård 2002).

### **The “level” problem**

Our results indicate that organisational aspects at a relatively high level in the organisations have an impact on working conditions of the individual. There are large differences between industrial sectors and between enterprises in different segments of the labour market. This may be seen as a falsification of the idea that organisational conditions at the lower levels are particularly important in the shaping of psychosocial working conditions for the individual worker. However, the main reason for this apparent contradiction seems primarily to be related to problems in defining the correct level. There are, for example, large differences, even between firms of similar size and in the same industrial sector, in how decentralisation is carried out. Thus, in some organisations human resources management is decentralised and closely related to the production process and leadership authority at the lowest level, while in others it is centrally organised and detached from the day to day running of production. To understand these differences and how they affect working conditions it is necessary to have information from both levels of an organisation. The preliminary results of the Healthy Workplace Study indicate that only under the assumption that all aspects of pro-

duction and decision making are well-integrated at all levels of an organisation would it be reasonable to focus on either the top management or the work site.

Another aspect of the level problem concerns the decision authority of managers at different levels. Our studies indicate that managers at different levels not only have different experience and knowledge of the organisations; they also have very different authority. In order to study organisational characteristics using managers as the main informants, we must be aware of and take into account the managers' position in the organisation. Earlier studies have shown that managers' perceptions of the effects of organisational change are very much dependent on how close they are to the operations or to the owners (Worall & Cooper 2003).

### **The search for relevant information**

Related to the "level" issue is the problem that standardised methods for data collection that can be efficient at lower organisational levels may not be useful at higher levels. It should be stressed that the assessment methodology applied here had an exploratory objective and was intended for the development of methods that can be used in future studies. Based on our experiences from assessing organisational data from more than 150 establishments (in the MOA study and the Healthy Workplace study together) we suggest that the organisational aspects under study are so complex that questionnaires should not be used as the sole information source. Consequently, follow-up questions and qualitative information on what is meant by the specific factors are often needed. Interviews, like the ones performed in the Healthy Workplace study, seem to be a suitable assessment method for organisational characteristics at least in samples of organisations with varying types of operations.

There is a great need for definitions and descriptions of what each aspect of working conditions and organisational conditions is intended to cover. It is obvious that the field of management is highly affected by a value-loaded rhetoric. Quite often, the concepts used can turn out to have very little to do with practice. This means that the answers given by managers might mean something very different from what the research team is asking about. The integration of organisational and individual data complicates matters in several other ways too. One problem stems from the necessity of finding relevant information about the individual's working conditions and about the organisation itself. As we have mentioned, there seems to be some evidence that, in some cases, organisational characteristics explain more of the variance in working conditions than do individual conditions. It can also be concluded that increased intensity of work has become a common problem in many occupations and industrial sectors and that organisational conditions are important in the attempts to handle this intensity at all kinds of different workplaces. These findings would lead to the conclusion that organisational structures, at least when assessed in traditional dimensions, are less important than organisational dynamics.

A second problem is the degree to which “objective” and “subjective” elements of an organisation should be in focus. In all three studies presented here, the aim has been to look at factual information about the organisation rather than attitudes among managers, supervisors, or employees. This means that the researchers, not the interviewees, define the organisational phenomena under study. Thus, there is a great demand for clear and concordant definitions of the concepts used. Although we still believe that this must remain the focus, there are some limitations. Leadership and management styles are important in shaping working conditions, and these kinds of characteristics are usually measured through different kinds of scales of the values and attitudes of leaders and managers. The particular leadership problem that we noted in the MOA study, the Healthy Workplace Study, and the case studies is that managers differ in how widely they define their role. This aspect of organisation and leadership needs to be studied in more detail. Some international research has used the concept of organisational culture to summarise subjective elements of behaviour rules and “soft” elements of how employment contracts are interpreted (Hofstede 1980, 1991). There seems to be good reason to include some of these cultural elements in the study of organisations, although they often overlap with other aspects of organisational dynamics.

Subjectivity of individuals may also be of great importance, although when working conditions are in the foreground we generally suggest a concentration on factual conditions rather than on attitudes. However, as we have mentioned, the National Working Life Cohort also deals partly with perceptions of specific conditions and attitudes to work and other activities. Thus, the main conclusion is rather that efforts should be made not to confuse measurements aimed at capturing factual conditions with measurements that are focused on perceptions or attitudes.

### **The integration of concepts and theories**

The use of theories and concepts that can be understood in the language and concepts of more than one scientific discipline presents a challenge. Generally speaking, the concepts and interpretations used in organisational psychology and sociology differ from those in business economics and management theory. Organisational psychology and sociology focus on interpretations where working conditions are formed in the interaction between individuals at the workplace. Thus, the main interest is in lower levels of organisation and the choice of organisational concepts is often based on a close link to how individuals act and react. Management theories, on the other hand, primarily focus on how organisational structures and different organisational processes may affect production and productivity. Analysis is mainly carried out at the higher levels of the organisation, and interpretations and concepts for individual reactions to working conditions are rarely developed.

One important observation from studying organisations and individuals at the same time is that the same concept is used for very different phenomena depending on whether an employee perspective is used or an organisational one. For

example, from an organisational perspective, vertical integration refers to a situation where all chains in the total production, from development and production to marketing, are carried out in the same corporation or production system. When the same concept, vertical integration, is used for descriptions of work processes it means that overall planning, performance, and result control is in the hands of the same employees. Similarly, there are different meanings of horizontal integration. From the organisational perspective it means that the production is organised in flows without clear demarcation lines, while from the worker perspective it means that the same employees follow the flow and are involved in the entire production process. Control and flexibility are other examples of concepts with different meanings from different perspectives. High flexibility and control from the organisational perspective might even mean low flexibility and control from the workers' perspective.

The same concept can also shift in meaning over time depending on how it is presented and for what purpose. For example, the use of concepts in executive speeches and business consultants' marketing is a very powerful instrument for the construction of the core ideas of the "new world of work" (Müllern & Stein 2002). Thus, construction of the meaning of concepts and core ideas is used for promoting change in a specific direction. Furthermore, core ideas in the new mindset influence business practices, job performance, and even the identities of the workers. Work defines who we are and what worth we have. It has been suggested that if the values expressed in management rhetoric are in conflict with personal values, then the identity and health of the individual is threatened (Casey 1995, p. 84).

In order to develop a theory that covers both organisations and conditions for the workers, ideas and concepts must be shared between disciplines and levels. If concepts are used in a context where they have another meaning, there is a risk of falling into the trap of being used for other actors' interests without even being aware of it. It is therefore important that researchers in these areas cooperate and discuss theoretical models, concepts, and methodology for studies of both organisations and conditions for the workers. There is also a need for theoretical work and critical assessments of concepts and interpretations.

However, more information and more empirical work will not automatically lead to a systematic theoretical development. The underlying theory also defines the problem to be solved, the focal unit of analysis, and what variables should be included in an empirical study. Theories focusing on aspects of working life are based on different paradigms, each with different focal units of analysis, outcomes of interest, concepts, and assumptions. Different paradigms reveal regularities of their own focal unit of analysis; the individual, the task, the group, or the organisational structure. The result is parallel pictures at different levels of the organisations, giving an exhibition of pictures of working life, each picture showing a true illustration of working life constrained to and based on its own focal unit. The huge variation in how work is organised may lead to the conclusion that there are no regularities and thus no opportunities to generalise.

A change of analytical unit is thus necessary, to the relationship between individual and organisation, in order to obtain a systematic theoretical development. That is, to gather the parallel pictures within the same framework and allow the exploration of regularities in these relations. Structures and mechanisms may remain disguised if we do not have theories and concepts capable of capturing them. By building assumptions on earlier theories within each paradigm at different levels in an organisation, this might be made possible. What regularities will become apparent? What new opportunities for preventive action will appear as a consequence?

### **Prevention and intervention**

A different kind of lesson from our studies concerns the relationship between research and practice. One of the ambitions of all of the studies was to develop knowledge that could be used in prevention and intervention. It is obvious that organisation-oriented research on working conditions and health is potentially in a better position than studies based only on the conditions of individual employees to produce useful facts for prevention and intervention. One of the most important issues concerning the direction of prevention is the definition of the problem to be prevented. To the degree that our studies are able to find general organisational conditions that “cause” the problem, the logical approach is to look at whether these organisational conditions may be changed in order to improve the situation. There are a number of examples of this, but more often the results of empirical studies show that health problems and negative aspects of working conditions have different origins in different branches and in different types of operations. This implies that there is a need for branch-specific strategies of organisational improvement. Further, as already pointed out, the links between organisational conditions and individual health and working conditions are complex and multi-dimensional. This leads to the conclusion that preventive strategies and interventions aimed at improvement must use different combinations of organisational improvements in order to be successful.

The level problem, which was discussed earlier as a formal problem in research design, also has important implications for prevention and intervention. All preventive strategies must be focused and anchored at the correct level of the organisation. If a defined problem in the work environment is more closely related to a lower level of the organisation, such as a specific workplace, rather than to a higher level, such as the top management, then interventions at the lower level are more likely to be successful. This means that organisational analyses can be very useful in helping to select the arena in which a prevention strategy could be useful.

In some cases, the process of defining problems and solutions in a specific enterprise may also lead to the discovery of useful actors that can be part of the preventive strategy. Such actors or activists are rarely found in the formal structure of the company; they are more often strong “personalities” who form part of

an informal, diffuse, and influential power structure. This existence of such actors seems to be an evident characteristic in many contemporary organisations and their detection may be useful in both prevention and intervention.

A very important side effect of research which aims to combine organisational understanding with individual working conditions and health is that it requires a close relationship with both managers and employees. This may improve the quality of the information, but more importantly it may lead to the partners involved gaining a better understanding of how the enterprise work. This means that this kind of information represents a mirror that can also be used by the people involved in the organisation. Such information might facilitate opportunities for shared learning and dialogue between employees and managers at different levels.

However, despite the advantages for prevention and intervention that are gained when organisations are taken into account, it should be pointed out that research on how to manage successful intervention is yet another large research arena. Reliable research on how organisational conditions affect health and working conditions may be a good start, but it is well known that the accomplishment of prevention is dependent on a wide range of other conditions. These conditions also need more attention in future research on working conditions and health, and the evaluation of different kinds of intervention and preventions need yet other research designs and research models.

### **Final remarks**

Our approach differs from mainstream contemporary organisational research and management ideology, which seldom investigates conditions in broad samples of many workplaces and industries in the same study. Organisation studies rarely explore how organisational phenomena are linked to working conditions and health by comparing the distribution and variety of organisational conditions between establishments. Instead, great interest has been directed at specific phenomena, using abstract metaphors, organisational cultures, and so on in order to capture the new trends in working life such as the new “placeless” economy and boundaryless work. As we see it, and this view is supported by the three studies we have presented here, organising has to take place *somewhere*, and employees are individuals who can only be in one place at a time. In times when working life is described as volatile and virtual, research has a particular responsibility, not only to scrutinise these trends, but also to ground theoretical concepts in the tangible world. This means that we should use different kinds of scientific methods, including comparative studies with large samples of organisations and employees, to investigate organisations.

On the other hand, we are not in complete agreement with mainstream occupational health and stress research, either. The overwhelming majority of studies in these areas are still based on an individualised exposure-response model that does not take organisational conditions into account. We need to know much more

about the linkages between organisational phenomena and working conditions in order to understand how good and bad working conditions are influenced by new management trends. This necessitates a theory and methodology adjusted for empirical large-scale studies and systematic case studies. It also means that longitudinal studies should be used more frequently.

Some of the most important observations so far from the MOA study, the Healthy Workplace Study, the National Working Life Cohort, and the case studies have arisen as a consequence of the attempt to empirically explore contemporary organisations. The issues encountered include the “level” problem, the “demarkation” problem, and the “connection” problem. Also clear is the importance of selection mechanisms, in the sense that individuals move between occupational conditions, and these changes may be very different for different groups depending on individual and organisational conditions. As a consequence of this insight, individuals, whether workers or managers, cannot be seen as passive victims of conditions at the workplace or in the organisation, but must be viewed as elective and active humans. This is the case even when there are strong restrictions on their room for manoeuvre.



## Sammanfattning

Det har sedan länge varit känt att organisatoriska förhållanden påverkar arbetsförhållanden och anställdas hälsa. Att överföra kunskap om riskfaktorer från arbetshälsoforskning till interventioner på arbetsplatser kräver kunskap om den organisatoriska kontexten. Organisationsforskning och arbetshälsoforskning är tydligt åtskilda. Det saknas fortfarande användbara teorier och modeller över hur organisatoriska förhållanden är länkade till arbetsförhållanden och hälsa. Ett argument för att utveckla begrepp, teoretiska modeller och metodologiska verktyg för studier av organisatoriska förhållandens inflytande på psykosociala arbetsförhållanden och hälsa är att arbetslivet förändras. Ett annat skäl är att organisation och arbetsförhållanden är ömsesidigt beroende av varandra. När organiseringen av arbete förändras måste därför vår förståelse av hur arbetsorganisation, arbetspraktiker och arbetsförhållanden granskas kritiskt. Vi kan inte längre lita på att traditionella teorier är giltiga.

Denna rapport diskuterar några förslag på design och metoder för studier som söker överbrygga gapet mellan forskning om organisationer och forskning om individuella arbetsförhållanden och hälsa. Denna ansats inom arbetslivsforskningen föreslås benämnas *organisationsorienterad arbetshälsoforskning*. Syftet med denna rapport är att diskutera begreppsliga, teoretiska och metodologiska svårigheter och möjligheter inom en sådan forskningsansats och att föreslå lösningar på några av de problem vi stött på i ett antal olika studier av både organisationer och individuella arbetsförhållanden. Några specifika problem i integreringen av organisationsforskning och arbetshälsoforskning diskuteras och slutsatser dras för applicering av resultat av sådan forskning för prevention och intervention.

Det finns flera begreppsliga och metodologiska utmaningar när organisationsforskning och arbetshälsoforskning ska integreras. För det första rör sig organisationsforskning och arbetshälsoforskning på olika nivåer för datainsamling och analys. För det andra, är många organisatoriska förhållanden svåra att påverka vilket har betydelse för intervention och prevention. Vi behöver därför särskilt intressera oss för sådana förhållanden som inblandade parter är villiga att förändra. Slutligen, även om det finns kraftfulla statistiska analysmetoder som flernivåanalyser lämpade för att integrera data på olika nivåer, är förståelsen av kausala mekanismer mycket komplex och vi behöver utveckla bättre analysmetoder för att förstå sådana samband. Det finns också ett antal empiriska frågor som behöver lösas. En har att göra med *vilka organisatoriska aspekter och fenomen* som är relevanta att studera och *hur* de kan studeras och värderas. Det är också viktigt att bestämma *vilken nivå* inom organisationer som är relevant att studera när det handlar om att undersöka hur psykosociala arbetsförhållanden påverkas. Ett annat problem som är särskilt viktigt då många av dagens organisationer är mycket rörliga och har oklar avgränsning till andra organisationer, är *hur en organisation ska definieras och avgränsas* och *hur individer ska länkas till en specifik arbetsplats*. Detta innebär bland annat att formella och informella makt

och ansvarsrelationer för den psykosociala arbetsmiljön kompliceras i dagens organisationer. Några av våra viktigaste iakttagelser har uppstått ur egna empiriska studier av ett stort antal organisationer i olika branscher. Många individer i dagens arbetsliv rör sig mellan olika arbetssituationer och sådana förändringar kan vara mycket olika för olika grupper av arbetskraften beroende på både individuella och organisatoriska förhållanden. En slutsats är därför att selektionsmekanismer behöver tas hänsyn till i förståelsen av hur organisation och arbetsförhållanden hänger ihop. En konsekvens av detta är att anställda och chefer inte kan betraktas som passiva offer för omständigheter, utan som aktiva människor med möjlighet att, oavsett situation, välja handlingsalternativ.

## Summary

It has long been known that organisational conditions affect working conditions and occupational health. However, the transfer of knowledge about risk factors from traditional occupational health research into prevention requires insight into the organisational context. Moreover, there is a breach between organisational research and health research in terms of concepts, theories, and methodologies, and there is a lack of useful theories and models for how organisational conditions are linked to working conditions and health. One argument for the development of concepts, theoretical models, and methodological tools for studies of the organisational impact on psychosocial working conditions and health is that working life is changing. Another argument is that organisation at the meso level and work practices at the worker level are greatly interdependent. Thus, when the organisation of work changes, our understanding of how organisations, work practices, and working conditions affect health must be scrutinised. We cannot take it for granted that traditional theories are still valid.

This report discusses some suggestions for the design and methodology of empirical studies aimed at bridging the gap between research on organisations and research on individual working conditions and health. This approach in work-life research can be described as *organisation-oriented work and health research*. Our main aim is to discuss the conceptual, theoretical, analytical, and empirical difficulties and options involved with such an approach. Using the examples of a number of research projects with different specific questions and different empirical designs, we attempt to detect some of the most common stumbling blocks and to find some pragmatic solutions to the problems which arise in this type of research. We discuss some specific problems with the integration of organisational studies and health research, and draw conclusions about the application of such research results to prevention and intervention.

There are several conceptual and theoretical challenges associated with the design of studies that try to integrate organisational-level data with working conditions and health data at the individual level. Firstly, there is a wide gap between organisational research and occupational health research in the use of theoretical concepts, in the choice of focal units of analysis, and in data treatment. Secondly, in relation to intervention and prevention, not all factors that affect working conditions and health may be equally easy to change, and there is thus a need to focus on factors that the employer and the representatives of the workers may be willing to adjust. Finally, although powerful statistical techniques such as multilevel analysis are available to link organisational and micro-level data, understanding of the causal mechanisms becomes even more complicated when individual and organisational conditions are to be interpreted. Thus, there is a need for improved analytical tools in order to understand such complex associations. There are also a number of empirical issues involved in the linking of organisations and individuals. One is the determination of *what* aspects at the organisational level are important and another is *how* such organisational aspects

can be measured and assessed. It is also important to decide *what level* within organisations is most relevant to a specific study. Another problem that is particularly important, as many contemporary organisations are volatile and have diffuse boundaries, is how organisations should be defined and how individual employees should be linked to a specific part of an organisation. This means, for example, that formal and informal power and responsibility structures for coping with the psychosocial work environment are very complex in contemporary organisations. Some of our most important observations have arisen as a consequence of an attempt to empirically explore contemporary organisations. One conclusion is that selection mechanisms should be taken into account, as many individuals move between occupational conditions. Additionally, these changes may be very different for different groups, depending on individual and organisational conditions. As a consequence of this insight, workers and managers cannot be seen as passive victims of conditions at the workplace or in the organisation, but must be viewed as elective and active humans. This is the case even when there are strong restrictions on their room for manoeuvre.

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