Depression in video display terminal (VDT) employed workers

C. ABBATE, E. MICALI, A. ABBATE, M. BARBARO, and D. GERMANÒ

Introduction

The development of computer technology and the propagation of its application in many subjects brought to consequent growth of VDT use in almost every working subject. As you know, this change has positively interfered with productiveness, through easier and freer working consultation, elaboration and organization. This increase in VDT use, focuses workers’ attention on possible health effects due to the use of this instrument. Recent studies and researches examined the effects due to VDT use on workers (Mocci 2001). Since early 90’s during the increasing VDT use the attention is focused on stress and mental strain troubles in addition to ophthalmic symptoms and skeleton and muscular troubles. WHO (1998) affirms that a lot of troubles pointed out in VDT workers, are related with some factors like neuropsychological stress that can show as clinical depression joined by weariness, psychophysics fatiguing and behaviour changes joined by irritability and indifference (Selye,1976). The idea of searching link between visual trouble and neurological effects needs neuropsychic examination. The object this research has in view is studying depressive levels and manifestations in a group of VDT workers, so investigating possible effects of VDT use on psychic sphere.

Method

Subjects: Studying sample consist of 50 persons (25 Men and 25 Women),employed in a Processing Data Centre, with the following features: average age of 38,34 years, average working exposure of 9,7 years, 13 years of school attendance, sitting work engagement of 6,7 hours, no smokers, no drunkard, no under pharmacological therapy, with clinical story negative for neuropsychiatry pathologies. Control group consists of 50 persons employed in administrative office in the same Centre, it’s selected observing the same features of exclusion and homogeneity.

Instruments: In the first time we subjected for a whole week, after the end of working time, selected samples (experimental group and control one) the “Stress origin catalogue” inspired by Cooper (1981) and composed by 44 assertions. In this test the individuals had to sign the assertions that, according to them, could describe stressing event in their working organization. After a break of seven days we gave psychiatric scale: Beck Depression Inventory (BDI), (1961) to both of groups in the same temporal condition and social environment. This psycho diagnostic tool, and it values depression behaviour signs., is composed by 21 items, each of these items results quantified by individual choose with an answer demonstrating a different level of gravity (score:0-3).Total score upper than (limit) 18 means clinical depression.

The items were chosen on the basis of their relationship to the overt behavioural manifestations of depression and do not reflect any theory regarding the etiology or the underlying psychological processes in depression

Results

The “Stress origin catalogue” didn’t show differences of aspect linked to objective detection of working stress and working life quality, between experimental and control samples. Using BDI in experimental sample we obtained the following scores:

• 29 persons (19 W – 10 M) obtained 18, that means depression simptomatology
•10 persons (6W – 4 M) had a score like 11, that means mood lowering
•11 person (11 M) obtained a score like 3, that means absence of depressive simptomatology.

Using BDI in control group we obtained the following scores per la BDI:
•32 persons (10 W – 22 M) had a score like 4, that means absence of depressive simptomatology
•16 persons (13 W – 3 M) had a score like 8, that means mood lowering
•2 persons (2 W) had score like 18, that means depression simptomatology.

**Conclusion and discussion**

After showing the absence of stressing situations in investigated working organization, the BDI scale shows that person belonged to experimental group, compared to persons belonged to control group, have scores clinically relevant about depression and its behaviour signs; this clinical data associated with insomnia, irritability, weariness, psycho-physical troubles, are present in risk exposed workers compared to control group, it’s also evident that workers that show symptomatology, are mainly women. Brown (1995) Rabbitt (1995) Svanborg (2001)

Comparing the results obtained from experimental group and control one it’s evident a larger incidence of depressive symptoms in relation with birth age and exposure. The observation that the psychological symptoms are in relation with exposure according with Travers’(2002) results, in his paper he shows that the symptoms in VDT workers appeared to increase as duration of VDT exposure increase.

Our results are according to recent literature studied that show as VDT work causes psychic sphere troubles and that a lot of inconvenience observed in VDT workers are related with neurophisiologic stress Smith (1997) Mocci (2001). The results of the study on our sample is well related with Wuang’study (1998) that shows depression, hostility and anxiety increase in 516 VDT workers. Wuang (1998)

Then, even if further investigation are necessary, our study allows to assert, thanks to use of a psychiatric valuation scale that VDT work exposure causes depressive simptomatology.

**References**


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The concept of ‘human and organisational factors’ in risk assessments in the Norwegian offshore petroleum industry

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Introduction

Investigations often reveal that human and organizational factors are present in incidents and accidents that occur in offshore petroleum activities. The petroleum industry has traditionally been concerned with technical issues and solutions, but within the last few years the industry has become more concerned with how human and organizational factors can affect the risk of a major accident.

The term ‘human (and organizational) factors’ is subject to various interpretations in the literature, as well as in the practical application of offshore work. ‘The interaction between man and machine’ has been a well known definition of human factors (Gordon 1998, Mearns et al 1997), but during the 1990’s this definition was expanded to encompass the effects of individual, group and organizational factors on safety (see also Wilpert 1995). Similarly, the Health and Safety Executive definition (HSE 1999) refers to “environmental, organizational and job factors, and human and individual characteristics that influence behaviour at work in a way that can affect health and safety”. The expression ‘human factors’ is, at times, used interchangeably with the term ‘ergonomics’ (Kirwan 2002), yet Bea et al (1996) discuss human factors as including people, equipment, management systems, culture and environment (cited in Vinnem et al 2000). ‘Human factors’ is also a “professional discipline concerned with improving the integration of human issues into the analysis, design, development, implementation and operational use of work systems” (Widdowson and Carr 2002).

The Norwegian Petroleum Directorate requires operating companies on the Norwegian continental shelf to conduct a major hazard quantitative risk assessment (QRA) before oil or gas production can begin. The QRA results in a numerical risk estimate (for example a FAR-value\(^1\)) for a particular offshore installation. The assessment is based on data about the installation, historical failure rate data and knowledge of physical processes, but there is a great deal of uncertainty in the models, data and assessment methodology (Bolsover et al 1998).

The QRA is also intended to be used as a tool for decision support throughout the production phase. The oil and gas producing companies are required to update the QRA when changes are made that are likely to affect the risk level. Human and organizational factors are, however, usually not included in quantitative risk assessments in a systematic manner. Changes of organizational character may therefore not influence the risk level reflected in the QRA, which reduces the value of the risk assessment as a decision support tool. Assessments that do include human, and to some degree organizational factors, are for example hazard and operability studies (HAZOP), hazard identification (HAZID) and safe job analysis (SJA). These assessments are qualitative and have a more limited scope than the major hazard risk assessment (QRA). The extent of information exchange between the QRA and various other risk analyses is somewhat random.

The inclusion of human factors in a risk assessment framework is dependent, to some extent, on how the term is understood by the people carrying out the assessment. It has been difficult to implement human factors in technical oriented disciplines, much the same as it has been difficult implementing technical issues in

\(^1\) FAR (Fatal Accident Rate = statistically expected loss of lives per 100 million exposed hours)
studies of health. In order to facilitate the discussion of how ‘human factors’ (including organizational factors) can be integrated in risk analyses, the objective of this study is to investigate how the concept of human factors is understood within risk assessments in the Norwegian offshore petroleum industry.

Method

The project is based on qualitative methods, including a literature review and interviews with representatives from petroleum companies operating on the Norwegian Continental Shelf. This study refers to relevant reports and articles, but also to material that is less academic than that which is normally approved to be background material for published articles. We consider this material valuable because of its relevance to the industry’s own policy and work.

Ten interviews with nine respondents were conducted. Eight of these respondents work in the Norwegian offshore petroleum industry, and one respondent is employed by an international aviation company. The link to aviation is made on the basis of problem similarities and on the need for comparison. The eight respondents work in four different petroleum companies with operatorships on the Norwegian continental shelf. Three of the respondents are involved with QRA’s in their daily work. However, none of our respondents are personally involved in conducting major hazard QRAs because this job is often commissioned to external consulting companies.

Due to confidentiality guidelines, we were not given the opportunity to study background analysis of any QRAs. This report is based solely on information provided from interviews and discussions with our respondents, and literature studies.

Information from the interviews and literature studies was analyzed using the qualitative analytical tool NVivo 2.0, from QRS International Pty. Ltd.

Results

Within the last couple of years, the petroleum industry has become highly engaged in taking into account the impact of human factors on accident probability. It is evident that some human and organizational aspects are included in most risk assessments, but mainly in the production phase of qualitative risk assessments. What factors are considered important to integrate is highly dependent on how the term is interpreted and what the object of analysis is.

One respondent argued that ‘human factors’ can be divided into soft-side issues consisting of inter-human conditions, and hard-side issues incorporating physical factors such as design. A few respondents argued that human factors cover all human activity in relation to the offshore operations. Others placed human factors somewhere within the concept of HSE-culture, further defining HSE-culture as everything not involving procedures, hardware and so on. Of the more precise, but still wide definitions, were those that connected human factors to ergonomics and work environment, as well as to accident probability and consequence. Others linked the term directly to the influence of human error in an incident and the likelihood of humans acting in accordance with plans and procedures. Finally, there are respondents who emphasize the MTO-notion (man, technology and organization) when talking about human factors, although they may not be capable of defining this term.

Based on the various interpretations of this concept found in the literature and in the interviews concerning “human factors”, we identified four components that cover the majority of definitions, these are: 1) individual factors (for instance, competence, stress, motivation, etc.); 2) working environment factors (mainly group related factors); 3) organizational factors (procedures, control, cost cutting programs, reorganizations, etc.); and 4) physical factors (layout, design). The petroleum industry representatives tend to emphasize the individual and working environment factors, while the literature is more focused upon organizational and physical factors. These four categories broadly define the elements of human factors that
are comprised in our material, but the content of each individual category can still cover a wide range of aspects to take into consideration in a risk assessment.

Human factors can arguably be included in the QRA through the FAR-value, because this value is based on the number of personnel on the installation. Another respondent stressed that human and organizational factors are brought into the analysis as frequencies of human error. In this connection, the different databases containing information about previous incidents are of great significance as they are used as background material for risk assessments. One respondent felt that major hazards simply cannot be triggered by human actions alone, and even if this was possible, the technical barriers would prevent escalation.

Based on the findings of how the concept of human factors is interpreted in relation to risk assessments, we propose dividing the term ‘human factors’ into two sectors; 1) human performance and 2) performance shaping factors. Human performance is a broad and inclusive term, but we will use it in the context of actions or inactions that are connected with accidents and near misses. The term ‘human performance’ can be divided in ‘human error’ and ‘error recovery’.

The concepts of ‘human factors’ and ‘human error’ are often used interchangeably in the offshore oil industry, without a clear distinction being made between their meanings (Bellamy 1994). Both refer to human contribution in the cause of an accident (Mearns et al 1997), although the term human error is less comprehensive. There exist several definitions of this notion, such as the one from Rasmussen (1993), which defines human error as “human acts which are judged by somebody to deviate from some kind of reference act … they are subjective and vary with time” (cited in Gordon 1998).

Human factors can be quantified through calculations of human performance, mainly as frequencies of human error. There are also assessments that consider the human aspect directly through the possible occurrence of human error, for instance in Human Reliability Assessments (HRA). While human error might trigger an accident, error recovery is the human contribution to detecting and intervening in order to prevent an accident. This contribution is little explored in risk assessments. Error recovery deals with the positive human contribution in safety-related matters, for example through the detection of a gas by an individual on an offshore installation. Unfortunately error recovery is not discussed much in the petroleum industry, although academically it is a subject of increasing attention. In the petroleum industry, human error, or human reliability, is still the main area of focus.

The simplest way of quantifying human performance is through estimating the probability of human error. This requires a solid base of data, but a new offshore installation often lacks important error data for several reasons. Firstly, there are not yet any available error frequencies for the particular installation and data must be collected from comparable installations, which may differ in design and organization. Secondly, major accidents do not occur very frequently and their causes are therefore difficult to fully affirm. Moreover, the quality of error estimates is dependent on the thoroughness of earlier accident investigation. It is therefore quite difficult to get the full overview of all human contributions to offshore accidents, something which will be reflected in the quality of the QRA.

There are several different factors that influence human performance. These factors are called performance shaping factors (PSF), conceptualizing the influences that are present in the design, operation and human interaction of complex technological systems (Bolsover et al 1998). HSE operates with the following definition of PSF: “Factors that influence the effectiveness of human performance and the likelihood of errors. Examples include the design of displays and controls, training, fatigue, environmental and job design factors” (HSE 1999). PSFs can also be related to the distinction between latent and active failures. Latent failures may be poor design, gaps in supervision, maintenance failures, unworkable procedures or shortfalls in training. They may arise from strategic decisions and as their impact spreads throughout the organization, error-producing factors will be created within the individual workplaces (Reason 1997). Performance-shaping factors can be resources (such as manning and instrumentation), safety policy and training, communications (information flow and written documentation) and work pressure leading to stress or boredom (Bolsover et al 1998). The essence of performance shaping factors is not much different from human (and organizational) factors, or latent failures, and can be related to the categories ‘working
environment’, ‘organizational factors’ and ‘physical factors’ mentioned previously. Performance-shaping factors can affect how employees perform their jobs, and these factors influence the probability of human error and error recovery.

Clearly PSFs are important in our setting, but they are hard to implement in the QRA. These factors are virtually impossible to quantify. The reason for this seems relatively obvious; how is it possible to estimate culture or self-confidence? PSFs are therefore important to take into account, but the integrating strategy is less distinct. If one uses accident analysis after an incident, one will succeed in discovering relevant PSFs that lie close to the incident in time, but it will be harder to reveal them in a longer time perspective. Some may disagree with this statement and say that integration is dependent on the PSFs in focus. In a project carried out by Øien and Sklet it was concluded that it is possible to quantify the effects of organizational factors on the risk level, although there is some uncertainty in the numbers (Øien and Sklet 1999). Competence and experience are examples of PSFs that may be linked directly to human error through quantification, but most PSFs are not suitable in quantitative assessments.

We propose that the concept of human factors in a QRA is viewed as human performance in relation to the functioning of barriers. The impact of human error and error recovery should be related to the concept of ‘barriers’, where the barriers are technical or physical systems put in place to prevent accidents. Allowing for division of the ‘human factors’ concept into human performance and performance-shaping factors enables quantification of the influence of human error, or error recovery, on the functioning of the barrier. Since performance shaping factors are very difficult to quantify, they should be considered in relation to their impact on human performance.

The Norwegian Petroleum Directorate has included the concept of ‘barriers’ in its new regulations, which deal with efforts to prevent accidents and other undesirable conditions that can result in injuries or damage. These barriers may be of a technical, operational or organizational kind (The Ministry of Labour and Government Administration 2001/2002). If one thinks of barriers as only technical appliances, which are not affected by people, a quantification of their effectiveness is possible. Humans can increase or decrease the probability of a technical barrier being activated, through the degree to which they react correctly in a given situation. On one side, a break in a barrier may be caused by a maintenance failure, such as the actual opening of a ventilator giving free passage to gas that could potentially lead to an accident. This represents the negative contribution of human factors. On the other side is error recovery, understood as the human contribution to accident prevention. The capacity of humans to discover and intervene in potentially hazardous situations, reducing the risk for themselves and their colleagues, does not seem to be incorporated in risk assessment work today.

There have been significant efforts to classify human error. One is based on Reason’s model of active and latent failures called the Human Factors Analysis and Classification System (HFACS), which is directed at investigation methods and the restructuring of post-accident databases. It describes human error as either a) unsafe acts of operators, b) preconditions for unsafe acts, c) unsafe supervision, or d) organizational influences (Wiegmann and Shappel 2001). We consider the three last error types as performance shaping factors.

**Conclusion**

Qualitative risk assessments carried out within the offshore petroleum industry are numerous and take human factors, and to some degree organizational factors, into account. These analyses are, however, more limited in scope than the major hazard QRA. We suggest that estimating the human contribution to accident probability is done by estimating human error and, possibly, error recovery probability. Performance-shaping factors (PSF) are difficult to implement in QRAs due to their evident qualitative characteristics, but they are still important for the installation’s risk level. Major hazards are influenced by human and organizational issues and ignoring this would be unwise.
The evident uncertainty about different terms and methods is problematic with respect to developing a collective understanding of this area. We have found problems in the communication of certain issues, due to diversity in the use and understanding of the concept of human and organizational factors in relation to risk assessments. There is a need for clarification in order to increase the cooperation between people trying to achieve the same goal.

A more operational use of the QRA would require an increased focus on the internal communication concerning performance-shaping factors, and an increased collaboration between different disciplines within and between the petroleum companies. In this way, different areas would get a more complete understanding of others’ challenges, and could hopefully contribute with expertise relevant for them. Concerning the focus of QRA’s today, it would be better to support and further develop this as a decision-making tool. Although it is reasonable to believe that the different values in QRA already represent uncertainty, it is doubtful whether this could be held as an argument for not integrating the human aspect as well. A broad integration of human factors in risk assessment work is, however, dependent on a more systematic demarcation than we find today of what can and cannot be quantified.

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Developing a new role for occupational health psychology: the clinical occupational health psychologist

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Introduction
Should Occupational Health Psychologists (OHPs) be more involved in the treatment of workplace mental health problems – particularly by providing individual psychological interventions for employees and groups? The role of OHPs in work-related stress has traditionally been prevention through research into better job design and the development of stress reducing workplace initiatives. But it could develop into greater involvement in the treatment of stress-related mental health problems at the individual, organisational, and political-social level. The aim of this paper is to examine this possibility through the idea of a new role: the clinical occupational health psychologist. To examine the level of interest, results from a survey conducted at the 4th Annual Conference (Arthur, 2002b) on OHPs’ attitudes to the relative importance of clinical roles in mental health workplace stress will be presented.

Background
The author’s own research shows that symptoms of work-related stress are often mental health problems in disguise, requiring specialist treatment and advice through workplace psychological counselling programmes (Arthur, 2001d, 2002b). Unfortunately, these are not always satisfactory because they lack an understanding of how to treat the broader workplace issues that may be contributing and this approach can unfairly ‘pathologise’ the individual (Arthur, 2000, 2001a, 2001c). However, if the expertise of OHPs were to be combined with an understanding of mental health problems it might be possible to envisage a specialist role of clinical occupational health psychologist that could tackle both sides of the issue (the individual and the workplace); and perhaps even the broader socio-political context. Some clinical psychologists have already become involved in this type of role (Arthur, 2001b) but there is a danger that these professionals, practising at the individual micro clinical level, might miss the broader causes of stress in the workplace because they do not have an OHP training. Clinical OHPs would need to learn some new skills, for example: how to differentiate between more common work-related stress and the mental health problems, how workplace stressors trigger or cause mental distress, the common presentation of mental illness, and some therapeutic treatment skills and techniques. Additional training components added to undergraduate courses or later at the postgraduate levels could easily achieve this.

At the organisational level OHPs have traditionally been involved by researching, analysing and describing stressful practices, and trialling projects to alleviate them. Clinical OHPs could offer more direct advice and consultation to organisations on strategies for alleviating stress and mental health problems. For example, how often do we hear of OHPs being consulted to minimise employee distress when major ‘innovations’ or changes to management or organisational structures are envisaged? It is suggested that OHPs, particularly clinical consultants, could enlarge their roles in organisations and, when doing research, be expert consultants on the mental health effects of management and organisational decisions.

Finally, greater involvement at the social-political level is necessary if there is to be a significant impact on work-related mental health, however this is not just a role for the proposed clinical OHPs – this is something for all OHPs. How much were OHPs involved in, for example, designing the European Work Directive, the French reduction of hours in the working week, the emphasis on family friendly employment practices in the UK, and the European directive for the rights of part time workers to holidays, sickness and pension benefits? Indirectly through research, teaching and professional activity there was a contribution. But it will be argued that OHPs have an important and direct contribution to make to governmental policies related to peoples working lives. It will also be argued that OHPs have a contribution to make to the debate about the psychological effects of living in aggressively materially acquisitive societies. Research shows that the social values of material acquisition in the United Kingdom require individuals to work harder than ever before, and that, worryingly, employees appear willing to comply, even though recognising the cost to themselves, their relationships, and mental health (Arthur, 2002a, In Press).
Before progress can be made on developing the role of occupational clinical health psychology it is important to examine how OHPs view the causes and treatment of mental health problems in the workplace. How prevalent is the view that there is a need for a more clinical dimension to OHP? During the Vienna EA-OHP Conference 2002 a colloquium was held on mental health problems in the workplace (Arthur, 2002a), and participants were invited to take a questionnaire survey on its causes and treatments. The results of the survey are presented here and provide an interesting insight into the attitudes of OHPs on this topic.

Method
The questionnaire
In a recent review of the work-related mental health and stress literature (Arthur, In Press) six factors emerged as important in understanding the problem and form the basis for the structure of the questionnaire:
1. The causes of work-related mental health problems
2. Relative importance of different professions in tackling it
3. Role of social & economic factors
4. Importance of different treatment services
5. Whose responsibility it is
6. What should be done
A questionnaire was constructed for the survey that allowed respondents to rank their opinions on the relative importance of items within each of these six areas. For example, when asked whom they believe is responsible for causing these problems they can rank from 1 (highest) to 6 (lowest): organisations, individuals, governments, economies, society, or work groups.

Results
Forty-five questionnaires were distributed during the colloquium Mental health care in the workplace – the need for an integrated approach (Arthur, 2002a) and 26 (58%) were completed and returned. Results from each question are presented below with their average response ranking.

1. Please rank in order of importance from 1 (highest) to 8 (lowest) how much you believe each of the following causes of work-related mental health problems.

<table>
<thead>
<tr>
<th>Causes of problems</th>
<th>Rank 1 - 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. Personal difficulties (e.g. personality, trauma, illness)</td>
<td>3</td>
</tr>
<tr>
<td>1b. Relationship problems (e.g. home, life, partners)</td>
<td>4</td>
</tr>
<tr>
<td>1c. Work problems (e.g. work practices, bullying, managers)</td>
<td>1</td>
</tr>
<tr>
<td>1d. Organisational problems (e.g. downsizing, mergers, demands)</td>
<td>2</td>
</tr>
<tr>
<td>1e. Social pressures (e.g. political, material, economic)</td>
<td>5</td>
</tr>
<tr>
<td>1f. Physical illness</td>
<td>7</td>
</tr>
<tr>
<td>1g. Drug &amp; alcohol addiction</td>
<td>8</td>
</tr>
<tr>
<td>1h. Mental Illness</td>
<td>6</td>
</tr>
</tbody>
</table>

2. Please rank in order of importance from 1 (highest) to 7 (lowest) how much you believe each of the following professions should be involved in tackling work-related mental health problems.

<table>
<thead>
<tr>
<th>Importance of Professions</th>
<th>Rank 1 - 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a. Occupational/Organizational Psychologists</td>
<td>2</td>
</tr>
<tr>
<td>2b. Occupational Health Psychologists</td>
<td>1</td>
</tr>
<tr>
<td>2c. Clinical Psychologists</td>
<td>5</td>
</tr>
<tr>
<td>2d. Counsellors</td>
<td>4</td>
</tr>
<tr>
<td>2e. Psychiatrists</td>
<td>7</td>
</tr>
</tbody>
</table>
2f. Medical & 6
2g. Human Resource Professionals & 3

3. Please rank the importance from 1 (highest) to 5 (lowest) of the following social and economic factors to work-related mental health problems.

<table>
<thead>
<tr>
<th>SOCIAL &amp; ECONOMIC FACTORS</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a. Employers unrealistic demands</td>
<td>1</td>
</tr>
<tr>
<td>3b. Individuals requiring higher standards of living</td>
<td>3</td>
</tr>
<tr>
<td>3c. Desire to increase social status</td>
<td>4</td>
</tr>
<tr>
<td>3d. Socialist systems</td>
<td>5</td>
</tr>
<tr>
<td>3e. Capitalist systems</td>
<td>2</td>
</tr>
</tbody>
</table>

4. Please rank in order of importance from 1 (highest) to 9 (lowest) how much you believe each of the following services should be involved in treating work-related mental health problems.

<table>
<thead>
<tr>
<th>Importance of Services</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>4a. Occupational Health</td>
<td>1</td>
</tr>
<tr>
<td>4b. Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>4c. Managers</td>
<td>2</td>
</tr>
<tr>
<td>4d. Employee Assistance Programmes (employee counselling)</td>
<td>5</td>
</tr>
<tr>
<td>4e. Community health services</td>
<td>9</td>
</tr>
<tr>
<td>4f. Stress management training</td>
<td>7</td>
</tr>
<tr>
<td>4g. Organisational consultants</td>
<td>4</td>
</tr>
<tr>
<td>4h. Stress audits (measuring cause &amp; location of stress)</td>
<td>6</td>
</tr>
<tr>
<td>4i. Mediation services (employee &amp; manager conflict resolution)</td>
<td>8</td>
</tr>
</tbody>
</table>

5. Please rank in order of importance from 1 (highest) to 6 (lowest) whom you believe is responsible for causing work-related mental health problems.

<table>
<thead>
<tr>
<th>Whose Responsibility</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>5a. Organisations</td>
<td>1</td>
</tr>
<tr>
<td>5b. Individuals</td>
<td>4</td>
</tr>
<tr>
<td>5c. Governments</td>
<td>6</td>
</tr>
<tr>
<td>5d. Economics</td>
<td>2</td>
</tr>
<tr>
<td>5e. Societies</td>
<td>5</td>
</tr>
<tr>
<td>5f. Work groups</td>
<td>3</td>
</tr>
</tbody>
</table>

6. Please rank in order of importance from 1 (highest) to 10 (lowest) what you think should be done about work-related mental health problems.

<table>
<thead>
<tr>
<th>What should be done</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>6a. More research</td>
<td>5</td>
</tr>
<tr>
<td>6b. More counsellors</td>
<td>8</td>
</tr>
<tr>
<td>6c. More occupational health services</td>
<td>6</td>
</tr>
<tr>
<td>6d. Greater employer awareness</td>
<td>1</td>
</tr>
<tr>
<td>6e. Educate society about its causes &amp; effects</td>
<td>3</td>
</tr>
</tbody>
</table>
Discussion

When OHPs were asked whom they believe is responsible for causing work-related mental health problems they gave the highest ranking to organisations, economies, and work groups; and the lowest to government and society. The role of individual responsibility in causation is in the middle ranking. This appears to reflect the importance OHPs attribute to the context within which individuals work and probably differs from the more individualist view that might be taken by clinicians (e.g. clinical psychologists, counsellors, psychiatrists).

Indeed this was confirmed with the results for the causes of problems factor where the items ranked highest were work and organisational difficulties; nevertheless the contribution of personal and relationship problems were identified as high. Significantly physical and mental illness, and addiction were considered low causes, but without a proper assessment awareness of their role may not be fully appreciated.

Continuing the theme of causes; when given the opportunity to evaluate the broader issues that might cause mental health problems, employers’ unrealistic demands and capitalist social systems received the highest ranking, and socialist systems received the lowest. Nevertheless, it should be remembered that in his examination of the effects of ‘emotional labor’ Hochschild suggests socialist systems can also be exploitative in nature (1983).

On the question of who is responsible for tackling work-related mental health problems OHPs ranked their profession, organisational/occupational psychologists, and human resources the most important. The clinical professionals (clinical psychology, medicine, psychiatry) were considered less important, which might reflect the preventative versus treatment emphasis in occupational health psychology.

What should be done? Greater awareness by employers, improved job design, the education of society, and training managers were highly ranked, but government initiatives, involvement of trades unions and providing more counsellors were seen as less important.

Overall the results of the survey suggest OHPs rate more highly preventative measures over individual solutions and see themselves as key players in these initiatives. Individual clinical services and their providers, the government, and trades unions are not seen as very relevant. Interestingly the desire of individuals to materially improve their standard of living is not considered a major cause of work-related mental health problems. However, UK research suggests that many employees and their partners consider the long hours culture and its detrimental physical and psychological effects on individuals and families an acceptable cost for material improvement (Arthur, 2002a, In Press).

The questionnaire results presented here suggest that this group of OHPs prefers involvement in preventative measures compared to individual clinical interventions and therefore support for an individually based clinical occupational health psychology may, at present, be limited. Nevertheless, this author argues that the proposed clinical OHP need not be restricted to just working in individual treatment, but to develop an understanding of how maladaptive managers, poor group dynamics, and ‘sick’ organisations can ultimately impact on individuals’ mental health (Obholzer & Roberts, 1999). The clinical treatment required may not necessarily be for the individual but for the group, management or organisation.
Conclusion
It appears from this survey that OHP colleagues must be convinced about the idea of developing a clinical aspect to their work and convinced this would not mean compromising their beliefs in preventative action through traditional methods. It could be pointed out that developing a clinical dimension to their work would likely enhance, inform, and lend weight to concerns many OHPs have about the real human mental-health effects of disturbed working environments. Further, with their focus on either clinical treatment or work design prevention, clinical or occupational psychologists alone may not be in the best position to tackle the causes and treatment of work-related mental health stress; the proposed clinical OHP might.

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Team climate and situational leadership in air traffic control

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Introduction

In a joint project between the Swedish Civil Aviation Administration (SCAA) and Lund University, questions concerning organizational aspects - such as organizational climate, team climate, situational leadership, psychosocial working environment - and safety culture are under study. A team-based organization has recently been introduced and a new air traffic control system will soon be installed at the two main air traffic control centers (ATCC) in Sweden. To find out how these changes will affect the organizational aspects and the safety culture, four studies will be conducted. These studies will involve the two air traffic control centers in Malmö and Stockholm as well as the Air Navigation Services Headquarters in Norrköping (ANS). The first study conducted about a year before the introduction of the new system, has been accomplished. The second study will be conducted just before the system introduction, the third directly after the introduction and the fourth approximately six months later. This design gives the opportunity to compare the situations before and after the system introduction.

The safety culture is studied by Questionnaire for Safety Culture Assessment (Ek & Akselsson, manuscript). The psychosocial working environment is studied by COPSOQ - Copenhagen Psychosocial Questionnaire (Kristensen & Borg). The organizational climate is studied by GEFA (Ekvall, 1996), the team climate by TCI - Team Climate Inventory (Anderson & West, 1994), and the leadership by LEAD - Leadership Effectiveness and Adaptability Description. The latter instrument is based on the situational leadership theory (Hersey & Blanchard, 1988) and designed to measure primary leadership. All five instruments will be used in all four studies.

In this paper, focus is directed towards team climate and leadership. The question at issue is how the team climate and the situational leadership are assessed, and if and how these aspects differ between the two ATCCs as well as between different teams at each workplace. Such a comparison is of interest since the two ATCCs operate under somewhat different conditions. The ATCC Malmö is located in the southern part of Sweden about 45 kilometers (28 miles) from the main Danish airport, Kastrup in Copenhagen. It has the characteristics of an en route center. About 35% of the ATC work is connected to air traffic arriving at and leaving different airports in the area. The remaining 65% of the flights are en route flights implying that the air traffic controllers mostly serve airplanes passing by at high altitude. The work tasks therefore mostly consist of surveillance. At the ATCC Stockholm about 90% of the ATC work is connected to airplanes arriving and departing from different airports in the area, mainly from the main Swedish airport Arlanda and from the Bromma airport. Giving a simplified picture of the work at ATCC Stockholm it can be characterized as an arrival and departure center. This means that the air traffic controllers have to be rather active, working within fairly small sectors and with airplanes flying at low altitude. The two ATCCs also differ in the work progress concerning the introduction of the new team-based organization. The ATCC Stockholm has reached a little further in this process because of an earlier start. The constellation of the teams is also slightly different between these two units.

Of interest is also to investigate if and how the two ATCCs differ from the ANS-Headquarters with respect to team climate and leadership. These three units differ mainly from each other with respect to working tasks and methods. Still they are part of the same organization, working together towards the same superior goals. Of interest is also to look at the relation between the team climate and the leadership to find out how these two concepts may be correlated. Is a highly evolved team climate associated with a good situational leadership?
The team climate concept is based on a shared perceptions approach of climate. This approach emphasizes the climate as consisting of shared perceptions of organizational policies, practices and procedures. Individuals are likely to identify most closely with their proximal work-group and to have commitment to its ongoing social structure. The shared perceptions are therefore most likely to evolve at a team level because individuals have the opportunity to interact and to co-construct perceptions within this immediate work environment (Anderson & West, 1998).

The situational leadership model used is based on a curvilinear relationship between task behavior and relationship behavior and maturity. Task behavior is described as the extent to which leaders are likely to organize and define the roles of the members of their group, to explain what activities each has to do and when, where, and how tasks are to be accomplished. Relationship behavior is referring to the extent to which leaders are likely to maintain a personal relationship between themselves and members of their group by opening up channels of communications, providing socio-emotional support and facilitating behavior. Maturity refers to willingness and ability to take responsibility, and experience of an individual or a group. This theory attempts to provide leaders with some understanding of the relationship between an effective leadership style and the level of maturity of their co-workers. Because abilities and motives among co-workers vary, the leader must have the sensitivity and diagnostic ability to be able to sense and appreciate the differences. Yet, even with good diagnostic skills, leaders may still not be effective unless they can adapt their leadership style to meet the demands of their environment (Hersey & Blanchard, 1996). This means that if the needs and motives among co-workers are different, they must be treated differently.

Method

Subjects

The studies were conducted at two Swedish ATCCs referred to as the en route center and the arrival and departure center respectively because of different prevailing operating conditions. The study also concerns the Swedish ANS-division in Norrköping. The team-based organization at the en route center consists of 16 teams with 10-15 persons in each team. At the arrival and departure center, the organization consists of eight teams with approximately 20-25 persons in each team. The organization at the ANS division consists of 13 teams with 3-30 persons in each team. The questionnaires were distributed to all 635 employees at the three units. 390 completed questionnaires were returned. Of these 141 were filled out by employees at the en route center, 130 by employees at the arrival and departure center and 119 by employees at the ANS-division. Altogether, 39 respondents dropped out for reasons such as maternity/paternity leave, on leave for sickness, training, vacation etc. This resulted in a final response rate of 69% for the en route center, 63% for the arrival and departure center and 64% for the ANS-division.

Material

The team climate was measured with the Team Climate Inventory (Anderson & West, 1994). This questionnaire consists of 46 items that loads onto 13 sub-factors, which in turn load onto four second order factors of climate and one social desirability response factor. The main scales are as follows: Participative safety (information sharing, safety, influence and interaction frequency); Support for innovation (articulated support and enacted support); Vision (clarity, perceived value, sharedness and attainability); Task orientation (excellence, appraisal and ideation). The situational leadership was measured with Leader Effectiveness and Adaptability Description (LEAD) (Hersey & Blanchard, 1988) in a modified version (Holmkvist, 2000). This questionnaire consists of 32 items, reflecting different situations, which are described to the respondent. Each item is answered by one of four alternatives. The respondent is asked to choose the alternative that best describes the respondent's expected behavior in each situation. Each item concerns leadership in group or individual situations. The situations are in addition described in terms of development or as reflecting difficulties. The method is therefore managing four types of situation: group or individual situations, and situations characterized by development or difficulties.

Procedure

The four TCI main scales were computed as mean scores. One-way ANOVA was used to analyze differences between the teams within each unit and across units. T-test for dependent samples was used to calculate differences between different team climate dimensions. The LEAD data was calculated as a mean for each team and situation (group/individual and development/difficulties) and for each of four possible leadership styles S1-S4 where S1 indicated high task/low relationship behavior, S2 high task/high relationship behavior,
S3 high relationship/low task behavior and S4 low relationship/low task behavior. Leadership data was also calculated with respect to leadership style adaptability scores for each team and for each type of situation. Correlation coefficients were calculated to analyze the relationship between the team climate dimensions and the leadership adaptability at each unit and in each situation.

Results

Team Climate
The different teams at the ANS division reported a statistically significant more positive team climate over all main TCI dimensions measured when compared with the two ATCCs. At the two ATCCs the team climate dimension Participative safety was statistically significant higher rated compared with the other dimensions for all teams. Overall, the team climate was rated as average at the two ATCCs and just above average at the ANS division.

Situational Leadership
The results for LEAD showed similar patterns concerning the leadership styles at all three units. The overall picture indicated the leadership as being characterized by relationship behavior rather than task behavior in development situations and group situations. In situations of difficulty and in individual situations the leadership was, on the other hand characterized by task behavior rather than relationship behavior. Concerning the leadership adaptability, the results describe the adaptation to be more successful in individual situations than in group situations and in developmental situations than in situations of difficulties.

The relation between Team Climate and Situational Leadership

En route center
Table 2 shows the correlation coefficients between TCI dimensions and LEAD situations. At the en route center the TCI dimension vision was statistically significant correlated with leadership adaptability in individual situations (r=0.50), group situations (r=0.52), and situations characterized by difficulties (r=0.57). For the other three TCI dimensions the correlation coefficients were very low or approaching zero.

Table 2. Correlation coefficients for teams at the en route center; bold figures are significant at p < 0.05, N=16.

<table>
<thead>
<tr>
<th>TCI-Dimension</th>
<th>LEAD Development</th>
<th>LEAD Difficulties</th>
<th>LEAD Individual</th>
<th>LEAD Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participative Safety</td>
<td>0.01</td>
<td>0.04</td>
<td>-0.04</td>
<td>0.18</td>
</tr>
<tr>
<td>Support for Innovation</td>
<td>-0.00</td>
<td>0.22</td>
<td>0.03</td>
<td>0.32</td>
</tr>
<tr>
<td>Vision</td>
<td>0.33</td>
<td><strong>0.57</strong></td>
<td><strong>0.50</strong></td>
<td><strong>0.52</strong></td>
</tr>
<tr>
<td>Task Orientation</td>
<td>0.05</td>
<td>0.04</td>
<td>0.01</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Arrival and departure center
At the arrival and departure center, no statistically significant correlations were found between the team climate and situational leadership data.

ANS-division
At the ANS-division the team climate dimension participative safety was statistically significant correlated to leadership adaptability in development situations (r=0.70) and individual situations (r=0.56) but not in difficult and group situations. In addition the team climate dimension support for innovation was statistically significant correlated to leadership adaptability in development situations (r=0.56).
Table 2. Correlation coefficients for teams at the ANS-division; bold figures are significant at p < 0.05, N=13.

<table>
<thead>
<tr>
<th></th>
<th>LEAD Development</th>
<th>LEAD Difficulties</th>
<th>LEAD Individual</th>
<th>LEAD Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCI-Participative Safety</td>
<td><strong>0.70</strong></td>
<td>0.12</td>
<td><strong>0.56</strong></td>
<td>0.19</td>
</tr>
<tr>
<td>TCI-Support for Innovation</td>
<td><strong>0.56</strong></td>
<td>-0.02</td>
<td>0.43</td>
<td>0.07</td>
</tr>
<tr>
<td>TCI-Vision</td>
<td>0.17</td>
<td>0.42</td>
<td>0.25</td>
<td>0.31</td>
</tr>
<tr>
<td>TCI-Task Orientation</td>
<td>0.10</td>
<td>0.14</td>
<td>0.16</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Discussion

Concerning the team climate study, at least two things are worth noticing. First, the teams at the ANS division reported a statistically significant more positive team climate for all main TCI dimensions when compared with the teams at the two ATCCs. A possible explanation may be that the team organization at the ANS has a longer history compared with the ATCCs where teams have been formed quite recently constituting a new work structure, at least in its current constellation. Some time is probably needed to establish a tight and effective team structure. Another similar explanation refers to the fact that the team members do not interact on a daily basis. No or just a small amount of operative work is performed within the teams. Instead, the teams are more of a constellation with a strategic function. For sharedness to evolve Anderson & West (1998) argue that (a) individuals interact at work, at least on an infrequent basis, (b) that there exist some common goal or attainable outcome which predisposes individuals toward collective action, and (c) that there is sufficient task interdependence such that individuals need to develop shared understanding and expected patterns of behavior. These three criteria represent necessary but not sufficient conditions for shared climate to exist. The loose team structure at the two ATCCs may not fulfill all of these criteria to the same extent as the ANS division does.

The second result from the team climate study worth noticing is the pattern at the two ATCCs showing the dimension participative safety as statistically significant more positive compared with the other dimensions measured. Participativeness and safety are characterized as a single psychological construct in which the contingencies are such that involvement in decision-making is motivated and reinforced while occurring in an environment, which is perceived as interpersonally non-threatening (Anderson & West, 1998). The ATCCs have shown to be organizations with highly evolved safety culture (Ek, Akselsson, Arvidsson and Johansson, 2002). In such a culture, factors such as justness and trust are important in the daily work of continuous improvement concerning safety. One explanation could therefore be that these concepts are somehow related and that this may be reflected in the team climate dimension participative safety. Even if this seems reasonable, an earlier study (Arvidsson, Johansson, Ek and Akselsson, 2003) concerning the relations between team climate and safety culture, conducted at the same workplaces could not prove that such a relation existed. The explanation must therefore be found elsewhere.

The results from the leadership study give a picture of the leadership adaptation to be more successful in individual situations and developmental situations. This is not surprising, since it is reasonable to believe that the adaptation becomes easier when just one individual has to be taken into account, compared with the adaptation in a group of different individuals with different experiences and abilities. The most striking thing however, concerning the leadership, is the homogeneity in leadership styles that seems to exist among the team leaders. All air traffic controllers pass through an ambitious selection process during the recruitment and the education. This selection process has its obvious reason, to identify and educate people that have the right and necessary abilities needed to succeed in the profession. This affects the homogeneity of the whole group of air traffic controllers and accordingly the individuals that choose to become managers and team leaders. In addition, all managers at these two organizations face the same kind of management programs and leadership education. It is likely that this helps to make a rather homogenous group even more homogenous.

When it comes to possible relations between team climate and situational leadership, no obvious patterns could be found. Yet, there seems to be a connection between the team climate dimension vision and leadership adaptability at the en route center. This pattern does not appear at the other units however, which
make it hard to draw general conclusions from this result. This is true for the relations that appear at the ANS-
division as well. Therefore no conclusions can be drawn concerning the relationship between team climate
and situational leadership. Two things have to be pointed out in addition to the above discussion, which may
have affected the results. First, as mentioned earlier, the teams are quite loose in their structure with no daily
interaction and no or just a small amount of joint operative work. The team-based organization is also quite
new, and so neither the team members nor the team leaders may have had time to settle down and find their
right positions in the team. Altogether, this may have an impact on how the team climate was assessed and on
its relation to the leadership adaptation as well. Second, the correlation coefficients were calculated at team
level. This means that a small number of cases were part of the analysis. This may have affected the outcome
of these calculations.

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Occupational causes of depression

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Until recently little attention has been paid to possible role of occupational stress and strain as cause of depression. Beck argued that depression is based on negative self-schema, that assumedly arise in early childhood. According to Beck (1967) different types of experiences can activate these schemata later in life. None of these were specifically related to occupational factors. For obvious reasons the “brain-dysfunction” thesis did neither focus on occupational factors. Two distinct recent developments are changing this picture.

Stress and depression
On one hand recent brain research indicates that stress can affect the brain in a manner that predisposes the individual for developing depression, and may even cause depression directly (Tennant, 2001.
In 1968 it was discovered that hippocampus has specific receptors for stress hormones. The hippocampal formation is particularly sensitive to the effects of adrenal glucocorticoids secreted during chronic stress (McEwen, 2001)
One study documents (Magariños, Verdugo, McEwen, 1997) that when rats are exposed to repeated restraint stress the consequence was structural changes within the hippocampus.
The hippocampal formation is particularly sensitive to the effects of adrenal glucocorticoids secreted during chronic stress (McEwen, 2001) . The hippocampal sensitivity to stress has been extended to explain how stress can influence, change and disturb cognitive processes, especially in relation to memory. The hypothesis is that structural plasticity in response to repeated stress is an adaptive and protective response.
But if the imbalance is not resolved this response results in damage that alters the manner in which the hippocampus participates in memory functions.
Recent studies also indicate that not only hippocampus is affected and even damaged by stress hormones (corticosteroids) (Höschl & Hajek, 2001), but other modular brain structures as well (Lupien & Lepage, 2001). For instance stress induces impairment in cognitive functions in prefrontal cortex. The main symptoms are working memory impairment, and poor attention regulation (Birnbaum et. al., 1999).
Investigations with MRI of depressed patients have shown an increased frequency of generalised, as well as localised atrophy in the brains of depressed patients. This process involves hippocampus, which is particularly interesting because of the role of hippocampus for cognitive processes (Videbech & Petersen, 2001).
Chronic stress also causes atrophy of the apical dendrites of CA3 pyramidal neurons and deficits in spatial memory as well as changes in the input-output relationship in the hippocampal trisynaptic circuit which could affect information flow through this structure (Pavlides, Nivón & McEwen, 2002). Chronic stress also seems to affect hippocampal-dependent learning (Park, Campbell & Diamond, 2001). The reason for these deficits in spatial learning following stress may be related to suppression of long term potentiation like phenomena in the hippocampus through stress induced changes in thresholds for synaptic plasticity necessary for both long term potentiation induction and spatial memory formation (Garcia, 2001).
These symptoms occur in depression and indicate that stress (primarily through its effect on the hippocampal formation) may actually cause depression.

Social (hierarchical) factors in depression
On the other hand developments within evolutionary psychology point towards the role of social factors in depression.
There are basically three different classes of such theories:
1. depression is a process and a method through which changed in social status, social competition or submission is dealt with (Gilbert et.al, 1995; Nesse, 2000).
2. depression is a distinct type of pain behavior (Alexander, 1986;Thornhill og Thornhill 1991;)
3. depression is a behaviour that signals (unfulfilled) social needs (Henderson, 1974) and/or involves changes in social exchange relations to the advantage of the depressive individual (Hagen, 1996; MacKey & Immerman, 2000; Watson & Andrews, 2002)
It is obvious that the theory that stress can cause or at least contribute substantially to depression justifies increasing attention towards the role of stressors at work. But when these theories are combined with evolutionary theories emphasizing the role of changes in social status, social exchange and social need, it becomes obvious that social relations at work and the meaning and importance allocated to theses relations by individuals and groups must be considered as important source of strain that can contribute to or directly cause depression.

From the viewpoint of Occupational Health Psychology the first hypothesis is the most interesting one.

**Depression and changes in status in social systems**
Depressive individuals tend to evaluate their social situation in a distinct negative manner. But in fact they are more realistic in their self-evaluation than normal individuals who tend to show exaggerated belief in their own resources and possibilities (Gilbert et. al., 1996). In traditional approach to depression this negative self-evaluation is viewed as a symptom of depression itself. But evolutionary tends to view this mindset as an expression of subjective evaluation of ones social position and status (Gilbert et. al., 1996; Nesse, 2000).

For that reason evolutionary theories of depression focus on relations within social groups. The assumption is that the processes through which such groups are established, maintained and develop as social hierarchies has become possible through a corresponding evaluation of specific social skills and abilities. These skills and abilities are partly about how to manage conflicts. Specifically it is assumed that lower ranging members of groups or persons who have experiences or perceived loss of status, as a result thereof exhibit signs of social subordination. This subordination contributes to maintaining the integrity and coherence of such groups. Conflicts (or at least the disruptive consequences of conflicts) are minimized (Nesse, 2000).

But this evolutionarily acquired capacity to deal with defeat also means that those who are exposed to such experiences are increasingly in risk of developing specific pathologies (depression) (Gilbert & Allen, 1998).

A number of empirical investigations indicate that depression is closely related to subjective experience of low status, with loss of self-value, confidence and a feeling of being looked down on, as well as a exhibiting submissive behaviour. Of course most people will not reach to such experiences by developing depression. The risk of depression seems to increase considerably when such experiences also involve social defeat and loss of personal autonomy. In such cases the adaptive mechanism tends to become eschewed or corrupted in such a manner at that individual exhibits increasingly passive behaviour in relation to the affected individual’s social surroundings, a process that often leads to depression (Gilbert, 2000).

This line of reasoning becomes even more interesting when following Rohdes (2001) line of reasoning, we assume that not only do humans possess external hierarchical goals or motives, but also internal mental hierarchical goals. It follows from this that the lack of resources in trying to obtain internal hierarchical goals can lead to loss of well being and behavioural changes that reflect characteristics of the self same psychobiological mechanism that is responsible for regulation of interpersonal relations.

**Conclusion**
This approach points unequivocally to processes related to social stratification including those who affect individual goals and social identity as being responsible for the development of depression. Increasingly social goals are becoming a central part of modern work-identity. Knowledge intensive jobs are immersed in social structures in which traditional instrumentality is replaced by a work-orientation in which the valorisation of identity is central.

When combined with the theory that stress in itself can contribute to or even cause depression, the relevancy of this to organisational health becomes obvious.

This may very well be an important, even central part of the reorientation of Occupational Health Psychology to the new conditions that characterize modern work and organisation.

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An empirical pilot study of the work environment for orchestra musicians in Norway

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Introduction
The growing emphasis on the significance of team building and the importance of a healthy and fulfilling psychosocial work environment has also reached the orchestra arenas, which still more or less operate after their medieval hierarchical communication and management structure. The work in an orchestra is almost 99% project based, with a new project every week. On a typical concert production, the musicians are given their assignments prior to the first meeting on the podium so that the musicians individually can rehearse their part. They then spend four hours a day on the podium adding “strokes” in the notes and rehearsing the musical piece under the instruction of the conductor. It is up to the individual musician to do additional rehearsing prior to giving concerts every Thursday, Friday and/or Saturday. This routine follows every week of the year.

The behaviour and the communication on the podium are subject to strict rules (Rødne,T. In Aslaksen et al (red),1999). The communication channels run from the conductor through the concert master, and then to the group leaders, to the alternating group leaders and finally to the tutti musicians2 in the various instrumental groups. It is not acceptable to express critical remarks to colleagues outside of these channels. It is therefore possible to come to work, do your bit and go home without having to talk to anyone at all. On the podium, all communication between the conductor, the concert master and the group leaders takes places as whispers, nods and winks.

The questions are then what this communication structure does to the psychosocial environment in the orchestra both on and off the podium, and what challenges this brings to the management as well as the musicians.

The main objective of this pilot study is to gain further information on the special work environment challenges of an orchestra, so that it will improve the quality of the quantitative instrument to be used in a later nationwide survey. The study will hopefully be extended to include the four other major orchestras in Norway, but this has yet to be decided.

Method
The pilot study is based on a survey of the Stavanger Symphonic Orchestra, initiated by the musicians themselves. A questionnaire was developed by RF based on preliminary interviews of five selected musicians and with relevance to the Karasek and Theorell model of demand, control and social support (Karasek and Theorell, 1990).

Participants
The questionnaire respondents consisted of members of the Stavanger Symphonic Orchestra, and included 41 male and 24 female respondents. The orchestra had some time before this study been in contact with RF with a view to possibly carrying out a project related to internal conflict in the organization. The orchestra management had also contacted other bodies seeking advice on solving the problem of musculoskeletal ailments among the employees. The musculoskeletal problem is quite typical for this profession. All in all, the orchestra seems highly motivated to solve their problems.

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2 A phrase used both for the whole orchestra during alternation between solo play and cooperative play, and for the low ranking musicians in the orchestra in general)
Factor analysis
66 (out of 75) orchestra members completed the questionnaire. (This is a response rate of 88 %.) However, 66 respondents provide a somewhat small number with respect to conducting a quantitative analysis. The factor analysis is therefore used in a relatively explorative manner. Variables with five or less missing values were replaced with group mean and included in the analysis. This resulted in 9 constructs that are thought to represent important characteristics for orchestra musicians. All the constructs had \( \alpha \)-values over 0.8 in the reliability check, but we will only refer to a selected few in this short paper, based on the information gathered in the preliminary interviews.

Results
Correlations
Amongst the correlations that point towards the need for further research and development, are the correlations with the construct “work pride” \( (\alpha = .8702) \). The prouder the respondents were of their occupation, the more support they experienced getting from their subordinate colleagues \( (r = .573, \alpha = .01) \) and leaders \( (r = .464, \alpha = .05) \). These respondents also seemed to perceive the orchestra as a place for them to develop their skills \( (r = .634, \alpha = .01) \) and expressed a desire to remain in the orchestra throughout their music career \( (r = .555, \alpha = .01) \). They also, however, reported their job to be more “demanding and exhaustive” \( (\alpha = .8212) \) than their colleagues \( (r = .514, \alpha = .01) \).

Respondents who reported having “a dedicated and competent leader” \( (\alpha = .9218) \) reported less involvement in conflicts with co-workers \( (r = -.447, \alpha = .01) \), and more satisfaction with the demands placed upon their instrument group \( (r = .536, \alpha = .01) \).

Respondents who reported having “a careful and considerate leader” \( (\alpha = .8827) \) seemed more motivated \( (r = .390, \alpha = .01) \) and felt less excluded in the work place \( (r = -.412, \alpha = .01) \) than other respondents. This construct also correlated with “a dedicated and competent leader” \( (r = .748, \alpha = .01) \), but neither of the two above mentioned constructs correlated significantly with “work pride”.

The construct “job-family conflict” \( (\alpha = .8993) \) was the only one of the nine constructs that correlated significantly with the prevalence of musculoskeletal ailments, but the construct did not correlate with any of the other constructs. These respondents also considered their health to be somewhat poorer than other respondents \( (r = -.350, \alpha = .01) \).

Amongst results that need further investigations is the result that indicates that the experience of having “careful and considerate colleagues” \( (\alpha = .8626) \) seems to decline with time of service in the orchestra \( (r = -.395, \alpha = .01) \). The same could be seen with the construct called “proactive colleague” \( (\alpha = .8585) \) after Senge (1994). The longer the time served in the orchestra, the less the respondents felt that they could have any influence on the work place \( (r = -.372, \alpha = .01) \). This was also evident in regard to age and the experience of being “involved” \( (\alpha = .8642) \) in central issues concerning the orchestra’s plans and decisions for the future. Older musicians felt more left out than their younger colleagues \( (r = -.368, \alpha = .01) \) and this becomes a concern when there also seemed to be a correlation between degree of involvement and the perceiving of slander behind one’s back \( (r = -.517, \alpha = .01) \).

Discussion
Based on the results we propose the following model for the further investigations of the psychosocial environment in the orchestra:
The figure is meant to illustrate the potential dilemma of having outstanding and occupationally proud colleagues in an orchestra. On the one hand they motivate their colleagues and make them play better, but there seems to be no correlation between work pride and the experience of an including and rewarding collegial spirit. There is, however, a correlation between work pride and the feeling of having a demanding and exhausting job. Since the role of group leader is exclusively based on musical qualities, this might ultimately place serious demands upon either the orchestra’s strategies for leader development and support, or the selection criteria for the group leader role. On the other hand it might also place perfectibility demands upon the work culture in the orchestra outside the podium.

The figure does not address the problems with what seems to be an exclusion of senior colleagues in the orchestra, and this needs to be investigated further. There are no results in the data material that indicate that competence diminishes over time in the orchestra or with age for that matter, but these workers still seem to experience gradually being left out.

Conclusion

A symphonic orchestra is a challenging and complex work environment. From an outsider’s point of view, the conductor appears to be playing one highly sophisticated instrument where no one is to stand out unless specifically asked to do so, such as solo play areas in the partiture/score. The internal life of the orchestra is, however, not always in harmony. On the one hand one could claim that the orchestra depends on one or more excellent musicians that serve as motivators for the others musicians, but whether these individuals are able to contribute to, and be included in, the collegiate spirit also outside the podium is a whole different issue. In this profession the individual performance is very transparent, but the strict rules on the podium for how communication is supposed to take place make it more difficult to develop true collegiate fellowship.

The degree to which social relations and social competence are to be seen as an important factor in the development of a symphonic orchestra needs to be further investigated before launching the nationwide survey. We have identified some central issues, but there are still too many unanswered questions before we can say we can form a productive understanding of some of the dynamics within a symphonic orchestra. The study is therefore still to be considered under development.

References


Introduction

Currently, work-related violence is one of the most important threats to the psychosocial health and the safety of employees. According to the British Crime Survey (BCS) (Budd, 2001), there were almost 1.3 million incidents of physical assaults and threats of violence at work in England and Wales in 1999. The total number of incidents is estimated to have increased by 5% since 1997. However, the actual number of incidents or threats is probably much greater than this, as there is likely to be a good deal of under-reporting. Physical assaults are probably the most widely reported incidents of violence. However, non-physical or psychological forms of violence, for example, verbal abuse, are also a concern (Chappell and Di Martino, 2000).

There is some debate within the literature about what constitutes work-related violence. It is generally agreed that there are at least three types of violence, defined according to the relationship between the perpetrator and the organisation:

- Type I violence, where the perpetrator has no relationship to the organisation,
- Type II violence, where the perpetrator is a client or customer of the organisation, and
- Type III violence, employee on employee violence [bullying].

However, other authors argue that further types exist. The prevention strategy employed by an organisation may vary depending on what type of violence is believed to be a risk. The Health and Safety Executive (HSE) defines work-related violence as: ‘Any incident in which a person is abused, threatened or assaulted in circumstances relating to their work’ (INDG69rev). This can include verbal abuse or threats as well as physical attacks.

Work-related violence has serious consequences for employees and for the business they work for. For employees violence can cause pain, distress and even disability or death. Physical attacks are obviously dangerous but serious or persistent verbal abuse can damage employees’ health through anxiety and stress. For their employers this can represent a real financial cost – through low staff morale and high staff turnover. This in turn can affect the confidence of a business and its profitability. Further costs may arise from expensive insurance premiums and compensation payments.

Whilst it is recognised that work-related violence is the result of a complex interaction between factors such as the perpetrator, victim, the organisation and environmental context (e.g., Standing & Nicolini, 1997, Chappell & Di Martino, 2000), certain job features and particular occupations are associated with increased risk. One such feature is working alone. Lone working is becoming increasingly common and includes those who work alone at a fixed base (e.g., in a small shop), those who work on their own away from a fixed base (e.g., community care workers) and home workers. HSE defines a lone worker as: ‘Someone who works by themselves without close or direct supervision’ (INDG73rev). As well as those who work alone for the majority of their working time, there are a greater number of people who work alone part of the time (Chappell & Di Martino, 2000). Lone work does not automatically imply a higher risk of violence, but it is generally understood that working alone does increase the vulnerability of workers. Moreover, this vulnerability will depend on the type of situation in which the lone work is being carried out.
The Health and Safety Executive recognises that work-related violence is a major risk to employees and commissioned work to improve understanding of violence to lone workers and its prevention and management.

Method

Objectives
- To develop a set of case studies to illustrate how the risk of violence to lone workers can be prevented and managed. These case studies will then be shared with employers and the self-employed.
- These case studies to represent a range of occupations with a higher risk of violence (based on data from the British Crime Survey (BCS)), and include companies of all sizes, from self-employed to large organisations, across England, Scotland and Wales.

Design
- Case study methodology provides the rich contextual data that organisations need to help manage violence in their own workplace. The aim of the work was not to provide a representative survey of violence management in the UK, rather to communicate ideas that could help organisations to manage violence. Case studies are an ideal way of disseminating this kind of knowledge.
- We collected data for the case studies using questionnaires and semi-structured interviews. The former enabled us to collect basic information about each organisation’s violence risks, the preventative measures they have in place and their costs and benefits, whilst the latter allowed us to explore these issues in greater detail. We supplemented the interview and questionnaire data with other information such as organisational reports and policies, photographs and newspaper clippings.

Procedure
We targeted recruitment in order to find suitable participants for the case studies. We used the British Crime Survey to identify occupational sectors with above average risk of violence and then used a variety of sources including trade associations and public bodies to recruit study participants.

We approached over 400 organisations across the different industry sectors and in different sized organisations. We received around 50 positive responses and from these we selected 20 organisations to be the focus of our case studies. We selected organisations that appeared, from their responses, to represent different occupations, work activities and sizes of businesses, as well as those that appeared to have implemented measures that they felt were successful.

We used a detailed questionnaire covering issues such as key violence risks, examples of work-related violence experienced in that organisation, successful anti-violence measures and cost effectiveness information. This was sent to the selected organisations prior to interviews. We then visited the organisations and conducted semi-structured interviews to explore the issues in more detail. We also collected photographs to contextualise and add interest to the case study.

The qualitative data were summarised in case study format. As HSE required participating organisations to be identified, the case studies were sent to organisations for them to verify.

Results
We produced a set of 19 case studies. They covered a diverse range of occupations, (including taxi drivers, the police and midwives), and sizes (from the self-employed to large multi-national companies). Whilst each case study can be read as a ‘stand alone’ document, analysing the whole data set for overarching themes allows us to draw some general conclusions.

Violence risks
The case study volunteers perceived that certain features of their job increased the risk of violence. They considered they were at greater risk when clients or customers were alcohol or drug users, when they worked
in particular geographical areas and when work was being conducted late at night or early in the morning. These are similar to risk factors identified in the wider violence literature (Standing & Nicolini, 1997). For some organisations where the lone worker held a position of power or authority (e.g., the police), this power relationship was seen to increase the risk of violence.

Consequences of violence

Work-related violence was seen to affect the individual and consequently, organisational performance. For example, organisations believed individuals could experience stress, anxiety, fear and depression, stress-related health problems, low morale and loss of self-confidence and physical harm and injury. Consequent impacts on the organisation included staff retention and recruitment problems, sickness absence and low productivity.

Successful measures

We categorised the violence prevention and management measures into
1) training and information,
2) work environment and equipment, and
3) job design.

Of the three categories, measures involving training and information were the most common. The key training messages highlighted in the case studies included: avoid a situation if you feel at risk, use conflict resolution or defusing techniques, maintain awareness, and leave the situation if you feel threatened. Many organisations stressed the need for employees to be aware of how clients, customers or the public may perceive them. Organisations were clearly aware that employee behaviour could act as a trigger for aggression, especially if behaviour is perceived to be malevolent or unfair to the client as highlighted by Lawrence & Leather (1999). All organisations found that conducting risk assessments was essential. Communication was also important. Sharing information within the organisation about potentially violent customers or clients appeared to be helpful, as was discussing lone workers’ experiences of and ideas about violence. Letting staff know where lone workers are was also important. The use of work diaries and information boards to show the location of lone workers during the day was seen as useful for many. One key factor was that in many organisations, violence prevention measures had the full commitment and support of senior management. Organisations felt that it was important for all staff to know this as it encouraged employees to use and have confidence in the lone workers systems and measures.

Successful work equipment and environment measures included the use of mobile phones or other communication devices. Lone workers used these devices to call for help if needed and to let others know where and how the lone worker was. Personal alarms were also popular and helped staff to feel more confident about their safety. Panic alarms in buildings and CCTV were used in some organisations. However, the environment in which lone working is carried out will determine how and whether it can be modified or designed to help prevent incidents of violence.

Modifications were made to the design of the job in most organisations. Some organisations sent two people to carry out a job if there was thought to be a possible risk of violence or if the employee had particular concerns. Lone workers were also encouraged to regularly assess the situation they were in and the risks to which they were being exposed. Some organisations applied strict recruitment criteria to ensure that only those who were highly suited to lone working were selected for the job. For some, the organisation, as a last resort, can withdraw their service, implement sanctions or threaten prosecution if their lone workers experience violence or abuse.

We also asked whether there were any factors which reduced the effectiveness of measures as we thought this would be useful information for readers. The main difficulty that was highlighted was reliance on individual action. Some measures rely on the individual to do something, for example, to tell someone where they are or activate an alarm. This means that human error or neglect to do so can make even the most reliable system occasionally fallible.

There were several perceived benefits from implementing these measures: staff felt safer, supported and valued by their organisation and more confident about dealing with violence. Some organisations believed that the measures had resulted in a reduction in reported violent incidents or, in some cases, a complete absence of physical work-related violence. Some also believed that customers and clients experienced better
service from the organisation as a result of preventative measures and there were fewer problems with staff turnover.

Most organisations felt that cost effectiveness of the measures was a difficult area to quantify. This is mirrored in the violence literature by the lack of sound evaluation studies (Peek-Asa et al, 2001). However, organisations were able to formulate views on this issue, feeling in general that the benefits of the measures outweighed their costs. They also noted that a non-confrontational, polite approach costs nothing and that systems or equipment used in the management of violence can often be used for other business purposes.

Conclusions

We were able to find and develop a set of case studies that demonstrate a range of successful measures that real organisations use to prevent and manage work-related violence to lone working staff. These will be freely available on the HSE website (www.hse.gov.uk/violence/experience.htm) to encourage as wide a dissemination as possible. This research also highlighted that more needs to be done to encourage organisations to evaluate the effectiveness of their measures.

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Women Professionals in the IT-Sector: the mutual shaping of work practices and work organisation.

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Introduction
There is a rich debate on the gendering of organisations. Empirical research focuses on questions of women’s access and professional development, from the perspective of orientations, personal identities, work styles, and the experience of male dominance. Few of these studies look closely into the more detailed aspects of women’s work practices and how these are shaped by the characteristics of their work environment and by more general professional commitments and competencies in their field. This is the topic of this paper. It discusses the relationships between work organisation, work practice and gender in the IT-sector. The women’s work environments in the IT-sector with its highly demanding character, its flexibility, its hectic atmosphere is analysed – the character and organisation of the work, the culture, and the position of women. Profiles of women are presented in relation to/within the context of what are the crucial aspects of their work environment, trying to understand the mutual shaping of work practices and identities and the context of work. Davies (1996) argues that professions exhibit a ‘gendered substructure’ in the same way as work organisations do. Acker (1992) introduced this notion to describe the dynamic of gender relations in organisations, as something that mirrors the gender relations within society but at the same time is in flux, changing with the mix of people, skills, and tasks. Adams and Tancred in their study of women architects argue: “It is in this sense that we talk of the profession ‘designing’ women and of women ‘designing’ the profession, for with the significant entry of women into architecture (and other professions), the underlying and hidden gendered substructure will be modified” (2000, p. 8).

Method
The paper focuses on results of qualitative studies done in different fields of the IT-sector, ‘following’ women in their everyday work. The studies are based on rich material of ethnographic studies and biographical interviews (Birbaumer & Wagner 2003; Birbaumer, Wagner & Tolar 2003). We have done several case studies in multimedia companies, software companies and companies in the e-publishing sector. All case studies consist of several sessions, observing women professionals in their everyday work. In addition we conducted biographical interviews. Some of the interviewees were involved in the case studies, some of them came from other companies. So, we were able to analyse a wide range of working conditions, work practices, women’s competencies and strategies in different fields of the IT-sector. Due to the restrictions of space there will be one multimedia company presented as an example and one profile of a woman working as a project manager in this company.

Multimedia – an example
Multimedia products are increasingly complex due to the tendency towards integrated web sites with informational and transactional character, interactive installations, and media integration. There is the need to invent ever new products for varying purposes (from consulting to entertainment) and to develop visual languages and interaction possibilities that are adequate for these purposes. A recent Swedish study (Sandberg/Augustsson 2002) characterizes multimedia companies as typically young, small, with a staff of five to 16, few of them with regular contracts, a high turnover, and few women (about one fifth, less in programming). Two thirds of the companies in this study outsource part of their work, and few care to systematically upgrade their staff’s competencies.

Mediaform – the ‘magical place’
Mediaform, the company we studied, is no exception, however it is larger. At its head are three male CEO, two of them the company’s founders, and recently departments have been installed. It is design oriented, highly successful with some internationally acclaimed projects in the area of art and culture, and – like most of its competitors - under considerable pressure. There is the necessity to develop a distinct profile on the one hand, to select the right kind of partner firms for mergers and other forms of cooperation on the other hand. Products need to go on-line quickly and, due to cost and time constraints, conditions are tough.
Toughness is not only required when dealing with competitors and formulating strategies, it translates into the rhythm of everyday work at Mediaform. Work is often enacted as ‘drama’. The hectic and overexcited atmosphere is in contrast to the necessity to give each other support, to be available for varying requests, to maintain a continuous dialogue with team members or to carry persuasion for one’s ideas – things that are important in order to be able to cope with complex requirements under pressure.

Networking is an important aspect of people’s everyday work. Networks range from cooperations with external specialists (video, filmmaking, music) to contracting out specific programming/technical tasks or maintenance work, and building strategic partnerships with other companies. These networks need to be built, maintained, and further developed. There is hardly any management support for these activities at Mediaform, they are taken for granted.

There is a sometimes sharp contrast between the relative banality of the products with which the company earns money – most of them ordinary websites - and its rather boastful and fancy designer image. The language in which the company presents itself - in publications, its homepage, its premises, in meetings – is full of metaphors and self-aggrandizing images, stimulating the fantasy to be/to achieve something special, such as for example the characterization of Mediaform as a ‘magical place’: “Philosophies overlap like lasagna with the hope that through creative coincidence a perfect dinner will be served, hot & delicious”.

Everyday work practice almost always falls short of this image.

Burnout is a widespread phenomenon in this area of work, and also in this company, with its roots in “insufficient staff and resources, changes in technology and/or business environment, unrealistic deadlines and target dates, organizational restructuring, expectations and needs of users, unclear objectives, problems with managers ...” (Moore 2000).

Women are few in leading positions, in design, and in programming/technical work. We followed one leading woman through her work day.

Profile: The project manager

MM is 35. She comes from India. She has a BA in Economics & Liberal Arts, graduate education and job experience in advertising and marketing, took additional training as a project manager and is currently working on an MBA in Technology. She had been working in the company as a project manager (the only one with significant experience in PM) for a year. MM is a highly competent project manager with a strong view on issues of quality and professional work. While participating in the case study she was already determined to leave the company, saying:

They now insist on promoting me, but I don’t want this, this is not my concept of life, I want to be PM and not dig a sick company out of the dirt for them ... a (woman) client yesterday told me: ‘If they are going to loose you now ...’.

Interestingly, management hires her as a PM consultant once she has left the company – a late recognition of her skills and commitment.

For MM maintaining good relationships with colleagues and clients is essential. She loves the density of interactions at work as well as the kind of loose and informal contacts that happen after a business dinner or at presentation meetings; but she also needs time for herself. In her scarce free time she gives Yoga classes.

Project management requires dense communications within the team and with clients, it means to fight for resources, to schedule and re-schedule project activities, to set priorities, to coach younger staff, to continuously monitor and readjust the work process, and to finally evaluate the success of a project.

Coaching is a central aspect of M.’s work; she defines herself as an ‘enabler’:

This is one of my main tasks – you try to maintain an overview for them. I daily check everything with my collaborators and often I have to wait until the evening before I can check my own priorities. … Just, I don’t interfere with my projects, I am an enabler. I try to make life easier for them, to take anxieties away from them.

In her interactions with others giving appraisal, feedback, encouragement, protection – ‘enabling’ – dominate. Here is a collection of typical remarks:

Super, this was excellent! — How can we support you? — I want to share these experiences with her so that she can do better in her next project. — He is excellent, so reliable and precise, does not give up, all good qualities and I worry – he belongs to the type of people who work very hard and then get frustrated and bury themselves ....

She often gives explicit advice to the younger, less experienced people around her about how to handle management, team members, and clients. Here she insists on values such as to strive for a high level of precision and correctness in one’s own work, to be able to execute a difficult task with ‘tact’, and to always think about how to create incentives for people when delegating work to them.

MM frequently complains that she is not able to meet her standards of quality in a constraining, hectic environment with a premium on speed. This, for example, is a list of things that came up in a project closure session, in which she talked about things that went wrong: not involving the programmer in writing the
Storyboard; failing to write up a proper requirements specification; the product had to go on-line without testing, bug reporting was not properly organized. Interestingly, management hires her as a PM consultant once she has left the company – a late recognition of her skills and commitment.

Yet, MM is perceived (and appreciated) as tough, in the words of one of the CEOs:

MM is tough in a way – I don’t have any men like her here. Tough means that she simply ignores some of the rules that exist in the companies were I worked. This also caused some problems, for example with X – that the client found it hard to cope with her aggressiveness – aggressive, this does not mean that I could blame her for anything ...

MM experiences the dominant culture of boastful, sometimes aggressive languaging as repelling and ridiculous. M’s self definition is in contrast to “those small men” who seek to dominate, while she “enables”. Her professionalism is misinterpreted as “toughness” – by men who tend to describe their work and their competitors in aggressive metaphors.

In MM’s biography two life themes stand out – ‘connecting two worlds’ and ‘leaving traces’. Coming from India she recurrently plans projects around the ‘connecting two worlds’ theme, wondering sometimes if she would manage to live in India again as a single woman with a European life style. In her work she seeks to combine a philosophy shaped by the notion of ‘having time’ and ‘looking inward’ with a more European way of running a business. This may be one of the sources of her personal and intellectual independence that makes her seem tough. The philosophy has not only influenced her life style but also her approach to project management - the urge to step back, to reflect upon her practice. ‘Leaving traces’ mirrors her ambition to bring something to a successful end but also to be visible and imprint her ideas on an organisation and then leave, rather than to gain power or a higher income. She comments this as

The best way of keeping me is to give me a task which I cannot do. Because, I was married to a man for eight years and determined that this marriage works out, but it didn’t. But I with my stubbornness … Yes, but as soon as it works I am most likely off, or as soon as I think that I have extracted the wisdom or the thing that helps me take a step forward, then I leave, since it gets boring.

MM mentions several decisive turning points in her life, among them her broken marriage when after eight years of homemaking she re-entered a successful career, seemingly without difficulties. Another crucial event took place when she was about to leave Mediaform, discovering that she was too busy and strained (and finally ill) to take notice of the death of a close friend and of the pregnancy of another friend:

These were two milestones for me. Then I thought for myself, now woman, there is more to life than extreme work and there is more at stake than your own life. Simply, someone dies and someone expects a baby and you walk by. And this was my decision and this is why I took time off before starting at F (the new employer)...

Results

Multimedia production is a design discipline. The product of work is a result of multidisciplinary cooperation, inside design teams as well as with external specialists. It reflects an intricate mix of knowledge. Challenging work, a mixture of direct and peer control as well as a focus on immediately useful skills are typical of Mediaform.

Gender is an explicit subtext in the case of Mediaform, a more subtle issue that can only be deciphered by looking more closely into the position of women and their positioning themselves in other cases. The multimedia company has its overtly aggressive and also self-aggrandizing aspects. There is an ambivalence about tough and capable women, respect mixed with fear, as can be seen from the remark about MM’s ‘toughness’.

All female employees describe the work culture at Mediaform as dominated by classical male characteristics such as

... acting tough and dominant or so, what is seen as masculine, partly choleric, which in women is perceived as hysterical, in men this is just hard-headed … (ME).

Positioning the women – the women positioning themselves

All the work environments we have investigated are open and ‘in formation’, in their particular ways. If there is a gendered substructure, it is interwoven with professional commitments, which are more generally shared by members of these communities, and it is shifting, causing trouble in some situations and supporting the women in others. The concept of ambivalence captures some of the subtext of gender in how the women act (as opposed to their male colleagues). It describes the combination of women’s pleasure with the content of their work and pride in the competence that goes with it, with distance from men who define their life around it (Wagner 1994). Traces of this ambivalence are also visible in how the women we observed relate to the requirements for acting successfully in their field.

Dynamism: Working successfully in such environments requires dynamism - the ability to deal with unusual requirements, to get to work on prestigious projects, changing constellations of cooperation, speed – getting
things out quickly. At the same time, good work is associated with high quality standards, reliable time
planning, and stable, trustful work relationships. Dynamism practised at the expense of quality standards and
good work relationships is one of the reasons why MM leaves Mediaform. MM is highly critical of the way
people are treated by the company’s CEOs. Comments such as
they neglected him, they have no idea how to treat people — here everything is chaos — this is how you chase people out,
you should not be too excited in the beginning, he is a new person, and put him down afterwards —
are frequent.

Organization building: In IT-companies much effort has to be spent on organization building. Here the
division of labour is more clearly gendered. The women of Mediaform contribute to organizing and managing
the work inside, acting as house-keepers and teachers, addressing and mending conflicts, communicating their
concerns, and often taking over unpaid responsibilities, while the ‘dynamic’ men are more focused on
managing issues of power and dependencies with the outside world - project acquisition, negotiating
contracts, presenting, initiating strategic partnerships. At the same time, the women are successful in shaping
the internal organization. It takes MM to leave Mediaform before she succeeds in finally convincing
management to introduce project management methods. However, she is respected and influential as a person.

Biography and identity
Reading the women’s biographies helps clarify some aspects of their position in the companies and the way
they position themselves.

Unusual careers: Some of the women are on unusual career paths. MM has made a transition, first from India
to Austria, then from being a house-wife in the countryside to being a highly successful project manager in a
multimedia company. ‘Patchwork career patterns’ such as these seem to be typical of the multimedia industry
with its lack of predefined paths and its openness to a diversity of skills. Consequently, the women define
their identity less through a special field of expertise or content of work than through the possibility to realize
their own life themes in different projects. The companies clearly benefit from these women’s rich and varied
backgrounds and skills.

Connecting: This is a strong and related theme in the biographies, with different facets. It is explicit in MM
who is bridging different cultures. One of the challenges she has set for herself is to combine a more
European way of running a business with ‘having time’ and ‘looking inward’. She leaves Mediaform since the
company, with its emphasis on speed and neglect of basic qualities she cares for, does not leave room for
reflection and for the continuous assessment of work and of personal relationships at work.

Being visible/having an impact: MM wants “to leave traces”, as she formulates it. She does not only want to
see success in her work but to make it visible, get known for achievements, make herself a name in the
business.

Concluding remarks
We have collected rich material about women in the IT-sector, their work environment, work practices, and
their biographies. The analytical eye we applied highlights the diversity of women’s backgrounds, life themes,
professional environments, and strategies, trying at the same time to identify some common themes in what
we read as gendered (sub)texts; among them: The women’s ambivalence towards ‘dynamism’; their
substantial contributions to organization building; their unusual career paths and mix of skills, from which the
work organizations benefit; their creativity being grounded in the thrive and the ability to forge connections;
their ambition to be visible and make an impact. It is less that these women feel different or even an outsider
than that they (at least some of them) want to make a difference in the organizations in which they work.

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Occupational Mental Health: An Analysis of Human Resources Management Practices

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Introduction

Facing the increasing individual and organisational costs of occupational stress, numerous organisations are trying to tackle the problem either by actions aiming to help the individual (secondary and tertiary interventions) or by intervening on various aspects of the organisation (primary interventions). However, as Clarke and Cooper (2000) argue, what often lacks is a systematic and detailed procedure to assess, analyse and manage workplace stress. In the same perspective, Cox (1993) proposes that psychosocial hazards can be managed in a similar way as physical hazards using similar risk assessment procedures. Indeed, whereas the prevention of harms related to physical hazards is generally based on a systematic and continuous approach evaluating the risks and implementing corrective solutions, organisations attempting to prevent occupational stress are often left without a similar plan of action. Consequently, the money and energies invested in prevention have often been deceiving since they have not produced the expected results. As underlined by Cox and his colleagues (2000), in order to tackle efficiently work-related stress problems, it is crucial to first identify hazards and associated risks, implement the appropriate strategies and then, monitor their effectiveness.

Even though there is no universally accepted definition of risk, many authors suggest that the term refer to a combination of probability or frequency of occurrence of a hazard and the impact of this hazard (Clarke and Cooper, 2000, Singleton and Jovden, 1987; Rowe, 1990, Warner, 1992). As Clarke and Cooper suggest, the concept of risk includes two principal elements: the probability that an event has negative consequences and the severity of these consequences. Cox and Griffiths (1996) point out that some organisations have either (a) measured different types of consequences (e.g. absenteeism statistics, mental health measures) and then inferred evidence of occupational stressors in case of high level of absenteeism or poor mental health or (b) identified occupational hazards and then inferred impact of those work hazards as consequences. However, identifying occupational hazards is not sufficient in the assessment of risk since evidence of associated harm is also required. According to Clarke and Cooper (2000), the product of the probability or frequency at which a group of employees is exposed to a hazard and the severity of the consequences of this exposition constitutes a more robust estimate of the risk level. By determining to which work characteristics employees are the most exposed, and which are most associated with mental health variables, deciders can take more judicious decisions in order to reduce stressful work conditions or their consequences.

Using the framework of risk management, this paper sets out the results of the first phase of a research study which aims at (a) assessing the extent of the problem of occupational mental health as well as the organisational factors perceived by employees as risks to their mental health, and (b) assessing prevention and human resources management activities in order to inventory the tools being used to prevent and control occupational stressors. More precisely, activities of prevention at the primary, secondary and tertiary levels are documented. As mentioned by Kelly, Sprigg and Sreenivasan (1998), some organisations are doing things about stress that can be considered as primary prevention activities without considering them as such. Indeed, good management practices like team reunions, workload evaluations, work design evaluation or family-friendly work schedules can be viewed as primary stress management.

Method

The data were collected from four organisations during 2001-2002, using questionnaires, semi-structured interviews, and focused interviews for the purposes of validation: a university, a multinational firm
in the metallurgic industry, an hospital and a tree nursery. A total of 3 142 people answered the questionnaire (overall response rate = 35%).

The questionnaire measured a variety of psychosocial (e.g. workload, roles, relationships, rewards, skill discretion, decision-latitude, work-family conflicts) and physical (e.g. security problems, exposure to toxic agents, meteorological conditions) work hazards. Diverse psychological consequences were also assessed (i.e., psychological distress, emotional-exhaustion, psychosomatic complaints). In order to produce results that are job-specific, each analysis was done for every occupational status for each organisation separately. All occupations were considered (e.g. professorial, clerical, technical, professional, managerial, operations).

To calculate the exposition level for each risk-factor, scores from each scale were standardized on a 0 to 100 scale. Then, the association between each factor and mental health was calculated with a non-linear multiple regression between each exposition factor score and mental health consequences scores. The non-adjusted R² coefficient from each regression represented the consequences level. The product of each exposition level by its consequences level constitute the risk level. The risk levels are then ranked decreasingly and divided into three equal sets, representing high, moderate and low risk levels for the mental health of a population of worker. This procedure allows identification and comparison of risk factors for a given work category, as well as comparisons between occupations of an organisation. However, it does not imply that a specific factor constitutes an absolute risk for a work category, since there is no organisational norms available for this comparison.

In the perspective of inventorying the prevention activities of each organisations, 56 persons were interviewed. The human resources management and work practices associated with these factors were documented through interviews conducted with managers, employees and the main occupational health and safety officers of the organisations.

**Results**

As shown in Table 1, data were gathered from four organisations. Level of absenteeism related to psychological reasons were relatively high in all four, Table 1 resumes the characteristics of the four participating organisations.

<table>
<thead>
<tr>
<th>Organisations</th>
<th>Number of employees</th>
<th>Unionized</th>
<th>Location</th>
<th>Sex Repartition (M/F)</th>
<th>Absenteeism for psychological reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>University</td>
<td>3 365</td>
<td>Yes</td>
<td>Urban</td>
<td>56% / 44%</td>
<td>39%</td>
</tr>
<tr>
<td>Firm in the metallurgy industry</td>
<td>3 461</td>
<td>Yes</td>
<td>Region</td>
<td>94% / 6%</td>
<td>20-25%</td>
</tr>
<tr>
<td>Hospital centre</td>
<td>4 283</td>
<td>Yes</td>
<td>Urban</td>
<td>20% / 80%</td>
<td>39%</td>
</tr>
<tr>
<td>Tree nursery</td>
<td>80</td>
<td>Yes</td>
<td>Region</td>
<td>20% / 80%</td>
<td>Not available</td>
</tr>
</tbody>
</table>

A high level of psychological distress was found in 43.4 % of employees across participating organisations, compared to 20% of the Quebec population in 1998. For each organisation, the prevalence of

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3 In the perspective of a risk management approach (i.e., actions following assessment), the participating organisations could not be selected solely on a random basis, since top management and union support were necessary in order to insure that actions would be taken following the assessment. This methodological consideration implies that the participating organisations could not be selected randomly.
significant mental health distress was calculated for each job category and each organisational risk factor was measured. The risk levels were then ranked by decreasing order and divided into three equal sets in order to identify the high, moderate and low risk factors. As an example, Table 2 illustrates the results obtained for university professors. Similar tables were produced for each job category.

<table>
<thead>
<tr>
<th>Risk category</th>
<th>Risk factors – professors (n = 384 respondents)</th>
<th>Exposure (0 to 100)</th>
<th>Consequence (0 to 1)</th>
<th>Risk (E X C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Quantitative work overload</td>
<td>65,77</td>
<td>0,30</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Pressures to publish / find funds</td>
<td>60,09</td>
<td>0,25</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Family-work conflict</td>
<td>63,74</td>
<td>0,22</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Work role conflict</td>
<td>49,22</td>
<td>0,20</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Low recognition by colleagues</td>
<td>34,73</td>
<td>0,22</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Communication / lack of information</td>
<td>57,89</td>
<td>0,12</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Competitive climate</td>
<td>46,24</td>
<td>0,14</td>
<td>7</td>
</tr>
<tr>
<td>Moderate</td>
<td>Role ambiguity</td>
<td>25,98</td>
<td>0,23</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Qualitative overload</td>
<td>25,67</td>
<td>0,21</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Participation to decision-making (local level)</td>
<td>40,54</td>
<td>0,13</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Relationships with colleagues</td>
<td>39,90</td>
<td>0,13</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Relationships with superior</td>
<td>38,46</td>
<td>0,14</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Participation to decision-making (local level)</td>
<td>54,80</td>
<td>0,09</td>
<td>5</td>
</tr>
<tr>
<td>Low</td>
<td>Decision latitude</td>
<td>21,55</td>
<td>0,16</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Responsibility for things/people</td>
<td>62,83</td>
<td>0,05</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Job security</td>
<td>36,00</td>
<td>0,09</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Relationships with students</td>
<td>21,91</td>
<td>0,11</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Career opportunities</td>
<td>28,51</td>
<td>0,04</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Skill discretion</td>
<td>9,56</td>
<td>0,01</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 1 illustrates the risk levels associated with each factor, for all work categories of the higher education institution. Risks are divided into three sets – high (black), moderate (grey) and low (in white) – depending on the number applicable for each category.

Figure 1. Risk levels for each job category for the workers of a university.
<table>
<thead>
<tr>
<th>Risk factors in decreasing order of risk level, all work categories</th>
<th>Managers</th>
<th>Professionals</th>
<th>Cleres</th>
<th>Technicians</th>
<th>Operators/blue collar</th>
<th>Professors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressures to publish / find funds</td>
<td>NSP</td>
<td>NSP</td>
<td>NSP</td>
<td>NSP</td>
<td>NSP</td>
<td>NSP</td>
</tr>
<tr>
<td>Quantitative work overload</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships with superior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation to decision-making (organisational level)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation to decision-making (local level)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication / lack of information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work role conflict</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsibility for things/people</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family-work conflict</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low recognition by colleagues</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitive climate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career opportunities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships with colleagues</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Role ambiguity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Job security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Qualitative overload</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>N/A</td>
</tr>
<tr>
<td>Pauvres relations avec les subordonnés</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>N/A</td>
</tr>
<tr>
<td>Skill discretion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decision latitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationships with students</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Relationships with clients</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>N/A</td>
</tr>
<tr>
<td>Problems of security</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
</tr>
</tbody>
</table>

N/A = non applicable, * = insufficient number of respondants.

Overall, when we take into account all occupations for all four organisations, the most significant risk factors affecting mental health were: (a) quantitative overload, (b) little recognition from coworkers and supervisors, (c) poor relations with supervisor, (d) a low level of participation in decisions.

Moreover, it was found that activities implemented to prevent and combat occupational stressors are still in an embryonic state in each organisation studied. Some primary prevention, which is intended to eliminate or control the source of risk factors, was taking place but was not specifically targeting work-stress. An unintended result of the study is that managers became aware that human resource management practices can often have an impact on employees stress levels. Indeed, the study allowed the inventory of numerous human resource management practices that were no longer used by the organisations, or were not systematically used by the staff and managers. Many departments of each organisation had undergone organisational changes (e.g., departures, personnel reductions, fusions) in the recent years. As a result, tasks, roles and functions have changed, but traditional human resources management practices have not always followed these changes. For example, many reported having very few team reunions, resulting in communication problems, poorly defined roles and work conflicts with colleagues. Many stated feeling unrecognized for their efforts and contribution to their organisations and blamed the organisational culture focussed on excellence and performance instead. The organisations studied seems to disposed of very few means to recognise their employees. For example, annual evaluation of the employee, which can be used to recognize efforts and good work, was a practice generally abandoned or rarely used because the superiors lacked time to do it. The heavy workload of managers and their level of psychological distress that is as high as the staff can also explain the poor relationships between managers and the employees, as well as the lack of communication and information reported by workers.
As for other types of prevention, the four organisations held secondary prevention activities (e.g., talks, conferences, training), though differences were found in their form, content and frequency. Tertiary prevention was often managed by the occupational health department or through the employee assistance program (EAP) or particular return to work conditions.

Conclusion

Primary prevention of stress at work is emerging in the participating organisations, and a willingness from management teams and unions to take action is evident. A second research study is currently running in order to document and evaluate the efficacy of actions implemented to control or reduce workplace stressors. Those actions vary across organisations, but usually start by pilot-projects of work reorganisation in voluntary departments and units. In order to ensure long term actions, one organisation has a permanent comity on psychological health. This comity has an action plan including the elaboration of an organisational politic on psychological health, training for managers as well as secondary prevention activities. In all organisations, the actions are supported by top management as well as by all unions concerned.

In conclusion, the increase in the rate of absenteeism and psychological distress is of urgent concern to our societies, organisations and individuals. Improving prevention is a complex process and it should be undertaken with care to insure that one day mental health, or more generally human resources, will become just as important to management decision-making as are finance, technology or market.

References


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Does sense of coherence and negative affectivity influence the work stressor – strain – relationship?

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Technical University München, Germany

Introduction

It is well known that personality characteristics influence the transformation of stressors to individual strain reactions (for an overview see Summer, 2003). However, with the salutogenetic model Antonovsky (1987) introduced a theory of health, stress, and illness that denotes the personality characteristic “sense of coherence” as the core variable within the stress process and for preventing illness. SOC consists of three components: (1) comprehensibility, (2) manageability, and (3) meaningfulness. Comprehensibility refers to the extent to which an individual perceives internal or external stimuli in a clear, ordered, and structured way (Antonovsky, 1987). Manageability describes a generalized expectancy of the individual about the availability of adequate resources to cope with a broad variety of demands. (3) meaningfulness refers to the extent to which an individual believes that life makes sense and problems are challenges worthy of the investment of activity and energy. According to Antonovsky (1987) individuals with a strong SOC compared to persons with a weak SOC should be more capable of giving sense and structure to stressors and should choose more adequate and effective strategies to cope with these stressors. Positive associations of SOC and variables of psychological and physical health and well-being were identified in several studies. In most studies direct effects of SOC could be identified. Moreover, mediator effects resulted for example in the studies of Feldt, Kinnunen, and Mauno (2000). Empirical evidence for a moderating effect of SOC is much weaker and not as conclusive as results supporting direct and mediating effects (e.g. Albertsen, Nielsen, & Borg, 2001).

Despite these encouraging results the concept of SOC has been seriously criticized. Some empirical findings show evidence for a confounding of SOC with other personality variables like negative affectivity (NA) and neuroticism (e.g. Schmidt-Rathjens, Benz, van Damme, Feldt, & Amelang, 1997). In recent years research on job stress pays much attention to the concept of NA. Most studies on this topic investigate a possible bias effect of NA on the relationship between job stressors and strain. It was argued that NA artificially inflates the correlation between stressors and strain because persons with high NA tend to report a higher level of stressors as well as of strain independently from the objective stressors of their working environment. This leads some authors to claim that NA should be partialed out when correlations between stressors and strain are computed (e.g. Burke, Brief, & George, 1993). However, in a recent article Spector, Zapf, Chen, and Frese (2000) opposed this position. Spector et al. (2000) stated six mechanisms to explain why NA could be related to job stressors and job strain. (1) The perception-mechanism: Individuals with high NA may perceive their job as having high levels of stressors and also experience a high level of strain. (2) The hyper-responsitivity-mechanism: Individuals with high NA may have an exaggerated strain response to stressors. In statistical terms this could lead to a moderating effect of NA on the stressor-strain-relationship. (3) The selection-mechanism: Individuals with high NA work in jobs with a higher level of stressors than people with low NA. (4) The stressor-creation-mechanism: Individuals with high NA create their stressors themselves. (5) The causality-mechanism: A high level of job stressors may tend to increase NA and the level of NA consequently determines the level of negative stress feelings (i.e. strain). This mechanism is empirically indicated by a mediator effect of NA on the stressor-strain-relationship. (6) The mood-mechanism: Spector et al. (2000) suggested that the inter-correlation of NA, stressors and strain is caused by a fourth variable: mood. This variable may have an impact on the report of stressors, strain and NA. From our point of view all six mechanisms proposed by Spector et al. (2000) are also possible explanations for the impact of other personality characteristics on the relationship between job stressors and job strain.

Based upon these mechanisms the main research question of the study was directed to three competing models, which cover five of the six mechanisms for both personality variables SOC and NA; the mood-mechanism was excluded from the study as it cannot be tested in a cross-sectional study.
Model 1: In model 1 (see figure 1) direct effects of work stressors, SOC, and NA are tested. Moreover, interactions of work stressors and the two personality variables are included into the model to obtain estimates for possible moderator effects of the personality variables. Moderating effects do indicate a hyper-responsivity-mechanism.

Model 2: In model 2 (see figure 2) paths from work stressors to strain and to the personality variables as well as from the personality variables to strain are modeled with a certain direction. The paths from work stressors to strain via SOC and NA do provide estimates of mediating effects of the two personality characteristics. Thus the model represents a causality-mechanism.

Model 3: In model 3 (see figure 3) the personality variables influence work stressors and strain. As the paths go from the personality characteristics to work stressors and not vice versa (see model 2) model 3 can be used to test possible perception-mechanisms, selection-mechanisms, or stressor-creation-mechanisms. To distinguish between these three mechanisms objective information about characteristics of the job itself have to be considered additionally. If a perception-mechanism causes the covariance between SOC and work stressors, one could expect that personality shows an impact on work stressors and that both variables are independent of the objective job position. In this case the measure of work stressors depends largely on characteristics of the individual (like SOC or NA) and is less likely determined by conditions connected to job positions. In contrast: If a selection-mechanism and/or a stressor-creation-mechanism is involved, personality characteristics and work stressors should not be independent of objective job characteristics indicated for example by job position.

Methods

Sample
Data were collected in two German hospitals. Participants were 205 hospital employees with different job positions: 160 nurses (78.4%), 20 physicians (9.8%) and 24 medical laboratory technicians (11.8%). For one person no information about the position was available. In hospital 1 only nurses took part in the study, whereas in hospital 2 subjects from all three occupational groups participated. 78.9% of the participants were female; the mean age was 34 years, 1 month and average job tenure 11 years, 5 months.

Measures
Work stressors were measured by means of the Work Load-Screening TAA-KH-S. The Work Load-Screening TAA-KH-S is a 79-item short version of parts of the Work Analysis Instrument for Hospitals-Self Report Version (TAA-KH-S, Büssing & Glaser, 2002), a fully standardized questionnaire based on the model of psychological work load within the German action regulation theory. The measured job characteristics include organizational and social stressors, regulation problems by different kinds of impediments and interruptions and outcomes of regulation problems. Internal consistency (Cronbach's Alpha) of the scales ranges from .62. to .91. As an indicator of overall work stressors an aggregated index from all 18 forms of stressors was computed. Sense of coherence was measured by the 13-item short form of the Sense of Coherence Questionnaire (Antonovsky, 1987) translated by Noack, Bachmann, Oliveri, Kopp, and Udris (1991). Internal consistency in the present sample was $\alpha = .85$. For the measurement of negative affectivity the Negative Affectivity Scale (NAS) by Levin and Stokes (1989) was translated into German by the authors (internal consistency: $\alpha = .87$). Strain was measured by four scales: (1) “Emotional Exhaustion” as part of the German version of the Maslach Burnout Inventory (MBI-D) adapted from Maslach and Jackson (1986) and validated by Büssing and Perrar (1992). (2) A modified version of the scale “Irritation/Strain” by Mohr (1991). (3) and (4) “Mental and physical health” measured by the SF-12 (Bullinger & Kirchberger, 1999). All scales reach a sufficient level of internal consistency in the present sample. Cronbach's alpha ranges from .89 to .90. To receive an indicator for overall strain a factor analysis of the four strain scales was performed and factor values were computed. Data were analyzed by means of structural equation modeling (AMOS 4.0) and ANOVA (SPSS 10.0).

Results
Figures 1, 2 and 3 depict the results for the three models. In model 1 direct effects of work stressors and direct respectively moderating effects of the two personality characteristics SOC and NA were estimated. The fit of the model was very good (GFI $\approx 1$, AGFI $\approx 1$, CFI $\approx 1$, NFI $\approx 1$, RMSEA $\approx 0$). The estimate of the standardized path coefficient from work stressors to strain revealed a significant result ($b = .23$). As expected
SOC and NA are strongly correlated ($r = .61$). Nevertheless, both personality characteristics, SOC and NA, exert specific significant direct effects on strain ($b = .33, b = -.34$). Results also indicate a significant correlation between work stressors and SOC respectively NA ($r = -.34, r = .28$).

However, no significant moderator effect (interaction terms in figure 1) of the personality characteristics could be identified. Therefore, the results do not confirm a hyper-responsivity-mechanism.

Figure 2 shows the result for model 2. In this specified model paths go from work stressors to SOC respectively NA and via the two personality variables to strain. Path coefficients from work stressors to SOC and NA are significant ($b = -.34; b = .28$). The fit of this model is much poorer than the fit of model 1. Especially the AGFI and RMSEA do not reach a satisfying level (AGFI = .907, RMSEA = .094). Thus, results with regard to model 2 do confirm the mediator hypothesis and, hence, the associated causality-mechanism only in a tentative way.

In model 3 (see figure 3) the paths between work stressors and personality characteristics are specified in a different way. Here, the personality variables are supposed to influence work stressors and strain. Therefore, this model makes it possible to investigate perception-, selection- and stressor-creation-mechanisms. For model 3 the fit is much better than for model 2, i.e. all goodness of fit indices reach a satisfying level (GFI = .998, AGFI = .987, CFI $\approx 1$, NFI = .997, RMSEA $\approx 0$). However, only for SOC a significant path coefficient to work stressors results ($b = -.27$) while no significant effect of NA on work stressors could be identified ($b = .11$).

\begin{figure}
\centering
\includegraphics[width=\textwidth]{path_diagram}
\caption{Path diagram and results of the moderator model (model 1)}
\end{figure}
Unfortunately results of model 3 give no direct answer to the question, whether the paths from SOC to overall work stressors and strain represent merely a perception-mechanism or if selection-mechanisms and/or stressor-creation-mechanisms are involved. Therefore, a further analysis was necessary to test if SOC and overall work stressors are independent of objective job characteristics indicated by the different job positions of the subjects. Such an independence can be expected, if only a perception-mechanism led to the results of the path analysis described above. However, ANOVAs with “job position” as independent variable and SOC, NA, and work stressors as dependent variables were performed. Table 2 presents the results of the ANOVAs. Significant effects of job position on SOC and work stressors could be identified. For example, physicians showed a stronger SOC and lower work stressors than nurses. Therefore, SOC and work stressors obviously are not independent of objective job positions. That is, at least part of the variance of work stressors was not caused by individual perceptions as posited with the “perception-mechanism”. At the same time results show that SOC is connected with job positions. Therefore, selection-mechanisms and/or stressor-creation-mechanisms seem also to be involved in the inter-relation of these variables. However, no effect of job position on NA resulted. Also considering the non-significant path from NA to work stressors in model 3 (see figure 3) it becomes clear that neither perception-, nor selection- or stressor-creation-mechanisms of NA can be supported.
Discussion

The result of the present study provided evidence for a substantial impact of sense of coherence (SOC) as well as negative affectivity (NA) on the relationship between work stressors and strain. Although both personality variables are correlated each of them explains - additionally to work stressors - a specific amount of variance in individuals’ strain. However, one should be careful in comparing the level of impact of works stressors, SOC and NA directly. As Cooper and Richardson (1986) pointed out, such comparisons are only valid if the study provides for procedural and distributional equivalence of the involved measures.

Moreover, with regard to the possible mechanisms of how SOC and NA may influence the stressor-strain relationship, the results of the present study support in first line the perception-, selection-, and stressor creation mechanisms. Unfortunately, the analysis of cross-sectional data does not allow a specific and
conclusive distinction between the three mechanisms. Additional analyses by means of ANOVAs revealed that it is very unlikely that the perception-mechanism is the dominating mechanism in model 3. However, a final differentiation between the three mechanisms is only possible in a study based upon longitudinal data.

For SOC causality mechanism was supported only in a tentative way, since the fit of the underlying model was rather poor. Moreover, the results do not support a possible hyper-responsitivity mechanism because no significant moderator effects of SOC and NA could be identified. For interpretation of this result one should concern that interaction terms have a low statistical power and the sample size is not very large, which reduces the probability to identify moderator effects (Aiken & West, 1991).

For future research on the impact of SOC and NA on the stressor-strain relationship it should be fruitful to include variables like appraisal, coping mechanisms and styles into the analysis to receive a more elaborate understanding of the processes causing the interrelations between stressors, personality characteristics, and strain (for more detailed information on this study see Höge & Büssing, in press).

References
The challenges of work in the computer industry – a trade union perspective

E. CHRISTENSEN
Union of Computer Professionals (PROSA), Denmark

Recently the Danish Institute of Occupational Health published a list of occupations in Denmark where the different occupations were rated. Work in the computer industry was placed among the 5 best occupations. There are several positive factors: An interesting job, teamwork, possibility of constantly developing, a high degree of responsibility in the work and a good wage.

In PROSA, we have always known that the industry has some problems. Many members are leaving the trade because of its demands. The focus of the trade union however, was generally on the positive elements; the screen and mouse problems were the focus of occupational health work. But within the last few years this has changed.

The union secretaries have found that an increasing number of members’ problems that contact the union have to do with psychological strain, caused by conditions at work. In the beginning there was little or no help found in the work done within occupational health. It seemed as if the problems of computer professionals were nonexistent. In order to find out to what extent there were specific problems in the working environment of computer professionals, the union carried out two studies that documented there are indeed problems in this type of work, which cause or contribute to stress. The most frequent problems seem to stem from managerial policies.

The first of two studies was carried out in 1997. A questionnaire was posted to a representative sample of the members, those in work, unemployed, and former members (resigned in the period from 1995-97).

Half of those who had left the union had also left the industry. The most common reasons were the working conditions in the industry; too much stress, too long working hours and general health problems. Many emphasized the constant pressure to keep abreast of current developments and the difficulties in focusing on training and education.

The results indicated that the pressure on IT-workers was much greater than expected. There was a clear connection between overtime, stress and discomfort. This was also the case in relation to working alone, bad management, social problems at work, ergonomic problems and problems with noise and disturbance, as well as lack of autonomy and influence.

The difference between the results obtained through this questionnaire and other similar studies has a lot to do with the problems that more traditional studies experience, regarding how work and working conditions are conceptualised and measured in these studies, compared to what actually is the case in IT-work or knowledge intensive work.

Standard questionnaires are not up to the task of describing problems and challenges in these types of work and working conditions. Such studies tend to ignore or miss problems that are typical in IT and knowledge-intensive work.

The results of this study were published in the official paper of the union. As a consequence, an increasing number of members contacted the union for reasons of stress and psychological wear and tear in general.

As a rule, these people were very responsible with high work standards. The most characteristic complaints related to pressure at work and problems stemming from relationships with management and sometimes colleagues. Most of them had tried to change their working conditions, but without success.
It was a great relief for most of these people to find out there was nothing wrong with them, but that the problem was to do with their work.

In many cases, when the problems were related to management, an understanding of how power and power structures in organisations actually work was helpful.

IT-workers tend to idealise management and have unrealistic expectations of them. But even if this did help, it was obvious in many cases that the psychological problems we were confronted with required specialist expertise that we did not have.

In many cases, we advised those of our members who were suffering severely from occupational stress and organisational conflicts to contact the health care system, or a psychologist. But in many cases we found that this was not helpful - many psychologists do not have the necessary skills and knowledge to deal with psychological problems stemming from work.

After some discussion, the union decided to establish the formal cooperation of an occupational health psychologist.

The deal was that, not only would our members get qualified psychological help based on occupational health psychology, but also that the results of this work would be integrated in our own preventive and educational efforts.

This has worked beyond our expectations. Many members who had previous experience with psychological assistance found that an OHP perspective suited their needs much better. There is no doubt in our mind that OHP is not only a valid approach to occupational stress and strain, but also the valuable basis of a therapeutic approach to the suffering of those who are victims of problems at work.

Even if the union is currently under great economic pressure because of increasing unemployment, we have in fact increased our spending in this field.

Our members have come to expect that the union can assist them, not only in relation to wage and working conditions, but also in dealing with problems at work in a broader sense.

This is one of the reasons why the union is becoming more and more involved in the judicial process that increasingly forms part of the regulation of this relationship between employers and employees in the IT-industry.

Since 1997 we have carried out one more study. This time the study pointed to the importance of managerial and leadership problems as being the most important stressors at work. This study also indicated that it is necessary to focus on a broader concept of psychological reactions to problems at work. Stress is very important, but anxiety, chronic exhaustion and depressive reactions are very important too.

Since 2000 we have increasingly focused on working conditions and occupational health. This I reflected in our monthly magazine. We have arranged a number of meetings that have been very popular amongst our members. We have established a web-site dedicated to occupational health and we have changed our training of shop- and safety stewards to reflect this change of focus.

We have also entered into a formal cooperation with the Centre of Clinical Organisational and Occupational Psychology at the Department of Psychology, University of Aalborg.

The centre is now involved in developing new services to our unemployed members. They are responsible for a new initiative whose goal is to empower shop-stewards in their daily work on occupational health and organisational development.

This initiative is partly motivated by our experiences with HR consultants in the companies where our members work.
These consultants often organize courses in stress management as a reaction to problems at work and in general contribute to individualising work-related problems in the IT-industry. This approach contributes to feelings of guilt and personal shortcomings in those who are affected by stress and strain at work.

The official Occupational Health Services have been restricted severely by the new government. They cannot be involved in problems related to the psycho-social environment any more; now these problems must be solved in the workplace. The employers are happy about this but the employees are experiencing increasing pressure.

This is why a modern union must focus on strengthening its expertise in occupational health. Only the union can maintain a focus on working conditions - everybody else is happy blaming the individual.

The PROSA will continue to focus on developing expert knowledge in the ever-changing challenges of a modern workplace.

In this work, the union must rely on the cooperation of those with expertise in applied organisational and occupational health psychology research.

The results obtained so far indicate that severe cognitive problems can arise from work related stress. Also stress, as well as organizational and social stressors, seems to contribute to depression. Finally, conflicting norms in relation to quality and cost-efficiency seem to cause extreme anxiety in a number of cases.

These results have changed the focus and priorities of the union, with an increasing focus on occupational health in the broad sense as an important result. In our contribution, we will voice the changes in focus, priorities and perspectives of the union.
Work-related Sexual and Reproductive Health

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One neglected area of interest within occupational health psychology is sexual and reproductive health.

Questions of Definition

Reproductive health has been defined as ‘a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its function and processes’ (United Nations, 1994). Somewhat similar definitions have been advanced for sexual health (Health Canada, 2003) and, sometimes, the two terms are used interchangeably in the scientific and health promotion literatures.

Two key questions arise: to what extent does an overlap exist between reproductive and sexual health both as concepts and as areas of research and practice?; how broad should be the definition of reproductive health?

In discussing the relationship between definitions of sexual and reproductive health, two positions can be taken. The first position is that sexual health and reproductive health are distinct and separate areas and should be defined in ways that make clear their differences. It is obvious that there will be significant overlap between the two areas and, on occasions, it might be legitimate to use the terms interchangeably. The second position is that sexual health is an integral part of reproductive health and is subsumed in an adequate definition of the latter. The authors tend towards the second of these positions, but for the sake of emphasis and to avoid unnecessary debate here refer to sexual and reproductive health.

The present paper adopts a broad and comprehensive view of sexual and reproductive health. It advances a model in relation to work and working life that begins at the level of the individual and their social interactions, moves through sexual behaviour, intercourse and conception towards children bearing and parenting and then a possible return to work for the mother and issues of work-life balance. Not only is this model structured around the normal cycle of relevant activities but it also ties sexual and reproductive health into current mainstream Occupational Health Psychology issues.

Work-related Concerns

For several different reasons, there is an increasing need to address challenges to sexual and reproductive health in relation to work and working life. To discuss work-related sexual and reproductive health is to focus, in practice, on those aspects of this health domain that are caused or made worse or better by working. This paper offers a framework model for guiding future research in this area.

An Occupational Health Psychology Approach

In 2000, Cox, Cox & Pryce presented a preliminary model of work-related sexual and reproductive health based on an operationalisation of the United Nation’s (1994) definition (see above). Among other things, it considers the psychological and social aspects of health as well as the more physical.

An important theoretical position informing this model is the bio-psychosocial approach to illness and health. Two things are characteristic of this approach. The first is the integration of the various biological, psychological and social aspects of health. The second is the willingness to move beyond the assessment and reduction of risk of illness and injury to consider salutogenic factors and, not unrelated, questions of positive health. Until we can adequately answer these questions and produce valid measures of positive sexual and reproductive health, our ability to conduct research in this area will be constrained.
The bio-psychosocial model has proved useful in health psychology but is not without its shortcomings in the present context. The focus of this model is clearly on the individual. The influence of a wide variety of different contextual factors, including those deriving from work and working life, is inadequately subsumed under the label ‘social factors’ (see, for example, Ogden, 2000). The model needs to be expanded in its thinking in this respect if it is to adequately deal with issues in work-related sexual and reproductive health. Although linguistically awkward, there is a clear need here for a bio-psychosocial and organisational model. Such a model would fit well into the definition of occupational health psychology in terms of the psychological, social and organisational aspects of occupational health and safety (Cox, Baldursson and Rial-Gonzalez, 2001).

A Working Model

Although there is a substantive literature on the impact of work on sexual and reproductive health, it is incomplete in its coverage of all possible issues (SJ Cox, Cox and Pryce, 2000). There is much research on the effects of the more traditional hazards of work (for recent reviews of this literature see Bonde, 1999; Irvine, 1998; Sharara, Seifer & Flaws, 1998), and on the psychological sequelae of reproductive success and failure (SJ Cox, 1999 (PhD); Hahn, 2001; McMahon, Ungerer, Tenant & Saunders, 1997). However, there is little research on the impact of the more psychosocial and organisational aspects of work and working life. It is the importance of exploring the role of such factors that places work-related sexual and reproductive health squarely in the domain of occupational health psychology.

The author’s model (see SJ Cox, Cox, & Pryce, 2000) focuses on the impact of work design and management, and their wider social and organisational contexts, on the different stages of sexual and reproductive behaviour and function, broadly defined, that together define the overall cycle of the reproductive process. It extends to include the question of work-life balance. The model was designed to integrate the existing literature within a more comprehensive framework than currently existed to allow ‘gaps in knowledge’ to be identified.

The model is sequential in nature distinguishing between three classes of variable: [1] (antecedent) occupational variables relating to work (and working life), such as the design of the physical work environment, the design and management of work, and work-life balanced, [2] reproductive variables, including sexual behaviour, and [3] ‘cost’ or outcome variables. In relation to the latter, a distinction is made between health outcomes and more general costs at the individual, organisational and societal levels. Here it is pointed up that feedback between the different classes of variables is important, in particular, the impact of individual and organisational outcomes on sexual and reproductive variables. An example is provided by the impact of poor general health, say exhaustion and anxiety, driven by work-related sexual difficulties on sexual behaviour and function (Saplosky, 1994). Several of the possible feedback loops describe ‘vicious circles’.

Consider conception as an illustration of the model. Above and beyond the impact of exposure to toxins and hazardous substances, the model highlights the possible role of psychosocial and organisational factors. For example, work stress may negatively impact on reproductive functioning (Sanders & Bruce, 1997; Sapolsky, 1987; Wasser & Barash, 1983) and the increasing drive for women to achieve in the workforce may have led to a gradual increase in voluntary childlessness and delayed parenthood (Seibel and Taymor, 1982). Together, these may increase the risk to women of problems such as subfecundity, conception delay, and increased frequency of spontaneous abortion (Stein, 1985, Schenker, Eaton, Green and Samuels, 1997). Impaired fertility can also hold negative consequences for psychological well-being (for further discussion see SJ Cox, 1999; Glazebrook, SJ Cox, Oates & Nduckwe, 2000).

Within the framework of this model, particular interest was shown in ‘work stress’ and ‘libido’ as potentially important mediating and/or moderating factors. It was noted (Cox, Cox and Pryce, 2000) that while there was a reasonable literature on the relationship between stress and sexual and reproductive health, there was much less on libido. Much of what did exist was methodologically poor. The authors hold that this may, in part, be due to issues of conceptualisation and problems of measurement. They have argued that there is a clear need for a short and usable, reliable and valid measure of libido for studies on ‘normal’ working populations. What is needed is a psychometrically sound instrument that can be administered without causing embarrassment or evoking strong social desirability effects (Kingman, 1994). The authors discuss and address this problem.
elsewhere (SJ Cox, Pryce & Cox, in preparation) and have explored the relationship between working hours and libido (Pryce, SJ Cox and Cox, in preparation).

**Conclusions**

In reviewing the literature from which this model was derived, the authors concluded three things. First, there was a need to be an increased focus on the impact of psychological, social and organisational factors at work on sexual and reproductive health, and increased funding of such research. Second, in order to promote such research, there has to be the deliberate development of better, more detailed and yet comprehensive theories linking these aspects of working conditions, through sexual and reproductive behaviour, to reproductive health. Third, the knowledge that we do have, and will develop, has to be immediately translated into practice and better used in health care to deal with sexual and reproductive problems.

There are several areas of study that require urgent attention. First, there is a methodological need to develop a sound model and measures of positive sexual and reproductive health. There is a not dissimilar need to develop a usable measure of libido. Second, there are a number of common assumptions about the relationship between work and working life, on the one hand, and sexual and reproductive health, on the other, that require empirical exploration. Such research could be carried out on general populations, but the role of occupational group, as a potentially powerful moderating variable, should also be explored. With a recognition of the status of occupational group as an explanatory variable, then an argument develops that different occupational groups should be studied in their own right. This is the third area of research: a focus on occupational groups in relation to sexual and reproductive health. Examples exist in relation to the effects of chemical exposure on the reproductive health of lead workers or those who work in dry cleaning shops (Cox and S Cox, 1985). The final area of research extends, if not reverses, our interest as occupational health psychologists and asks questions about the health and safety of those engaged in sex and reproductive ‘work’. The obvious, but not only example, is sex workers (prostitutes) (see Arnold and Barling, 2002).

The authors hope that this short paper will have both stimulated interest in work-related sexual and reproductive health and served to place that interest in main stream occupational health psychology.

**References**


Introduction

Over the last fifteen years, mounting evidence indicates that workplace bullying (WB) is a ubiquitous problem in 21st century organisations (Douglas, 2001). WB is not a new phenomenon, but increasing awareness has highlighted that such behaviour is unacceptable. Specific industrial sectors may be more vulnerable than others, but none are immune (Hoel and Cooper, 2000). Overall, data indicate that the prevalence rate is between one and four percent (Zapf and Gross, 2001), with up to 20% of employees in many organisations being occasionally exposed to negative social acts, e.g. being yelled at, teased or humiliated (Zapf, Einarsen, Hoel, and Vartia, 2003). WB can be considered an extreme type of social stress at work (Zapf, Knorz, and Kulla, 1996), which, if continued, may cause the target severe social, psychological, and psychosomatic problems (Einarsen, Hoel, Zapf, and Cooper, 2003).

What is Workplace Bullying?

WB refers to persistent exposure to negative and aggressive behaviours, primarily of a psychological nature (Einarsen, 1996). WB behaviours are generally verbal in nature and are rarely physical (Keashly, 1998). The exact definition of WB is debated in the literature. However, there are some common features emphasised across definitions:

The target of WB is in a weaker position of power compared to the perpetrator. Bullying behaviours are repeated and enduring. Bullying behaviours are intended to be hostile and/or perceived as hostile by the target.

These features are illustrated in a commonly accepted definition of WB given by Hoel, Cooper, and Faragher (2001, pp. 447, italics added):

‘. . . bullying is a situation where one or several individuals persistently over a period of time perceive themselves to be on the receiving end of negative actions from one or several persons, in a situation where the target of bullying has difficulty in defending him or herself against these actions. [A] one-off incident is not considered as bullying.’

Zapf (1999a) categorised bullying behaviours into five main types, which are typical of other proposed frameworks:

Work-related – affecting the target’s tasks and competencies.
Social isolation - not communicating with the target or excluding them from social events.
Personal attacks – for example, ridiculing or insulting the target.
Verbal threats – for example, yelling at the target, criticising or publicly humiliating them.
Spreading rumours.

Outcomes of Workplace Bullying for the Target

Target’s generally report reduced well-being and job satisfaction, and display a number of stress symptoms, such as low self-esteem, sleep problems, anxiety, concentration difficulties, chronic fatigue, anger, depression, self-hatred, and various somatic problems (Einarsen and Mikkelsen, 2003). In extreme cases, targets suffer from suicidal thoughts (Einarsen et al., 1994). Adverse health effects of WB may create a vicious circle, in which WB results in poor health, which further increases susceptibility to WB (Kivimäki, Elovingio, and Vahtera, 2000). Unfortunately, most studies are correlational and do not allow for cause and effect conclusions. However, interview studies with targets show that they actually attribute their health problems to being bullied (e.g. Kile, 1990).
Low self-esteem has consistently been found to correlate with self-reported exposure to bullying (e.g. Einarsen, Raknes, Matthiesen, and Hellesøy, 1996). As such, Mikkelsen and Einarsen (2002) hypothesised that generalised self-efficacy would moderate the relationships between bullying behaviours and psychological and psychosomatic health complaints. The rationale being that people low with self-efficacy are likely to suffer more victimisation than others when facing aggression and harassment because they feel unable to cope with the situation. This was the first attempt to study self-efficacy in relation to WB. Generalised self-efficacy refers to stable and global beliefs in the ability to deal efficiently with a wide range of stressors (Jerusalem and Schwarzer, 1992; Schwarzer, Bässler, Kwiatek, Schröder, and Zhang, 1997). The authors found no association between generalised self-efficacy and exposure to bullying, and only a small moderation effect. These relationships should be further examined, as there is sufficient evidence to suggest such a link between self-efficacy and WB. In addition, the results of one study should not be taken as conclusive.

The Psychological Contract and Workplace Bullying
A hitherto unexplored aspect of WB concerns the impact of such victimisation on the target’s psychological contract (PC). This line of enquiry might be valuable to the WB literature for two reasons. Firstly, it will broaden the scope of the bullying domain by linking it with an established area of research. Secondly, the construct of the PC may explain the health and well-being complaints resulting from WB. PC can be defined as beliefs about reciprocal obligations between the employee and the organisation (Rousseau, 1989). PCs emerge when an employee perceives that their organisation has promised to provide them with certain rewards in exchange for the contributions that they make to the organisation (Turnley and Feldman, 2000).

Three proposed roles for the PC, specifically perceived psychological contract breach (PCB), in WB are proposed:
Perceived PCB as an outcome of WB. Targets might perceive that their organisation has broken traditional conditions of employment, such as its obligation to protect them from harm and danger. These conditions might form part of the employee’s PC. Failure to fulfil these conditions could consequently result in perceived PCB.
Perceived PCB might mediate the relationship between exposure to WB and the negative outcomes observed. The reason being that targets of WB exhibit similar consequences as PCB (e.g. (Robinson, Kraatz, and Rousseau, 1994; Robinson and Morrison, 1995a; Robinson and Rousseau, 1994; Robinson, 1995).
Perceived PCB may not directly cause the negative effects of WB, but may interact with WB to exacerbate the negative effects on well-being, thus moderating the relationship between WB and well-being.

Previous Research on Workplace Bullying in Education
There is reason to believe that the prevalence of WB may be quite high in education. Björkqvist, Österman, and Hjelt-Bäck (1994) found that 30% of male and 55% of female employees at a Finnish university had been exposed to harassment during the last year, and 32% had observed harassment. Price Spratlen (1995) found that 23% of American university employees reported being mistreated at work during the previous 18 months. Richman, Rospenda, Nawyn, Flatherty, Fendrich, Drum and Johnson (1999) reported that low status male employees of a US university reported more sexual harassment than women in the same group. Hubert and van Veldhoven (2001) found that, in the Netherlands, education was one of the sectors most prone to systematic undesirable behaviours. Specifically in Further Education (FE, rather than Higher Education, i.e. university level), Hoel and Cooper (2000) found that 7.2% of employees had been bullied in the last six months, 21.3% had been bullied in the last five years, and 42.8% had witnessed bullying in the last five years. Savva and Alexandrou (1998) found that 21% of FE employees were bullied. Finally, Lewis (1999) surveyed FE and HE lecturers who were members of the teaching union NATFHE and found that 18% reported experiencing WB.

Method
Sample
The sample consisted of 317 members of the teaching union NATFHE who worked in five FE colleges in North Yorkshire, UK. A total of 95 questionnaires were returned, which is a response rate of 30%.
Measures

A questionnaire was developed, which assessed basic demographic information (e.g. age, gender, job title, hours worked, tenure), the respondent’s direct or indirect experience of WB, and health and well-being at work. The health and well-being section included the following scales:

- Job-related Strain (Warr, 1990, $\alpha = .93$) - the overall scale is comprised of two sub-scales: Job-related anxiety ($\alpha = .91$), Job-related depression ($\alpha = .88$).
- Job Satisfaction (Warr, Cook, and Wall, 1979, $\alpha = .93$).
- Organisational Commitment (Cook and Wall, 1980, $\alpha = .83$).
- General Perceived Self-Efficacy Scale (Jerusalem and Schwarzer, 1992, $\alpha = .91$).
- Perceived Psychological Contract Breach (Robinson and Morrison, 2000, $\alpha = .91$).
- Negative Acts Questionnaire Revised version (NAQ-R22, Einarsen and Hoel, 2001, $\alpha = .92$).

Results

Prevalence of Workplace Bullying

A total of 21 (22.8%), or approximately one in five, of the 95 respondents reported that they had been bullied over the last six months. This figure is comparable to other data from FE (e.g. Lewis, 1999, and Savva and Alexandrou, 1998). Most respondents reported experiencing WB ‘only rarely’ (14.1%), 6.5% reported ‘several times a week’, and 2.2% reported ‘several times a month’. If the time period is extended to the previous five years, the percentage of targets increases to 35.1%, or 33 respondents. Thirty-eight (40.6%) respondents witnessed WB over the last six months. If the time period is extended to the previous five years, the percentage of witnesses increases to 56.5% (N = 52). The discrepancy between the self-report and the witness data may indicate that targets are denying their experience because of the implied weakness and passivity. Therefore, the actual percentage of employees being bullied may be higher than suggested by the self-report data. In addition, the witness data indicates that the frequency of WB may be greater than indicated by the self-report data. Witnesses reported observing WB ‘several times a week’ and ‘almost daily’, but targets themselves did not admit to these frequency categories.

Organisational Status, Gender, and Number of Perpetrator

Targets were asked to indicate whether particular levels in the college (organisational status groups) bullied them. The percentage of respondents who ticked ‘yes’ to each organisational status option is shown in table 1. The data indicate that the perpetrators were most often employees with managerial responsibility, most typically a senior manager. It should be noted that over half the respondents reported that students bullied them. This represents a perpetrator group unique to educational settings, which may complicate the issue of addressing WB in this sector because of the financial penalties associated with removing students.

Table 1.
Frequency and percentage of respondents who were bullied by different organisational status groups

<table>
<thead>
<tr>
<th>Organisational Status of Perpetrator</th>
<th>N</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Management</td>
<td>13</td>
<td>92.9</td>
</tr>
<tr>
<td>Head of School</td>
<td>8</td>
<td>88.9</td>
</tr>
<tr>
<td>Middle Management</td>
<td>8</td>
<td>72.7</td>
</tr>
<tr>
<td>Learning Area Coordinator</td>
<td>7</td>
<td>70.0</td>
</tr>
<tr>
<td>Student</td>
<td>4</td>
<td>57.1</td>
</tr>
<tr>
<td>Teaching Staff</td>
<td>3</td>
<td>42.9</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>9.1</td>
</tr>
</tbody>
</table>

The majority of respondents (45.5%) reported being bullied by two organisational status groups. This could be extremely traumatic for the target if these two groups represent their immediate points of contact, thus limiting their options for assistance. More worrying is that one respondent ticked five of the six options, and one ticked all six. These individuals are likely to be in a severely vulnerable situation. It was found that the perpetrator was most likely to be a male who operated alone. The propensity of males to be perpetrators may be due to specific masculine behavioural attributes, or may simply reflect the fact that...
bullying is more often a top-down process and men are over-represented in superior positions in organisations (Zapf et al, 2003). Correspondingly, the perpetrators in this study were more likely to be senior managers.

Characteristics of Targets
A standard logistic regression indicated that the demographic information collected does not, as a whole, reliably distinguish between targets and non-targets ($\chi^2_{(12, 81)} = 17.74$, $p>0.05$). Only ‘number of hours worked’ reliably predicted bullying ($z = 4.38$, $p<0.05$), indicating that targets worked longer hours than non-targets. This could simply reflect increased chance exposure, since employees who work longer hours are more likely to run into the perpetrator.

A total of 52.4% of targets were bullied with several work colleagues, 33% were bullied individually, and 14.3% with the entire work group. Therefore, targets were far more likely to be bullied with other people, rather than alone. None of the demographic information collected predicted being bullied alone or with other people. This indicates that all employees are equally vulnerable to being the single target of WB.

Duration of Workplace Bullying
For 15 (71.4%) targets the bullying started at least a year ago, and of this group a total of 52.4% reported that it began more than two years ago. Such data supports the belief that the bullying process is often long and drawn-out. Table 2 shows the percentage of targets reporting each duration category.

Table 2.
When did the bullying start?

<table>
<thead>
<tr>
<th>Response Category</th>
<th>N</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the last 6 months</td>
<td>2</td>
<td>9.5</td>
</tr>
<tr>
<td>Between 6 and 12 months ago</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>Between 1 and 2 years ago</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>More than two years ago</td>
<td>11</td>
<td>52.4</td>
</tr>
</tbody>
</table>

Bullying Behaviours Experienced
Respondents were presented with a list of 22 bullying behaviours (the NAQ-R22) and asked to indicate how often they had experienced each one over the last six months. The data shows that all the behaviours were experienced at some frequency level. The five most commonly experienced bullying behaviours were:

- Being exposed to an unmanageable workload.
- Someone withholding information which affects your performance.
- Being given tasks with unreasonable or impossible targets or deadlines.
- Having your opinions and views ignored.
- Being ordered to do work below your level of competence.

A total of 89.5% of respondents experienced at least one negative behaviour ‘now and then’ over the past 6 months. This figure increases to 91.6% if the frequency of experience is extended to ‘now and then or more often’, and 37.9% experienced at least one bullying behaviour a week for the last six months.

Workplace Bullying, Well-being, and the Psychological Contract
Multivariate analysis of variance indicated targets have higher depression, anxiety, and perceived psychological contract breach scores; and lower job satisfaction, and organisational commitment scores, than non-targets. These variables can be considered aspects of well-being. Therefore, the results suggest that exposure to WB has negative effects on well-being. The cross-sectional nature of the data collected does not allow for cause and effect conclusions to be drawn, however comments provided by respondents indicate that they perceive WB to adversely impact on well-being, sometimes with serious consequences, e.g. heart attacks, suicide, and greatly reduced self-esteem. This is congruent with interview studies that have found targets attribute their ill-health to WB (e.g. Kile, 1990).

Despite respondents suggesting WB causes low self-esteem, the data did not support a direct relationship between generalised perceived self-efficacy and WB, which supports Mikkelsen and Einarsen (2002). In
addition, there was no evidence that generalised perceived self-efficacy moderates the relationship between WB and well-being. Mikkelsen and Einarsen (2002) did find a moderation effect, but it was very weak. Further analysis suggests that the relationship between WB and well-being may be more complex than suggested above. Analysis of covariance indicated that perceived PCB mediates the relationship between WB and depression and anxiety, moderates the WB-job satisfaction link, and neither moderates nor mediates the WB-organisational commitment link.

Conclusion
This study has added to the growing body of WB literature in general, and in FE specifically. The data further supports previous findings that education is a particular risk sector for WB. It is astounding that even with a relatively small sample size, 22.8% labelled themselves targets of WB and more reported witnessing WB. In addition, the nature of the victimisation may be particularly severe in FE because perpetrators from two organisational status groups bullied most targets, several colleagues were targeted at once, the experience typically lasted more than two years, and the full range of negative acts was experienced to some degree. The devastating effects of WB have been illustrated with both qualitative and quantitative data. This study has partially corroborated recent evidence concerning self-efficacy and WB, and has attempted to link the WB literature with the psychological contract. Positive initial steps were made, but more research needs to be done.

References


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BISTOSH: An information system for tailoring of occupational health and safety knowledge to international users

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Introduction

The classical way to inform companies about occupational health and safety (OSH) topics is via mass media like brochures, journals, films, television and radio. These media can raise a general awareness for OSH. However, they have often proven as sub-optimal to win people’s hearts and minds for OSH matters. Mostly the information is too general and does not fit in with the requirements of the individual employers. Therefore research literature recommends more individual approaches such as consulting or training to improve OSH-performance (Cooper, 1998), which measures have the drawback of being quite expensive.

Nowadays new communication technology makes it possible to combine the cost-benefits of mass media with the advantages of tailored individual information presentation. OSH-knowledge offered on the Internet can reach many employers at the same time and can also be designed for the needs of the individual. However, many companies struggle to find practical answers to their OSH-questions on the Internet. Searching for knowledge on the web often is for them like trying to find a needle in a haystack. At the same time the OSH-research institutes, consultancy services, labour inspection and other similar institutions possess information on the topics needed. However, this knowledge remains out of reach of companies or does not meet the companies’ knowledge demands. The underlying communication problem is, that although the internet offers the technological opportunity of a mutual two-way communication between provider and user, in reality most OSH information works only as one-way communication like classical mass media from sender to receiver.

After studying the OSH-information needs of different European countries the Basic Information System for Tailored Occupational Safety and Health (BISTOSH) was developed as a proposal to overcome the contemporary difficulties in OSH knowledge management at European or even more international level (Elsler, in print). Such a system could be hosted by an international OSH organisation, which could be governmental (e.g. EU OSH Agency in Bilbao) or non-governmental (e.g. IVSS). The heart of the system would be the BISTOSH editing office (Figure 1), which could be advised by OSH research institutes, labour inspections and social insurances. The editing office would be supervised by a three-partite board consisting of employers, employees and government representatives. The BISTOSH-approach would be based on two pillars: A knowledge-management system and an e-learning tool in OSH.

The BISTOSH knowledge-management system

There are already many OSH-databases to find on the internet, but many of them are not used very frequently. Therefore this OSH knowledge-management system is designed to meet the needs of the customer more than other contemporary OSH information offers do. First it should possess an OSH database with extensive search functions, available in all languages of the participating countries. In addition it should offer an online-forum in which employers and OSH experts can exchange their ideas and discuss recent OSH matters. This active part of the knowledge-management process can be carried out probably only in the most spoken languages, to have a “critical mass” of discussion partners.

The already existing OSH exchange fora on the internet are not really successful in activating a large number of employers. Probably one reason for this is the lack of support from OSH experts, who guarantee that every question put into such a forum is answered. If an employer has an urgent question regarding the OSH problems in his workplace, he expects an immediate and reliable answer. However, in a normal internet

4 The acronym BISTOSH means “safe” in the Hungarian language
forum, the employer has to wait until someone accidentally comes along on the web-site who is able to answer the question and in addition has the time and motivation to do so. In reality this is rarely the case and the result will be disappointment and frustration on the part of the employer.

Therefore in the proposed knowledge-management system the BISTOSH-editors would be obliged to ensure that all questions are answered accurately. If the employer gains more trust into the system by getting useful help immediately, he will be probably more willing to help other employers with their problems. In that way a real mutual exchange process comes into being, which takes advantage from the huge practical knowledge of the employers as well as of the OSH-expert knowledge. However, it is necessary to have an initial investment from the BISTOSH-editors to start this process running.

![Diagram of BISTOSH approach for knowledge-management and e-learning in OSH](image)

**Figure 1: BISTOSH approach for knowledge-management and e-learning in OSH**

**The BISTOSH E-Learning Service**

As a second pillar BISTOSH offers an e-learning Service about OSH topics. E-learning is one method of training well known in research literature (Cooper, 1998) to influence both behaviours and attitudes in OSH. It provides an interactive, personalised training programme that allows trainees to work at their own pace while receiving ongoing feedback about their performance. The flexibility of e-learning tools also means that trainees can be trained at their place of work which makes it very attractive for employers who are often reluctant to leave their enterprise for a few days for an external training. In addition this "training on the job" facilitates the transfer of knowledge without the need for training personnel to be present.

Although the system will reach a large number of employers it can be tailored to the individual needs of every enterprise at the same time. Before using the system, every employer would have to pass an online-test, where his specific qualification needs and interests are found out. Then the system will tailor a specific study programme to meet the requirements of the individual employer.

E-learning systems are easy to keep up-to-date with newest research findings, since only a certain file has to be updated if new findings appear. It would be the task of the BISTOSH-editors to collect relevant research results from all participating countries and to integrate them into the system. The BISTOSH system allows very cost effective teaching for a large number of learners in all participating countries. As the development and maintenance costs could be shared between many countries a real synergy effect is generated by means of
international co-operation. In addition there would be only the translation costs for adapting the system to different languages. As translation software has made considerable progress in recent years, the cost for translation will decline in future as translation technology improves.

**OSH-Miles linking BISTOSH and Economic Incentives**

However, even if the information offer is designed so as to be very attractive and tailored to the needs of the customer, in many cases it is not read, because of time constrains or lacking motivation of the employer. Therefore it is a promising approach to link OSH information measures such as BISTOSH with economic incentives.

In recent years European policy makers became more and more interested in economic instruments to improve the working environment for a number of reasons. First of all, strict regulation approaches have not been proved as effective as imagined. It was costly to bring companies to court and the probability of prosecution and the level of fine were not sufficient to encourage compliance. Instead of the so-called “command-and-control” approaches market-based instruments use the power of incentives to convince employers, acting more or less in their own best interests, to improve their working conditions. These economic instruments often consist in linking fiscal incentives to good OSH performance of a company, for example with lower accident insurance premiums or tax rates. To reach the common goal of the EU – safe, healthy and productive jobs in Europe without distortion of competition – it is worthwhile to think about European approaches for economic incentives. There have been several proposals in recent years for a unified European economic incentive model in the area of working conditions (Bailey, Jorgensen, Koch, Krüger, & Litske, 1995; Krüger, Heß, Müller, & Stegemann, 2000), but these models have never been checked empirically with regard to whether they meet all needs of the very differently structured countries within the continent.

As recent research findings show (Elsler & Nikov, 2003) there is a growing need for economic incentives in Europe, but they should be designed fitting the specific requirements of each country. Incentive schemes, which have been developed in well-established market economies, cannot be transferred without adaptation to EU candidate countries for example, because economy and social insurance systems still lack some prerequisites. Throughout the EU the labour laws and standards are already harmonized but the development of effective control mechanisms and instruments is still not finished.

As stated in the paragraph before there is a great added value to be expected from international co-operation in knowledge-management and e-learning on the one hand, but on the other hand it is not feasible to introduce a unique economic incentive system in Europe. However, it would be desirable to link OSH information efforts of employers with economic incentives, as this method as proven to facilitate the OSH promotion in the enterprises (Elsler & Corth, 2003). To overcome the gap between common international knowledge management and national specific economic incentives one has to introduce a common currency between the two systems. Figure 2 presents one possible solution to the problem proposing a concept named “OSH-miles”, taking the two countries Bulgaria and Germany as an example. Similar to airline companies the employer can collect OSH-miles when taking part in an international OSH online-training. These OSH-miles can be awarded differently according to the specific situation in each country.
This is illustrated in figure 2, taking a Bulgarian and a German employer as an example. Previous research has shown that there are very different requirements for economic incentive schemes in these two countries (Elsler & Nikov, 2003). If employers from both countries follow the same OSH online-training course, probably only quite different rewards for this OSH effort would be possible. For instance, a German employer might expect discounts on accident or health insurance premiums, whereas a Bulgarian employer would prefer tax reductions or bank loans with lower interest rates. With the help of the common currency OSH-miles they both can be rewarded according to the specific requirements of their country for participating in the same international e-learning course.

References


Flexibility, stress and health in freelance media workers

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Introduction
The recent years have seen a steady growth of non-standard work contracts that deviate from full-time, permanent and secure employment (Aronsson 2001). Particularly in the media industry, companies tend to substitute employment by market transactions in order to minimise risks and to cut costs. Accordingly, risks and responsibilities are shifted to the “peripheral” workforce. Besides corporate and labour market restructuring, changing work orientations among a considerable proportion of the workforce, in particular the desire to be “one’s own boss”, lead to a rising trend in self-employment. However, freelancers are still an underresearched occupational group. So we focused our questionnaire-based pilot study on freelancers in the dynamic media sector, where self-employment constitutes over a third of the total workforce (Statistisches Bundesamt 2003; Baines 2002). Relating overall developments in work life to research into occupational stress, we hypothesise that the erosion of occupational structures, coupled with high market pressure, long working hours and inadequate coping, adversely affects wellbeing and health of freelancers. To test our hypothesis, the model of job strain by Karasek and the model of Effort-Reward Imbalance (ERI) by Siegrist were applied. We also considered gender specific effects of stress on health.

Method
The data (n=290) were taken from the second wave of a panel study, which was conducted in co-operation between the Federal Institute for Occupational Safety and Health and the union of media workers in Germany. For measurement we used an adapted version of the “Health at the VDU workplace questionnaire” (Ertel et al. 1994), and the questionnaires were mailed to freelance media workers (journalists, multimedia designers, public relation agents, translators, etc.) who were union members on the basis of the union’s member list. The first wave of the study was carried out in 1998; the second wave took place from autumn 2001 to spring 2002. The data that are reported here are drawn from the second wave of the panel study. The response rate amounted to about 20 %. The quantitative data of the study group were analysed using advanced statistical methods that included principal component analysis, cluster analysis and multivariate regression analysis.

The situational (extrinsic) component of Effort-Reward Imbalance (ERI) was measured by a standardised questionnaire containing 17 Likert scaled items. The original version of these items (www.uni-duesseldorf.de/MedFak/workstress/dimens5.html) had to be adapted to some extent to the specific work situation of freelancers. Ordinarily, ERI is binary measured, but because of the relatively small size of our study group, we constructed a continuous, normally distributed measure by logarithmic transformation. The respondents with values in the third tertile (see Table 2) are defined as risk group.

To receive information on the personal or intrinsic component of the model, we used the coping pattern Disturbed Relaxation Ability (DRA), which was assessed by a psychometric test composed of 6 Likert scaled items. According to previous practice (Richter et al. 1996), a dichotomous variable was constructed on the basis of a sum score with values > 17 indicating a psychosocial risk condition (see Table 2).

Information on job strain according to the Karasek model was measured by 6 Likert scaled items describing relevant aspect of the freelancers’ work situation in terms of “demand” and “control”. To define job strain, the four variables that addressed demand and the two variables that addressed control were factor analysed and the factor scores were dichotomised at the median. The 4 categories of demand (low/high) and control (low/high) were combined to a new, dichotomous variable, where the combination of demand (high) and control (low) indicates job strain (see Table 2).

The target variable self-rated health (SRH) was operationalized by multiple items. The category “poor health” is composed of respondents who regard their present health status as satisfactory or bad and at the same time are worried that they might suffer from chronic illness in the future. This measure expresses subjective health status that has proved to be useful in a preventive framework (Bjorner, Kristensen et al. 1996).
Results

Table 1 shows several descriptive characteristics of the freelancers who participated in this study. Of the 290 questionnaires returned, 52% were from women and 48% from men. Almost two thirds of freelancers have university diploma. Measures of work stress (predictor variables) and self-rated health (target variable) are presented in Table 2. One third of freelancers suffers from chronic stress in terms of Effort-Reward Imbalance; 37.8% show overcommitment at work (DRA). 29.8% are under job strain and 36.55% show poor self-rated health (outcome measure).

Table 2: Measures of work stress (ERI and Job strain) and health in 290 freelancers.

<table>
<thead>
<tr>
<th></th>
<th>Number of Items</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Stddev</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ERI</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effort Reward</td>
<td>6</td>
<td>6</td>
<td>29</td>
<td>15.80</td>
<td>4.54</td>
</tr>
<tr>
<td>Ratio</td>
<td>11</td>
<td>16</td>
<td>55</td>
<td>41.93</td>
<td>9.15</td>
</tr>
<tr>
<td>3rd tertile of log Ratio</td>
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<td>0.22</td>
<td>2.53</td>
<td>0.75</td>
<td>0.37</td>
</tr>
<tr>
<td><strong>DRA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum score</td>
<td>6</td>
<td>6</td>
<td>24</td>
<td>16.19</td>
<td>4.19</td>
</tr>
<tr>
<td>DRA &gt; 17</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>37.80%</td>
<td>0.49</td>
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<tr>
<td><strong>JOB STRAIN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>2</td>
<td>1.45</td>
<td>7.29</td>
<td>5.14</td>
<td>1.17</td>
</tr>
<tr>
<td>Demand</td>
<td>4</td>
<td>2.38</td>
<td>10.75</td>
<td>6.55</td>
<td>1.64</td>
</tr>
<tr>
<td>Job strain</td>
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<td>1</td>
<td>0</td>
<td>29.80%</td>
<td>0.46</td>
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<td></td>
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<tr>
<td>(Sum score)</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>36.55%</td>
<td>0.48</td>
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</table>

DRA: Disturbed Relaxation Ability
The associations (crude odds ratios) between poor self-rated health and psychosocial work characteristics are shown in Table 3. Poor self-rated health is significantly related to each of the included predictor variables, with the single strongest association between self-rated health and ERI (OR 3.91). For men, Effort-Reward Imbalance appears to be a stronger risk factor than for women (OR 5.65 and 3.19, respectively). The association between self-rated health and job strain amounts to OR 2.9.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>OR</th>
<th>95% CI</th>
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<td>3rd tertile of ERI (log)</td>
<td>3.91</td>
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<tr>
<td></td>
<td>Men</td>
<td>5.65</td>
<td>2.55</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>3.19</td>
<td>1.56</td>
</tr>
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<td>2.40</td>
<td>1.44</td>
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<td></td>
<td>Men</td>
<td>2.32</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>Women</td>
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<td>1.29</td>
</tr>
<tr>
<td>DEMAND</td>
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<td>1.48</td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>3.00</td>
<td>1.39</td>
</tr>
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<td></td>
<td>Women</td>
<td>2.09</td>
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<tr>
<td>CONTROL</td>
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<td>1.19</td>
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<td></td>
<td>Women</td>
<td>1.66</td>
<td>0.85</td>
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<tr>
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<td>1.70</td>
</tr>
<tr>
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<td>1.54</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>2.85</td>
<td>1.33</td>
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</table>

1 not significant. CI: confidence interval

Table 3: Crude odds ratios (OR and 95% CI) of poor self-rated health by psychosocial work characteristics

In the following step of the analysis, the hypothesis was tested that the combination of the ERI model of chronic stress at work and the Karasek model of job strain lead to an improved estimation of poor self-rated health. The logistic regression analysis was calculated separately for men and women. Information on both stress models was combined to construct distinct exposure groups, so that the joint effect of ERI and job strain on poor self-rated health could be assessed. Table 4 displays the findings on the distinct exposure group ERI/Job strain. For both male and female freelancers the table shows a significant increase in risk estimation for poor self-rated health. Among men, odds ratios are higher (4.54 and 5.00, respectively) than in women (3.04 and 3.35, respectively). The increase in risk estimation for poor self-rated health after adjustment II (see Table 4) indicates that social inequalities attenuate the adverse health effects of the combined stress variables.

Discussion and Conclusions

Completing the results of previous articles on our freelancer panel study (Ertel et al. 2002), we were able to demonstrate health risks of “flexible” working and employment conditions among a category of self-employed workers (freelance media workers) that represent an occupational group which is steadily increasing. Although the results of this pilot study have to be interpreted cautiously because of the low turnout (20%, postal survey), it appears that the model of Effort-Reward Imbalance with its focus on distributive justice is particularly useful in tracking health risks among workers that are subject to high market pressure and job insecurity. In keeping with previous results (Peter, Siegrist et al. 2002) this pattern of association is much stronger among men than among women. Combining the ERI model of chronic stress at work with an adapted version of job strain model by Karasek in multivariate regression analysis resulted in a significant interaction effect of the different sources of stress on health among freelance workers. In terms of methodology, we conclude that existing measures of work stress have to be adjusted to the new realities of a generally more insecure work life. With regard to the low response rate, this fact underlines the difficulty of accessing a spatially dispersed and individualised workforce that however has common interests and needs (career guidance, employability, work-life balance, etc.). To be able to meet the freelancers’ various demands, occupational health and safety experts, unions and others have to gather in-depth information on the overall working and living conditions of self-employed workers and freelancers in all sectors of the economy.
<table>
<thead>
<tr>
<th></th>
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<td>126</td>
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<td>0.50</td>
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<td>5.00</td>
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<tr>
<td></td>
<td>ERI+/JS+</td>
<td>0.01</td>
<td>3.35</td>
<td>1.28</td>
</tr>
</tbody>
</table>

COMBGR: Combined groups; ERI: Effort-Reward Imbalance; JS: Job Strain, OR: odds ratio
Adjustment I: age, regularly physical exercise, smoker, BMI>25
Adjustment II: I + education, income, marital status

Table 4: Logistic regression analysis: associations between indicators of job stress and self-rated health: Distinct exposure groups ERI/JOB STRAIN (COMBGR)

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Flexible labour – sustainable labour? The impact of flexibility on emotional exhaustion

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Introduction
This paper addresses flexible work patterns in Dutch companies. It answers the question, under which conditions can flexible labour contribute to a sustainable development of employment within these companies? In the past decade, both companies and policy makers are seen to be striving for more sustainability, including care for human resources within the companies. At the same time personnel strategies have become more imbued with flexibility. During this period, labour flexibility has shown its many diverse sides and has been linked with strong negative associations. Flexible labour markets and flexible organisations are supposed to lead to more insecurity, greater pressure and more complexity in the world of work. Some authors point out that the increasing flexibility of the worker is caused by changing economic, organisational and technological surroundings. For the worker, flexibility means the need to adapt, to open up to changes and to take risks. The worker is a ‘victim’ of these changes. Many negative impacts are assumed, including alienation, loss of social cohesion and increasing pressure and insecurity. From this point of view, flexibility and sustainability represent opposite values. Although this opposition is mentioned in many documents, only few studies utilising quantitative data have been presented to prove the direct or indirect contribution of flexibility to these pressures.

On the other hand a new type of flexible worker is believed to have risen, with its own requests in the field of flexibility, particularly with regard to combining work with family life. Several authors highlight the socio-cultural and demographic changes that create a new type of worker. In this view the flexible worker is an ‘actor’ and not a victim. Companies and institutions need to adapt to increasing diversity in the individual life course and to a workforce that combines different aspects of life (work, family life, learning, leisure). Increasing flexibility means individualisation, and the destandardisation of both life and working patterns. From this standpoint, flexibility could lay the basis for sustainability. Research publications, however, point out some of the risks of these developments; amongst others, the increasing strain due to the combination of work and family life (‘work-life strain’). So far, the direct or indirect role of flexible work in work-life balance, or imbalance, has not been thoroughly grounded with quantitative data.

Literature does not provide us with an exhaustive or undisputed view of the impacts of labour flexibility on employees, which is partly due to the diverse definition of flexibility. The literature provides us with different answers, depending on the views and the goals of the authors. Also, the question exists whether this relationship is direct or indirect and what intervening variables are important. These diverse views on flexibility, the contradictory results and expectations in the relationship between flexible employment and the impacts on employees, lead to the research question of this paper:

What types of flexibility are related to work strain, or to ‘work-life strain’, and what conditions can help to prevent that flexible labour leading to emotional exhaustion?

Method
Research data and method
In answering this research question a unique data source has been analysed consisting of 3618 companies and approximately 11,000 employees in Dutch companies in 1998. A questionnaire was sent to representatives of the companies and a face-to-face interview was conducted. The data was collected using a stratified sample and covers all branches except government and department of education, and all companies with more than one employee. All companies were requested to participate in the employee survey (a written questionnaire). At first, 2567 companies were willing to participate (71% of all companies). These companies received the questionnaires and an instruction for the sampling of employees. The employees could return this questionnaire directly to the researchers. A total of 10,992 useful questionnaires were returned. The actual response came from 1256 companies (35% of all companies). These companies can be seen as representative...
of the total sample of companies (Goudswaard, 2003). For the purposes of this paper, only the employee survey is analysed. The analysis is based upon cross-sectional data, which means that we can only show a relationship between the different indicators and have no longitudinal knowledge. The data are useful however, because a large range of variables in the field of flexibility, conditions at work and health are combined.

Research model and indicators
The figure above shows the general research model used in the survey. For this paper only one (negative) aspect of sustainable work is studied - emotional exhaustion. The research model presumes a threefold relationship. As discussed in the introduction, flexible work might contribute to emotional exhaustion. However, other conditions in the organisation of work are also important, as well as characteristics of the employee and conditions of the household. Therefore, the relationship between flexible work and these conditions also needs to be studied in order to answer the research question.

In the literature, flexibility is connected with emotional exhaustion in two different ways. Firstly, through high quantitative and qualitative job demands that appear to go hand in hand with the flexibility of work. In other words, emotional exhaustion can follow from job related strain. The second association is between the increasing complexity of work patterns and diversity in working hours and the increasing number of employees who try to combine work with family life. Emotional exhaustion can also follow from strain due to this combination of work and family life (‘work-life strain”).

The main indicator used in the analysis is emotional exhaustion (one aspect of burnout; Schaufeli and Dierendonck, 1994). Another indicator refers to work-life balance or imbalance; the employees were asked if they had enough time for family and friends. This question is not only used as an indicator for work-life balance, but is also seen as a condition for emotional exhaustion. Several indicators of job-related strain are studied as other conditions for emotional exhaustion. The basis for this analysis is an extended version of the ‘demands-control model’ (Karasek, 1979; the Nova Weba questionnaire is used: Kraan et al, 2000; Vaas et al, 1995). This model assumes that job-related strain will not be caused by actual high job demands, but by lack of possibilities to control these demands (job control). Both quantitative and qualitative job demands are studied. Two indicators of job control are studied: autonomy in work pace and adequate job information. In addition to these indicators, control over working time is studied as a condition for finding a good balance between work and family life. Three questions were used: firstly, the satisfaction of the employee with the number of hours worked, as an indicator of whether the employee has had sufficient influence over his or her working hours; secondly, the possibility to take job leave; and thirdly, control over the start and end times of the working day.
Gender differences have been included in all analyses. Despite the increased labour market participation of women, there are still many gender differences in work and private life. In private life, women still carry out most of the tasks involved in childcare. At work, occupational segregation still persists. Besides this, men and women are exposed to different types of flexibility. This implies that the answer to the research question will be different for men and women, and also that gender will play a role in all relationships studied.

**Results**

**Types of flexibility**

Part of the lack of consensus within the literature is due to the many diverse definitions of flexibility. The first part of the analyses is directed towards the creation of a typology of flexible work, based upon the empirical data. The different variables that indicate forms of flexible labour have been analysed with factor analyses (see table 1). Based upon these analyses, the following conclusions can be drawn:

Qualitative flexibility can be discriminated from quantitative flexibility. Distinctive features of functional (qualitative) flexibility form one comprehensive factor, which can be separated from other patterns of flexible work. Work patterns such as job rotation, job enlargement and job enrichment are interrelated.

There is no clear distinction between internal and external types of flexible work. Quantitative flexibility types that form a mix of internal and external quantitative flexibility can be found. A distinction is made between employment status (non permanent or part-time) and working time patterns.

The first type of quantitative flexibility, flexible employment contracts, can be characterised by the limited presence of the employee compared to the full-time permanent worker. Employees with this type of flexible work, have a fixed-term or non-permanent contract, a temporary agency contract, work on call, and/or a part-time contract (less then 16 hours a week).

The second type of quantitative flexibility, flexible working hours, can be characterised by the time of work and the variability of working hours. Employees with this type of flexible labour work with time schedules or work in shifts, they work at night, in the evening and/or during weekends.

As a result of these findings three types of flexibility are studied in further analyses: functional flexibility, flexible contracts and flexible working hours.

| Table 1 Factor analysis with forms of flexible work (employee data; total variance = 56,4%) |
|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| flexible contracts (including temporary agency work)          | flexible working hours                                        | flexible contracts                                           |
| -.028                                                         | .021                                                          | .793                                                         |
| part-time work (<16 hours week)                               | .092                                                          | .069                                                         | .780                                                         |
| work in evening, nights and/or weekends                       | .060                                                          | .796                                                         | .097                                                         |
| shift work                                                    | .012                                                          | .774                                                         | -.071                                                        |
| individual work schedules                                    | -.029                                                         | .709                                                         | .090                                                         |
| take over tasks from colleagues                              | .735                                                          | .135                                                         | .044                                                         |
| take over tasks from boss                                    | .737                                                          | -.032                                                        | -.023                                                        |
| work at other departments                                     | .610                                                          | -.053                                                        | -.157                                                        |

Flexibility, job related strain, work-life strain and emotional exhaustion

Table 2 shows the correlations between these types of flexibility and the other conditions at work. As the table shows, these correlations are not very high. However, one might suspect a risk for employees who are functional flexible, since they have higher qualitative and quantitative job demands and also seem to lack adequate job information and feedback. Employees working on flexible work hours might be at risk due to a lack of autonomy in work pace, fewer possibilities to take job leave and less control over start and end of their working day. Employees with a flexible contract seem to face less job demands, but also slightly less autonomy in work pace.
Different regression analyses answer the question whether or not these correlations lead to a relationship between flexible work and emotional exhaustion. Table 3 shows the results of these regression analyses. The first part of the table shows the relationship between flexibility and work-life strain (direct, indirect or through interaction with other conditions). The second part of the table shows the relationship between flexibility and emotional exhaustion, taking into account other conditions for job related strain and work-life strain. The following conclusions can be drawn from these analyses:

There appears to be a correlation between functional flexibility and emotional exhaustion. As we have seen in table 2, there is also a correlation between functional flexibility and both quantitative and qualitative job demands. The relationship between functional flexibility and emotional exhaustion disappears when these job demands are taken into account. The conclusion can be made that there is an indirect relationship between the two and that high job demands are more important than functional flexibility.

Another finding, although this relation is very weak, is that functional flexibility in combination with inadequate job information may lead to emotional exhaustion. This inadequacy in job information appears to be worse for employees who perform different tasks, while at the same time this seems to be more important for them.

There is no direct or indirect relationship between the two quantitative types of flexibility (flexible contract and working hours) and emotional exhaustion.

The analyses show a strong interplay between work and family life with respect to emotional exhaustion. High job demands are found to be an important factor in creating an imbalance between work and family life. This imbalance is found to be an important condition for emotional exhaustion.

The finding that irregularity in working hours has no relation to work-life balance, or emotional exhaustion, is notable. The interaction between irregular working hours and high job demands and/or low autonomy in work pace, however, appears to have a slightly negative impact.

Control over working time, on the other hand, is found to be a significant factor in preventing exhaustion. The ability to work the requested amount of hours and to take leave when necessary, are two indicators that relate to work-life balance. This also shows the pressure of work—in particular working time—on family life.

Control over start and end times of the working day do not correspond with work-life balance as assumed. This could be due to the type of work that allows employees to control this aspect of working time, which is possibly more result oriented. It could also be due to the fact that these employees might perhaps choose the optimum combination of work and family life, while employees that cannot control this aspect of working time (out of necessity) choose to work part-time or find other arrangements.

The results show a complex relationship between working hours, gender and work-life balance. Although women are more likely to work part time, they appear to have less time for family life. The relationship found is not very strong and does not lead to higher exhaustion among women.
Table 3  Relation between flexible work and sustainable work: regression-analysis with emotional exhaustion and work-family life balance as dependent variables

<table>
<thead>
<tr>
<th></th>
<th>insufficient time for family life</th>
<th>emotional exhaustion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>standardized coefficients sig.</td>
<td>correlation s</td>
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<tr>
<td>(constant)</td>
<td>beta .000</td>
<td>zero-order</td>
</tr>
<tr>
<td>flexible working hours</td>
<td>.01 .03</td>
<td>.01 .02</td>
</tr>
<tr>
<td>functional flexible</td>
<td>-.01 .04</td>
<td>.01 .12</td>
</tr>
<tr>
<td>flexible contract</td>
<td>-.03 * - .03</td>
<td>.00 -.04</td>
</tr>
<tr>
<td>Women</td>
<td>.05 *** .05</td>
<td>-.04 ** -.03</td>
</tr>
<tr>
<td>Age</td>
<td>-.02 -.01</td>
<td>-.02 .00</td>
</tr>
<tr>
<td>(no) care for children</td>
<td>-.03 ** -.01</td>
<td>.04 *** .04</td>
</tr>
<tr>
<td>responsibility for household tasks</td>
<td>.05 *** .06</td>
<td>.02 * .00</td>
</tr>
<tr>
<td>interaction women x care tasks</td>
<td>.01 .02</td>
<td>.02 .02</td>
</tr>
<tr>
<td>interaction women x resp. household</td>
<td>-.01 .01</td>
<td>-.01 -.02</td>
</tr>
<tr>
<td>Quantitative job demands</td>
<td>.16 *** .22</td>
<td>.30 *** .43</td>
</tr>
<tr>
<td>qualitative job demands</td>
<td>.06 *** .15</td>
<td>.07 *** .27</td>
</tr>
<tr>
<td>autonomy in work pace</td>
<td>-.01 -.04</td>
<td>-.07 *** -.12</td>
</tr>
<tr>
<td>adequate job information and feedback</td>
<td>-.06 *** -.13</td>
<td>-.16 *** -.30</td>
</tr>
<tr>
<td>interaction working hours x quant. demands</td>
<td>.02 * .01</td>
<td>.03 ** .02</td>
</tr>
<tr>
<td>interaction working hours x autonomy</td>
<td>.02 * .00</td>
<td>.04 *** .00</td>
</tr>
<tr>
<td>interaction funct. x job information</td>
<td>-.01 -.04</td>
<td>-.03 ** -.08</td>
</tr>
<tr>
<td>interaction contract x autonomy</td>
<td>.00 .01</td>
<td>.02 .02</td>
</tr>
<tr>
<td>interaction women en quant. demands</td>
<td>-.02 .00</td>
<td>-.01 .01</td>
</tr>
<tr>
<td>interaction women en qual. demands</td>
<td>.04 *** .04</td>
<td>.01 .03</td>
</tr>
<tr>
<td>interaction women en autonomy</td>
<td>.02 .02</td>
<td>.02 .03</td>
</tr>
<tr>
<td>interaction women en job information</td>
<td>-.02 -.01</td>
<td>-.01 -.01</td>
</tr>
<tr>
<td>control over start and end working day</td>
<td>.04 *** .03</td>
<td>.00 -.02</td>
</tr>
<tr>
<td>possibility to take job leaves</td>
<td>-.08 *** -.11</td>
<td>-.06 *** -.16</td>
</tr>
<tr>
<td>dissatisfaction number of work hours</td>
<td>.11 *** .14</td>
<td>.06 *** .14</td>
</tr>
<tr>
<td>interaction funct x control start/end day</td>
<td>.00 .01</td>
<td>-.02 * -.02</td>
</tr>
<tr>
<td>interaction working hours x dissatisfaction no. hours</td>
<td>-.03 ** -.03</td>
<td>.00 .00</td>
</tr>
<tr>
<td>interaction contract x dissatisfaction no. hours</td>
<td>-.03 ** -.03</td>
<td>.00 .00</td>
</tr>
<tr>
<td>interaction women x control start/end day</td>
<td>-.01 -.01</td>
<td>.02 * .01</td>
</tr>
<tr>
<td>interaction women x poss. take leaves</td>
<td>.01 .01</td>
<td>-.01 -.01</td>
</tr>
<tr>
<td>interaction women x dissatisfaction no. hours</td>
<td>.02 .01</td>
<td>-.02 * -.02</td>
</tr>
<tr>
<td>insufficient time for family life</td>
<td>.15 *** .27</td>
<td></td>
</tr>
<tr>
<td>(R^2)</td>
<td>9%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Sign. * = <.05; ** = <.01; *** = <.001

Conclusion

The figure above shows the main findings (the main indicators for emotional exhaustion are marked bold; non dotted lines show betas >.10; dotted lines show significant relations with betas <.10). This paper suggests that answering the more general question, under which conditions can flexible work contribute to sustainable work within companies, is not a simple task. The answer that can be given depends on the type of labour flexibility...
and, more importantly, on the conditions at work. A diverse answer should therefore be given. Some working conditions come forth which might lead to emotional exhaustion for employees who are functionally flexible. These conditions in particular are high job demands and a lack of adequate job information. Finding a good balance at work, limiting job demands and providing job control, is also an important consideration in finding a balance between work and family life. This balance at work appears to be of greater importance than flexibility. The amount of time spent at work, the ability to take leave when necessary and the amount of time needed for recuperating from work are more important than being flexible.

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Comparative study of the effects of organisational control on well-being in two call centres

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Introduction
The effects of organisational choices on health at work are increasingly being documented. For example, Wager, Fieldman and Hussey (2003) have established a link between certain characteristics of managerial control and blood pressure, a major risk factor of cardiovascular disease (CVD). In their study, these authors showed how the perception of the managerial style of the supervisor has a determining effect on blood pressure of employees. When prolonged, exposure to such working conditions can lead to deleterious health effects due to the appearance of chronic hypertension. As it has been established that CVD is the chief cause of premature death among adults, this has led some authors to consider work as a risk factor worthy of further investigation, not only for health at work but also on a public health perspective (Marmot, Bosma, Hemmingsway and Stansfeld, 1997, Weibel, 2002). Leaving aside medical considerations, occupational psychology also has a role to play in arriving at a better understanding of the causal relation between the socio-organisational context and the effects on health. For us, this means research on emotions at work; in this respect, it should be borne in mind, as per Damasio (1994) in the postscriptum of his bestseller, that emotions should be taken into account when the focus is on health problems where mind/body inter-relations are clearly involved. This is undoubtedly the case when we consider that managerial control is a potential risk factor for employees. In Damasio’s schema, emotions are embedded in complex body/mind patterns, where (among other things) the arterial muscles are physically and chemically affected. This focus is also coherent for the specific workplace examined in this paper: call centres. This is due to the fact that it is now clear (Zapf, 2002) that the emotional and relational demands of the job are considerable in call-centres, and could play a prominent role in the strenuousness of this sector. The job consists mainly in phonic interactions with customers, where the clerical worker perceives the emotions of the client but must also manipulate the expression of his/her personal emotions in order to achieve the goals of the interaction. For this reason, they should control their attitude, tone of voice and level of language, and at the same time permanently assess the effects of these behavioural dimensions on the person at the other end of the line in order to allow retroactive adjustment.

All this encompasses what is now known as "emotional work", according to Hochschild (1993). In the two call centres where this study took place, the task requires the worker to detect, assess and manage the emotions at both ends of the line, and both the management and the training lay down the way in which this should be achieved. The work must therefore be considered first and foremost as emotional work. Difficulties in dealing with these emotions at work, and the effect on psychological health and well-being, are starting to be documented (Zapf and Isic, 2003; Holman, Chissik, & Totterdell, 2002).

In the call-centre sector, the peculiarities of managerial practice have been highlighted (Frenkell, Korczynski, Shire, K., & Tam, 1998; Hammarström, 2001; Pichault, 2000). Many authors distinguish two contrasted organisational models relating to the way control versus autonomy is expressed. To simplify matters, we shall use Pichault’s terms. In the first model, people have to deal with quite complex and rich tasks and this is associated with a relative level of organisational autonomy: this is the empowerment model. On the contrary, the second model is structured around the intensification of simple tasks and is characterised by a high level of control: this is the panoptical model. In his conception, Pichault made some predictions concerning the way workers will deal with the two kinds of working condition associated with these two models.
This presentation will focus on a comparison of two call centres in the same organisation. In particular, we shall try to see how differences in the positioning on the empowerment versus panoptical continuum will lead to different patterns of emotions and different outputs in terms of well-being. In this respect, the nature of the tasks (complexity, variety) and the channels through which managerial control is mediated are important. It has already been emphasised that a distinction should be made in terms of work demand. The work could need the expression of either positive or negative emotions. The literature on this topic states that the effects on health are more important when the worker is supposed to express emotion that he or she did not feel. That is what Zapf (2002) highlights with the term “emotional dissonance” and Freund (1998) with what he calls “dramaturgic stress”.

Method

Task: Our work was based on a comparative approach in two units of the same consumer credit company (specialized in sale by phone). To simplify, we shall refer to the sales call centre and the after-sales call centre to specify the two sectors. Later, we shall present the type of tasks allocated to workers in the two centres. In order to match the panopticon-empowerment model, we shall examine the complexity and diversity of the tasks. The characteristics of the emotional work (requirement) were also identified through work observations and interviews.

Control: In both units, interviews with various members of the organisation were carried out to determine the kind of controls used in the organisation. The specific role as a supervision tool of the database that records every activity of the operators was also of prime importance and was then examined closely. The communication technique, aimed at promoting a culture of high performance among the workers, was also taken into consideration. We compiled observations and these interviews along with various data to characterize the organisation.

Emotions and well-being: Observations and specifics parts of these interviews were also used to precise the level of well-being. More precisely, we video-recorded the activity of the operators and asked them to specify the nature and intensity of the emotions related to various phases of their activity. Through this method, the context leading to the negative emotions (stressors) specific to each of the two sectors were identified.

At a second level, we interviewed the operators to collect subjective appraisal of their task and working conditions and we asked them to justify the strategies they used to accomplish their tasks, as it is now standard practice in ergonomics. The interviews and observations were also aimed at identifying the coping strategies developed in both situations. These coping strategies provide information concerning the emotional effects of the work and could bring into question their long run efficacy.
Results

Task and emotional work

In the sales call centre, the operators have to deal with incoming calls of clients, interested in the products of the company. The workload depends on the time of the day, and the analysis shows that they have many calls for much of the time. The mean duration of a call is 2 minutes and 9 seconds. Interactions with clients are short, fast with a very little variety. There is little autonomy as the operator only handles the introductory part of the commercial interaction.

The rhythm imposed is very fast and scripts and rules strictly define their interactions. The work rapidly becomes boring.

In the after-sales call centre, the operators must contact customers who have not respected their financial commitments and try to persuade them (by various means) to restart their payments. As it is often difficult to contact the client, they must develop elaborate strategies to find them: contacting their neighbours, employers, banks, etc. This search often goes on for several days or even weeks. There are three phases in the job: finding, negotiating and convincing. The emotional register to be use is broad (threat, invocation of moral sense, etc.) and should be adapted to the moral situation of the customer. They spend less time on line and the duration of the calls is longer (2 minutes and 54 seconds). The variety of the job and the need to be creative is clearly greater here, even if they have frequently to deal with difficult situations (aggressive customers, people with financial difficulties, etc.).

Control practices

In both call centres, the nature of control is very similar. It can be divided in three broad areas

*Info-normative control*: Information technologies contribute greatly to enhancing control. In this company, a specific department is dedicated to developing, implementing and exploiting the criteria used to assess the performance of the employees. These controls are linked to the results obtained by
the workers and to the means they use to reach their performance goals. There is a continuous individual and team assessment, and the results are used to determine (a limited part of) the salary. A continuous feedback on the degree of goal achievement is permanently available to the workers through the computer system, and every team permanently knows its previous and current position in the inter-team league table. A feeling of guilt was clearly visible among those in a bad position and they try hard to recover as quickly as possible.

**Direct supervision:** A manager is responsible for each team and is continuously present in the room. They directly controls the activity by regularly listening in to the telephone conversations. The aim is to improve the performance of each worker through regular reminders of the criteria and suggesting the “right way” to handle the task. They also pay attention to emotional work, stating for instance the tone of voice to be adopted in a particular situation. In case of insufficient performance, they make a deal with the operator, deciding the way to achieve the expected level of result and determining the schedule to do so. In this case, a “moral contract” is agreed with the employee. Through that, the employee considers himself as responsible for his success or failure.

**Ideological control (Mintzberg, 1990):** The company has developed a culture of excellence that is present in the many supports employed (training sessions, posters, extra-professional activities, etc.). When joining the company, everybody is made aware that the job is not simple, is challenging and that only “the best of the best” will be able to hold the position. A strong team spirit is promoted, based on the concept of commitment. Good people are those who undertake to do things and then carry them through, whatever the personal cost involved. This promotes a distance with “bad customers”, who have entered into a commitment and have failed to honour it in the long run. The better people are therefore those who are in the team, reach their goal and contribute to the collective success of the group and the company. Among other values, the company also emphasises the social utility of the job, and promotes competition between the sales and after-sales control centres.

If we consider the panoptical versus empowerment model, we can say that the sales sector follows the panoptical model, with strict control and simple tasks, while the after-sales sector is a composite model, where relatively varied and rich tasks are associated with a strict control.

**Emotion and well-being**

The results show that the sources of satisfaction and the nature of the stressors in the two work situations were different. In the sales call centre, negative emotions appeared when the workers were confronted with situations that delayed the execution of the task at hand and when achievement of the goals was hindered. For example, when they understand from the interaction that it will exceed the “normal” duration due, for instance, to a customer who speaks slowly or who asks for many detailed explanations, we observed negative emotions. In contrast, when they perceive indicators in the situation that the interaction will shortly reach a positive end, they express positive emotion.

In the after-sales call centre, negative emotions where related to the presence of direct managerial control. In fact, the main source of negative emotions appear when the supervisor approaches the employees.

With respect to coping strategies, there are also sectorial differences. Interviews lead to the conclusion that the coping strategies of the sales control centre were oriented towards rapid achievement of the required results. The operators explained that they aim to build “moments off” after periods when they try to "run faster than the machine". This kind of behaviour has already been observed in industrial assembly lines see also Grosjean, 1995). These strategies help to give a certain feeling of temporal control in an environment where the temporal constraints are high.
These coping strategies are not present in the after-sales control centre, where the main stressors are linked to the level of control and where the tasks are considered as richer. In both situations, we observed the appearance of cynicism and denigration of the customers, even if this behaviour is officially banned in the company.

When people start having difficulty to reach their goal, they enter in a vicious circle. They first have to accept to enter a remediation program that they should define with their management. If they are still unsuccessful in achieving their target, they start to feel guilty and their self-esteem is affected. This is also accompanied by a feeling of exhaustion. At this point, group pressure to remain among the best coincides with management pressure. Shortly afterwards, the operator agrees with the idea that he or she no longer deserves to have a place in the team and in the company and leaves. This process presents certain similarities with the concept of burnout, but also with a generalised mobbing against the “weak link” of the chain. The competitive and excellence culture, accepted by the worker as something normal and valuable, certainly plays a role in this process. In the end, everybody agrees that it would be better for “the weak” to leave.

Conclusion
These observations lead to the hypothesis of compatibility between the modes of control and the nature of the tasks, where complex tasks requiring creativity and initiative in association with a detailed level of control are perceived as intrusive by the workers. Even if current technologies allow for continuous and precise monitoring of human performance in modern work situations such as call centres in the interests of well-being, it may be better not to exploit the full possibilities of these technologies.

The long-term effects of such organisational practices were not explored in the study. The fact that the joint degradation of well-being and performance leads to rapid departure from the company certainly reduces the effects in the long run, particularly in comparison with companies where the exclusion occurs later (link with the burning syndrome of nurses in the health-care sector). However, only an investigation of the psychological health of people who have left could reveal their mental state of mind. An ecological approach to the health effects of this kind of organisation should therefore be undertaken.
When the performance is under the requested level, the worker begins to be under pressure. In the excluding model, he/she must leave when under the exclusion threshold. In the exhausting level, he/she only leaves when under the exhaustion threshold.

In the same vein, we can compare two kinds of organisational structures (see graphs 2.A. & 2.B.), differentiating excluding organisational structures (OS) from exhausting organisational structures. Both types refer to work environments where there is a high level of job demand and a high degree of personal involvement. In exhausting OS, where individuals are no longer able to cope with the high demands of the job, they enter into a negative cycle where a feeling of inefficiency and guiltiness on the one hand and attempts to reach the required goals in spite of this on the other go hand in hand. The two factors tend to reinforce each other, and could also be reinforced by environmental pressure (customers, colleagues, hierarchy). As there is no objective way of escaping the negative loop, the worker starts to “fall apart”; then becomes completely exhausted and eventually leaves the job in a state of deep exhaustion (part B of the graph). This is what occurs with health-care staff in hospitals in the case of the phenomenon of burnout, which has often been reported in this class of working environment. In the Excluding OS observed in our two call centres for example, when the performance level begins to drop the workers also come under pressure, not only self imposed pressure but also pressure from other members of staff and management. Hence, there are two possibilities: the ability to return to the expected level of performance or not. In the second case, structural and personal factors rapidly result in the employee (more or less voluntarily) leaving the company. This second model is presented in the part A of the graph. From a moral point of view, there is certainly room for discussion, but we should also consider the issue of the health of the employees. What is worse: to remain in the job until reaching the level of exhaustion described in other presentations of this conference or to leave early and have the opportunity to recover afterwards outside of the company? Here again, a more comprehensive examination of the interaction between working life and public health would be necessary to progress to an answer.

References

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Managers’ quality of working life

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Introduction

During the last two years, group interviews have been conducted with managers, in the context of developing stress projects within organizations. Prior to the group interviews, a questionnaire was distributed within the organizations and the statistical results presented to and discussed with managers. After conducting several group interviews, it became clear that managers are a forgotten group when it comes to implementing stress policies in their organization. Mostly they are considered to be executors of a stress policy, not a target group on their own. This led to the idea of investigating more profoundly the quality of working life for managers; how to explain it and how to improve it. The results of this research are presented briefly in this paper.

Method

In total we conducted 30 group-interviews, with an average of 10 managers per group. The interviews were conducted in three organisations, two of which belong to the public sector and one to the private sector. The group interviews were conducted following the structure of a self administered questionnaire that is used to measure the experience and evaluation of the managers’ work in the organisation. This questionnaire, incorporating the experience and judgement of work (VBBA), was developed by van Veldhoven (1996) according to interactional theory. It not only questions work related factors, but also person related factors in terms of wellbeing and tension. The questionnaire consists of 27 scales, of which 19 are work related and 8 person related. As a result of the group interviews only nine scales were selected for further investigation. Of the work related scales, the following scales have been selected: amount of work (how much work is there, how great is the pressure to get the job done, and is this a problem), participation (on the levels of job content, job circumstances, department, and organisation), independence (can you organise and plan your work yourself), relationship with colleagues (support and interaction), relationship with line management (support and interaction), problems with the task (role conflicts), changes at work (do they create problems) and in clarity of the function (role ambiguity). Only recovery needs has been selected from the person related scales.

After a content analysis, we will formulate some hypotheses regarding the interaction between the different scales. Secondly, these hypotheses will be tested with quantitative data collected in the focal organisations. We will therefore use a T-test (managers – non managers) to compare the “oral” story of the managers with their “statistical” story. Using a correlation matrix we will be able to investigate the direction of the relationships between variables that have evolved from content analysis of the group interviews. Finally, by means of a stepwise regression analysis, we will be able to test whether our hypotheses about managers’ quality of working life is possibly determined by the variables put forward as a result of the content analysis.

Content analysis of group interviews: formulating hypotheses about managers’ quality of working life

The qualitative research shows that managers find it difficult - at the beginning – to talk about their own quality of work within the peer group; they see each other as competitors rather than colleagues with similar challenges, problems, etc … As a result, it can be stated that managers are often a forgotten group, requiring more attention for their quality of working life. Before starting with the content analysis of the group interviews, we will explore some background characteristics of the qualitative data collected for this research.
Managers are confronted with a high amount of work; moreover, they argued that their amount of work is still increasing. Reasons for this are the lack of (clear) priorities, continuously changing objectives and the dependence on others to do their job. Because of the high amount of work, they find no time to fulfil their role as a people manager or to consult with their colleagues. Equally mentioned was the emotional load. As an explanation for this emotional load, they mention protecting employees and of dealing with difficult (internal) clients. Our first hypothesis can be formulated as follows: The combination of a high amount of work and emotional load means that managers are confronted with high psychological task demands.

Concerning possibilities for regulation, a high degree of independence and a high level of participation were mentioned. Here also, some remarks were formulated: a high level of independence is a sign of thrust from the higher echelons of management regarding lower and middle management. The down side of this independence however, is that managers do not experience much support from their line managers as far as task content is concerned. The level of participation was considered acceptable, but, nevertheless, they expressed a wish of having more influence, especially through formulating priorities and defining the vision and mission of the organisation, c.q. the department. Through the discussion of these scales, we already get a glimpse of the way they evaluate their relationship with colleagues and line management. Thus, hypothesis 2 is that managers experience many regulating possibilities, such as participation and independence at work. These regulating possibilities are negatively correlated with the task related problems.

The relationship with colleagues is evaluated as good, but only in the sense of no conflicts, etc. In fact, this means that they do not give the impression of having real professional relationships. They do not discuss matters like co-operation, setting common goals, etc. and they feel a shortage of social support; their informal contacts are few and far between. It appears that they see each other as individuals (competitors) and not as part of a team. As far as their relationship with their line managers goes, they experience a lack of social and moral support. In terms of social support, we can say that managers are asking for more social support from their colleagues as well as from higher management. Hypothesis 3 is that social support, in terms of good relationships with colleagues/ line management, is lacking.

Another thing we discovered during the group interviews is that managers are confronted with task related problems, such as in clarity of the function, problems with changes at work and the absence of information about their personal level of functioning. Inclarity of the function is related to the lack of (clearly) defined priorities, unclear mapping out of responsibilities and a non-existent vision and mission. Because of the continuously changing priorities, where the purpose of these changes remains unclear, the managers' experience problems with changes at work. Thus, hypothesis 4 is that task related problems, such as in clarity of the function and problems with changes in work, bear an impact on the recovery needs of managers. Hypothesis 5: We presume that problems with the task – although not discussed within the group interviews - also have to be included in the story and that they are linked with the scale of in clarity of the function. Hypothesis 6: We presume that there is a link between problems with changes at work and the amount of work.

Looking at the consequences of these work related problems, they explained that, although they have pleasure in their work, this pleasure is diminishing. They find less satisfaction and less meaning in their work. Additionally, they mentioned that these consequences are less visible at work, but are visible at home. Psycho-somatic complaints, such as headaches, were also mentioned. Hypothesis 7 is that managers are confronted with high recovery needs.

Based on these results, we would like to present the following model to explain the quality of working life of managers.
The following presumptions are made in this model. Task related problems are placed centrally. Inclarity of the function correlates with problems concerning the task and is negatively related to the line management (the better the relationship, the less inclarity), participation (the more participation, the less inclarity), independence (the more independence, the less inclarity) and relationship with colleagues (the better the relationship, the less independence). Inclarity of the function has a positive relationship with the problems associated with changes at work (the less inclarity, the fewer problems) and also positively influences the amount of work (the less inclarity, the less amount of work). Furthermore, we presume a correlation between the problems associated with changes at work and the amount of work. All of this influences the recovery needs, although we do not formulate hypotheses on the (in)direct influences and the direction of these influences on recovery needs at this stage.

In the following part of the paper, three statistical analyses will be made. Through a T-test we will compare the quality of working life of managers with that of non managers. This enables us to check how far the overall image of the quality of working life of managers is supported by the statistical data. Next, we will investigate the correlations between the scales mentioned in the model. Third, through a stepwise regression analysis, the impact of task related problems on the quality of life of managers will be investigated.

Results: testing the hypotheses by means of statistical data
Quality of working life of managers and non managers: a T-test
How do we read this figure? The higher the group mean on a scale, the more the group is confronted with the content of that scale. Interpreting the results in terms of a positive or negative result, we have to take into account the direction of the scale. At first sight, the image occurring throughout the group interviews is confirmed. On the positive side, we see that managers indicate a higher level of independence at work, a higher participation level, better relationships with line management and less in clarity of the function than non-managers. On the negative side, managers indicate a higher amount of work, more emotional load, more problems with the task, more problems with changes at work and higher recovery needs than non-managers. The scale relationship with colleagues did not give a significant difference. Let us now look at what extent to which the hypotheses formulated above, can (not) be accepted.

The first hypothesis - managers are confronted with high psychological task demands, such as amount of work and emotional load, can be accepted. The second hypothesis - managers have many regulating possibilities, such as participation and independence at work, can be accepted. Hypothesis 3 has to be rejected: we did not find any evidence for the assumption that managers are lacking social support, whether it comes from colleagues or line management. The T-test showed no significant differences on the scale relationship with colleagues and indicated a better relationship with line management than non-managers. Further research at item level of this scale can provide additional information, since this scale not only measures support but also the interaction. As far as the fourth, fifth and sixth hypotheses are concerned, we must look at the results of the correlation matrix and the regression analysis. At this stage, we can only partially accept the hypothesis that managers are confronted with task related problems. Managers are confronted with changes at work and problems with the task. However, they did not mention problems with the task in the group interviews despite these problems playing an important role in their quality of working life. Secondly, despite the fact that managers revealed during the group interviews a high in clarity of the function, the statistical data showed that this in clarity is even higher for the non-managers. The seventh hypothesis can also be accepted, namely that managers indicate higher recovery needs than non-managers.

Quality of working life of managers: a correlation matrix

Table 2: correlation matrix

<table>
<thead>
<tr>
<th>wh</th>
<th>ziw</th>
<th>rc</th>
<th>rl</th>
<th>pw</th>
<th>ow</th>
<th>viw</th>
<th>inspr</th>
<th>herb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rho (Notelaers, et. Al, 2002)</td>
<td>.89</td>
<td>.91</td>
<td>.85</td>
<td>.9</td>
<td>.78</td>
<td>.8</td>
<td>-</td>
<td>.9</td>
</tr>
<tr>
<td>WH: amount of work</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZIW independence</td>
<td>-0.21</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p-value</td>
<td>0.003</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RC relationship colleagues</td>
<td>-0.21</td>
<td>0.24</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.002</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RL relationship management</td>
<td>-0.27</td>
<td>0.35</td>
<td>0.457</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7E-05</td>
<td>0</td>
<td>2E-12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PW problems with task</td>
<td>0.415</td>
<td>-0.35</td>
<td>-0.38</td>
<td>-0.558</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3E-10</td>
<td>0</td>
<td>9E-09</td>
<td>7E-19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OW in clarity of function</td>
<td>0.269</td>
<td>-0.26</td>
<td>-0.35</td>
<td>-0.568</td>
<td>0.4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7E-05</td>
<td>0</td>
<td>1E-07</td>
<td>8E-20</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

By means of this correlation matrix, we will test our hypotheses again. We only look at correlations > 0.3 (average to strong correlations), since these are more meaningful. Hypothesis 2 says that there is a negative correlation between regulating possibilities and task related problems. In the correlation matrix, we
find negative correlations between participation and the task related problems (inclarity of the function, problems with the task and changes at work). As far as independence at work is concerned, only a negative correlation with problems with the task was found. We cannot fully accept hypothesis 2 and we have to adjust our model, which only indicated a direct interaction between regulation possibilities and inclarity of the function, not with the two other task related problems. Hypothesis 4 states that task related problems correlate with recovery needs. In the matrix we only found a correlation > 0.3 for the scales of problems with the task and changes at work. Thus, hypothesis 4 can only be partially accepted. The model can be refined, since the model does not indicate specific correlations between recovery needs and the work related scales. Correlations were found between recovery needs and amount of work, participation, and relationship with line management. Hypothesis 5 can also be accepted: a positive correlation was found between problems with the task and inclarity of the function. We found a positive correlation between the amount of work and changes at work, which means that hypothesis 6 can be accepted. An additional correlation was found between the amount of work and problems with the task; our model has to be adjusted. Besides the hypotheses, the other relationships in the model have to be tested. The correlation matrix shows a negative correlation between the relationship with line management and colleagues on the one hand, and inclarity of the function on the other. We have to adjust our model however, in the sense that negative correlations with problems associated with the task and changes at work were found as well. Finally, correlations were found between independence and participation, between independence and relationship with line management, between participation and relationship with line management, and between relationship with line management and relationship with colleagues. As a brief summary, we can say that the four scales (task related problems and amount of work) play a central role. However, the model is more complicated and additional correlations have to be included.

Quality of working life of managers: a regression analysis
By means of a stepwise regression analysis, we investigated the impact of task related problems on the quality of working life of managers. We would like to emphasise that this is only an explorative study and that the results have to be checked profoundly. We can only give some indication of the impact of one scale on another. Between the () the respective beta coefficients are mentioned. 16% of amount of work is explained by problems with the task (0.396). 41% of the variance in inclarity of the function is explained by the scales relationship with line management (-0.373) and participation (-0.343). 32% of the variance in problems with the task can be explained by the scales relationship with line management (-0.488) and independence (-0.174). 43% of changes at work is explained by the scales problems with the task (0.324), amount of work (0.294) (which is explained by problems with the task), inclarity of the function (0.16) and relationship with the colleagues (0.123). Since the ultimate purpose is to improve the quality of working life of managers, we also have to look at the recovery needs scale. 35% of the variance in recovery needs can be explained by the scales changes at work (0.282), amount of work (0.305) and participation (-0.150). All of this leads to a new model:
Conclusions and suggestions for future research

Results of the group interviews as well as statistical analyses showed that stress at work should not only be an issue for employees, but also for managers. Through the combination of qualitative and statistical data we were able to present a (preliminary) model for looking at managers’ quality of working life, through which the statistical data enabled us to structure the qualitative story of the managers. Task related problems combined with a high amount of work form the central part of our story.

Managers are confronted with high psychological task demands, such as amount of work and emotional load. In the correlation matrix, a positive correlation was found between amount of work on the one hand and problems with the task, changes at work and recovery needs on the other. The regression analysis showed that the amount of work can be explained by problems with the task, and itself can explain changes at work and recovery needs.

Managers experience many regulating possibilities, such as independence at work and participation, but some remarks were formulated during the group interviews. The down side of independence is that they do not experience much support from their line management and although participation was evaluated as acceptable, they expressed a wish for more participation in priorities, vision and mission. Those regulating possibilities, especially participation, correlate with the task related problems (inclarity of the function, problems with the task and changes at work). Moreover, participation has a positive impact on inclarity of the function and on recovery needs: the more participation, the less inclarity and the less recovery needs. Independence, on the other hand, only correlates with and explains problems with the task: the more independence, the fewer problems with the task. Independence and participation also correlate.

Although the group interviews indicated a lack of social support by colleagues and line management, these findings were not (yet) confirmed by the statistical data. This does not mean that social support does not play an important role in the quality of working life of managers. The two scales correlate positively with the task related problems. The relationship with line management explains problems with the task and inclarity of the function, and correlates with participation and recovery needs. The relationship with colleagues explains the changes at work. The task related problems seem to play a central role in managers’ quality of working life and they all correlate with each other. Whereas the group interviews focused on inclarity of the function, the statistical data show that we have to focus on changes at work. This scale is explained by the two others and, additionally, by the amount of work and the relationship with colleagues. Changes at work combined with amount of work and participation explain 35% of the variance in recovery needs.

Looking at these data, it seems to us that social support can be the trigger to finding a solution. Even in the group interviews, it was said that if managers would act as a team, by co-operating and discussing, some of these problems may find a solution. The group interviews themselves created a new point of view for them - as managers they are not only competitors, but also a group with common demands and needs. This resulted in the formulation of a need for more collective coping. Therefore, stress interventions directed at managers could aim for teamwork within the group of managers and at developing collective coping strategies, in order not only to find social support within the peer group, but also to act as a team towards higher management, in search of clarity in vision, mission and strategies.

But first of all, this model must be examined more profoundly. The model we proposed cannot be tested by our data, since the number of managers from the three organisations used here is too small for Lisrel to estimate reliable outcomes and confidence intervals. More troublesome at the conceptual level is the use of crossectional data, such as that gathered in this research project, to test causal relationships. In the future it would be helpful to test such a model with a sufficient amount of data, coming from a longitudinal design.

References


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Towards a more positive occupational health psychology: a proposed complementary role for positive emotions in explaining the work-health relationship

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Introduction
Over the last decade, occupational health psychology (OHP) has begun to assert itself as a distinct field in its own right. Some of its primary goals include advancing the understanding and prevention of workplace illness and injury (Sauter et al, 1999), improving working life and promoting healthy work (Quick, 1999), with a major focus on organisational-level problem-solving, prevention and employee participation (Cox, Baldursson & Rial, 2000). Sauter et al also emphasised the importance of both protecting and promoting employee health.

However, if we examine OHP research over the last decade, it is not entirely clear to what extent the discipline is achieving its full range of objectives. Innes and Barling (2003) conducted a review of the topics covered by the Journal of Occupational Health Psychology. Their results indicate an overwhelming focus on organisational and individual problems: on the understanding and amelioration of negative experiences and situations, rather than on the promotion of positive experiences. Much of the focus has been on the experience of stress, on negative aspects of work (stressors), on the role the latter play in the stress process as predictors, and on the outcomes of the stress process (strains). Thus, Innes & Barling argue, health prevention and promotion has been subordinated to the focus on problem-solving.

Whilst it is true that the negative focus apparent in OHP is understandable (after all, the absence of illness is one crucial prerequisite to the attainment of health), this paper will argue that it may not be facilitating OHP’s ultimate aim of promoting health in the workplace. This paper specifically looks at the limitations of this more negative focus for models of occupational well-being, and suggests an alternative model.

A Focus on Negative Emotions
The concept of work-related stress has been central to research in OHP; the experience of stress has often been conceptualised as a primary link in understanding the relationship between work and well-being. Over the last few decades, the topic has been the focus of a considerable volume of research, yielding well-developed theories of stress (eg., Lazarus 1966; Cox, 1978), as well a great deal of accompanying media attention. In the Journal of Occupational Health Psychology, stress has been examined almost twice as frequently as any other topic (Innes & Barling, 2003). The title of the longest established journal in the field, Work and Stress, also denotes its centrality.

A major current activity for occupational health psychologists in Britain is to apply a risk management paradigm to the prevention and reduction of work-related stress (Cox, 1993; Cox, Griffiths & Randall, 2003). This approach, adapted from established occupational health and safety procedures that attempt to control physical hazards, and enshrined in national and European health and safety legislation, is used by OHP practitioners to develop tailored assessments of psychosocial hazards in workplaces, to evaluate the risk they pose to employees in terms of the stress-related harm they may cause, and to translate the information thus gathered into appropriate, evaluated interventions. This bespoke approach, although of an essentially problem-solving nature (risk prevention and reduction), has been extremely valuable, since it has provided a framework that can be applied by employers themselves at the organisational level. It also enables employers to meet their statutory duties with regard to protecting their employees from harm and assessing all foreseeable risks. Variations on this risk management approach have been developed in many other countries.
Thus far, it seems that a problem-solving focus has been a good thing. It has proved to be relatively successful in its fundamental goal of establishing frameworks to protect worker health. However, while proving effective, the emphasis on the negatives (hazards, risks and harm; stressors and strains; negative emotions) may not be unmasking the full picture of the work–health relationship. Despite thousands of studies, stress has proved to be only moderately related to individual and organisational outcomes such as absence, performance, turnover and, on occasion, even health (Briner & Reynolds 1999; Ganster & Schaubroek, 1991; Harrison & Martocchio, 1998; Jex, 1998; Johns, 1997). Published interventions concerning stress are rare, perhaps partly due to the methodological challenges involved in carrying them out and in getting them published within a scientific establishment still dominated by the natural science paradigm (Griffiths, 1999).

Psychological approaches to stress (e.g. Lazarus 1966; Cox 1978) define stress as a cognitive state (Cox 1985) which is part of a wider process reflecting an individual’s perception of and adaptation to the (work) environment. This state, which constitutes a reaction to aversive aspects of the (work) environment, encompasses a subjectively negative emotional experience, and can give rise to harmful physiological and psychological outcomes. In other words, the state of stress is an outcome of a problematic transactional process between person and his or her environment. Thus, work can be bad for your health, and stress has been offered as a vehicle for conceptualising that link. It should also be said that unemployment is associated with poor health outcomes. In other words, not working can also be bad for your health. However, few would deny that our work environment can also provide us with opportunities for growth and development. These opportunities might augment performance and job satisfaction and enhance the quality of life. Thus, working may be good for your health. But here, little has been offered as a vehicle for conceptualising that link in occupational health psychology, or at least not anything that has achieved the status of the concept of stress. It is surprising how little attention the theoretical underpinnings of such a wider person-environment transaction have received. It may be, for example, that the states of high arousal caused by challenging work are somehow beneficial to work performance, well-being, and related behaviours such as absence, turnover and performance, provided the individual considers that he or she can cope with them.

There has been one suggestion that we should consider an alternative positive model. Nelson and Simmons (2003) have proposed that we could make the study of OHP more positive by focusing more on the concept of ‘eustress’. Eustress has been described as a desirable ‘positive stress’ associated with the effects of a physiological response to a given stimulus, as opposed to distress, the negative effect of that response (Selye, 1976). However, there is at least one challenge to this suggestion, if only in terminology. The very word ‘stress’ has ingrained negative connotations for many. To say that any type of stress can be positive is likely to generate confusion at best, and lead to poor management practices at worst. It has long been said by many a well-meaning manager that ‘a little stress is good for you’. They may mean ‘a little challenge is good for you’, but equally it may be used as a justification for setting over-demanding work.

There are three further practical concerns for occupational health psychologists in relying largely on the concept of stress in explaining the relationship between work and health. First, many managers find the issue ‘scary’; they express a reluctance to open up a ‘can of worms’ by focusing stress within their own organisations. As a result, many fail to comply with their duties to protect employees from known risks. Our work over the past decade on stress management interventions at the Institute of Work, Health & Organisations has shown that work-place assessments are often better presented in terms of ‘work and well-being’ rather than ‘work and stress’. Describing such activities in a more positive way, and including a focus on ‘good’ aspects of work generates more enthusiasm from managers. Second, it has been suggested that the essentially medical model of stress (still apparent in many circles) where stress is treated as a pathogen, reinforces the attitude that stress is an individual problem (Reynolds & Shapiro 1991). Many managers do indeed still believe that stress is simply something that certain individuals are ‘prone’ to, and that management practices are minimally influential. Third, and finally, at the beginning of the 21st century, where we face both skills shortages and a need to keep older workers at work for longer than has previously been the case (Griffiths, 1997), we need to explore all avenues for recruiting and retaining a healthy and productive workforce. A more extensive and practically-focused model of work and well-being, that encompasses both how to avoid negatives emotions and their sequelae at work, as well as how to enhance work’s positive characteristics, may well be judicious.
The Unexplored Role of Positive Emotions

The study of positive emotions may provide a more powerful model of the relationship between work and health. Just as the negative aspects of the work-well-being relationship have been explored via the concept of stress, which refers to a mediating role for distressing or negative emotions, so may positive emotions play a mediating role in the relationship between a positive work environment and well-being. The importance of positive emotions in general has been highlighted from within the ‘positive psychology’ literature (Seligman & Csikszentmihalyi, 2000; Fredrickson, 2001). However, so far positive emotions in the workplace have been largely overlooked in OHP. Up to now, the closest thing to a systematic body of research into positive emotions in the workplace, has been the organisational behaviour literature on employee ‘happiness’, although this literature is not without its critics (Wright & Docherty, 1998). The general lack of explicit attention to emotions at work is disconcerting since they are among the primary determinants of behaviour and as such may greatly affect the social climate and productivity of organisations (Pekrun & Frese, 1992; Cooper, Dewe & O’Driscoll, 2001).

The emerging picture from recent research on positive emotions in non-work situations is that they confer tangible beneficial effects to both physical and psychological health (Fredrickson, 2001). For example, they have been shown to hasten recovery from the cardiovascular sequelae of negative emotions; it has been proposed that they have an ‘undoing’ effect on negative emotions (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan & Tugade, 2000). Research in psychoneuroimmunology has pointed to various pathways (Salovey et al, 2000), with a focus not simply on the ‘pleasant present’ moment but on longer term well-being. Positive emotions have also been linked to measurable cognitive-behavioural outcomes. Experiments have demonstrated that positive emotions produce patterns of thought that are unusual (Isen, Johnson, Mertz & Robinson, 1985), flexible (Isen & Daubman, 1984), creative (Isen, Daubman & Nowicki, 1987) and receptive (Estrada, Isen & Young, 1997). In general terms, Isen (1987) has suggested that positive affect ‘enlarges the cognitive context’, an effect linked to increases in brain dopamine levels (Ashby, Isen & Turken, 1999). These are all outcomes which, in certain circumstances, might be desirable in an occupational context. In addition, given that it is impossible to eliminate the stressful aspects of certain types of work, we may nonetheless be able to mitigate their detrimental effects by promoting aspects of that work that give rise to positive emotions. In any case, preventing or reducing problematic negative emotions does not in itself cultivate positive emotions; experiencing positive emotion is more than simply not experiencing negative emotion (Pekrun & Frese, 1992; Weiss & Cropanzano, 1996).

Richard Lazarus, one of the greatest contributors to psychological models of stress, spent much of the latter part of his career arguing in favour of consolidating psychological stress theory within a larger theory of emotion (e.g. 1993; 1995; 1999). The more sophisticated our understanding of emotions at work, particularly positive emotions, the greater will be our ability to design and implement effective interventions. OHP researchers may wish to turn to the psychology literature on emotion as a first port of call, although it is likely that a great deal of new empirical work will be needed. In general terms, the scientific literature on positive emotions is thin on the ground and theoretically inadequate (Fredrickson, 2000). They may be able to draw from a number of recent theoretical advances which highlight the role of specific emotional reactions (Weiss & Cropanzano, 1996) and which advocate the ongoing assessment of emotions in real time.

Conclusions

The mitigation of problems in organisations is without question a central concern in the protection of employee health. But it has been contended in this paper that it may not provide the full range of options in our efforts towards the promotion of employee health. Both are central concerns for occupational health psychology. Stress-related theory and practice has ably demonstrated both the effects of negative emotional experiences at work, and the possibilities for reducing those health-detrimental experiences. We argue here that there remains a need for research that explores how work might benefit health, specifically by examining positive emotions at work, and by exploring methods for increasing those experiences where desirable. To do this, we may need to draw upon research in non-work-related fields. If positive emotions are found to predict desirable outcomes in the work environment, as they have done in non-work environments, practicing occupational health psychologists might draw upon this body of knowledge and expand the range of their assessments and recommended interventions in the psychosocial work environment. This might facilitate the overarching objective of OHP – the creation of healthy individuals in healthy organisations.
References


Is there something unique about service work that challenges occupational stress researchers?

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**Background**

Service work is heterogeneous and has been referred to as a vague ragbag of occupations (Forseth 2001). Historically the service-producing industry has included all kinds of industry except manufacturing, resource extraction, construction and farming (McCammon and Griffin 2000) and has been distinguished into welfare services (social services, health, education), distribution services (trade, transportation, communication), production services (finance, consultancy) and personal services (household, entertainment, recreation, maintenance) (Langeland 1999).

The last decades the service sector has expanded. In the sixties, 40 % of the Norwegian work force were applied in the service sector. The corresponding numbers for 1995 was 72 % (Forseth 2001). Statistics show approximately the same percentage in other western countries. It employs both men and women, but a division along gender lines can be seen. 50 % of the women spend 75-100 % of their time with the customer while the corresponding figure for men is 20 %. Men in service tend to dominate the managerial positions with less frequent contact with customers (Forseth 2001). Service seems to become more important for companies outside the service sector where the values of goods have become more dependent on the service content (Aronsson 1999). Service work may therefore be a more valid term than the service sector or the service-producing industry because service is performed in all kinds of organisations. By reviewing literature on service work, this paper aims to present theoretical and methodological challenges to be met by the occupational stress researchers because of the expansion of service work.

**Differences between manufacturing and service work**

Differences between manufacturing of goods and the production of service have been stated by Normann (1983). In manufacturing, the product is definite and something you can touch with your fingers and see with your eyes. In service the product is intangible; it consists of acts and processes that can’t be seen or touched. The product doesn’t have a tenure that can be transferred, it cannot be resold, it cannot be demonstrated before the sale and it cannot be stored. Another difference is that production and consumption take place simultaneously and in the same room in service, while production, sales and consumption are isolated both by localization and in time in the manufacturing industry. The third main difference is that the customer takes part directly in the production and there may be direct contact between the service worker and the customer. In manufacturing, there is no interaction between the customer and the producer of the goods. Additionally, face to face and voice to voice contact and the requirement for emotional labour is a fundamental element of service work (Macdonald and Sirianni 1996). Emotional labour is defined as “the management of feeling to create a publicly observable facial and bodily display, emotional labour is sold for a wage” (Hochschild 1983). The product is therefore a result of social interactions that take place directly between the customer and the worker – also called “the moment of truth” (Normann 1983).

Physically demanding work and demands such as higher time pressure and reorganisation processes with higher job insecurity also exist in service work. However these demands may be found in all kinds of organisations and are therefore not unique. The characteristic feature of service work is the relation to the customer.

**Characteristics of service work**

This relation between the service worker and the customer may differ between organisations, different occupations and the context in which such work is performed. Gutek (2000) have categorised service interactions in three distinct types: relationships, encounters and pseudo-relationships. The customer and the service worker have a service *relationship* when they get to know each other and are expected to interact again in the future. The service can then be tailored to the specific needs of the particular customer (ex: hairstylist, physician) When the service worker and the customer are strangers to each other and do not expect to interact again in the future, they have an *encounter* or a one-time interaction. In this case there are standard and uniform procedures. According to Gutek, this is the type of interaction carrying the highest level of stress and strain because they are monotonous, the service workers have less autonomy and few possibilities for development and advancement. The *pseudo-relationship* consists of repeated interactions between a customer and a service provider organisation but it is not a real relationship because the interaction is between strangers. An example is a customer who prefers a special bank, but not a special service provider within the bank.
The interaction between the service worker and the customer requires what has been denoted emotional labour. Arlie Russel Hochschild introduced the concept in her book in 1983. Emotional labour involves face to face or voice to voice contact with customers, the service workers are expected to produce an emotional state in the customer, and finally the employer has the opportunity to exert some control over the worker. This means that the worker has to manage the way she/he behaves and to create a sense of feeling or experience for the customer. This is often regulated by feeling rules that may exist in the organisation. The result is that an impersonal relation is made personal, including elements of kindness and caring, accepting complaints from customers without answering back but still with a true smile.

Emotions usually refer to a physiological arousal and a cognitive appraisal of the situation (Grandey 2000). By regulating the arousal and cognitions that define emotions, individuals can control their emotional expression to fit display rules of the situation. Similar for service workers is that they regulate their appraisal and cognitions in order to display the appropriate emotions at work. The appropriate emotions to display may differ from job to job (Grandey 2000). To smile and have a good mood is important in customer work; if you are a bill collector it can be more appropriate to show anger. Not showing emotions at all can be appropriate for therapists. Differences may also exist between men and women. Within the same position there can different requirements for expressing emotions between men and women.

Hochschild (1983) also stated that the employer has the opportunity to exert control over the worker. Management and control of service work mainly involve two approaches: The “production line” approach and the “empowerment” approach (Macdonald and Sirianni 1996). In the "production line" approach the behaviour of the service worker is appropriated in advance by management and coded in tightly scripted routines or integrated in the technical design. It can be compared to the assembly line in the manufacturing industry with deskilling of the employees and speed up trends. The workers repeat a set of relatively simple tasks continuously with little opportunity for decision making – leading to reduced control of service work mainly involve two approaches: The “production line” approach and the “empowerment” approach (Macdonald and Sirianni 1996). In the "production line" approach the behaviour of the service worker is appropriated in advance by management and coded in tightly scripted routines or integrated in the technical design. It can be compared to the assembly line in the manufacturing industry with deskilling of the employees and speed up trends. The workers repeat a set of relatively simple tasks continuously with little opportunity for decision making – leading to reduced job autonomy. An effect of this is the routinization of the customers. An example of an organisation using this approach is McDonald’s. The “empowerment” approach follows when the nature of the customer interaction requires more flexibility and spontaneity and when service needs to be tailor-made for the customer. In this case workers are carefully selected, trained and motivated to make decisions that management will approve. In the selection process gender, class, age and status markers act as proxies for required personality types. The employees are given the power by the management to make decisions on own judgement. That means that employees feel they are given a high job autonomy. Examples of organisations using the empowerment approach are insurance and banking.

Theoretical and methodological challenges for the occupational stress researcher

Theoretical models are often used in occupational stress research. They are operationalized into generic questionnaires for use in epidemiological studies, studies on specific heterogeneous and homogenous work groups and in intervention studies. In traditionally used models, the interaction between the customer and the worker (i.e. emotional labour) is absent. A challenge is to include these demands in models and to operationalize them in the questionnaire. For comprehensive studies, questions should reflect the general qualities of the diversity of emotional work, and make sense for all particular workgroups. For studies of more specific work groups it is more appropriate to develop more specific questions.

Another challenge is related to the understanding of control of work. The control concept has been related to the control of work tasks (Karasek and Theorell, 1980). In service work the employees perform work tasks that also include a third part, the customer, which mainly are relational. Control may in these occupations have a different meaning including both workers’ control over their relation to the customer and how organisations control the relations between the workers and the customers. Control may in this respect be difficult to understand but also difficult to operationalize for use in questionnaires.

Service jobs are occupied by both men and women. Men and women may have different work content, different requirements for performance, meet different attitudes from the customer and have a different work environment. Gender should therefore be taken into account in all studies of service work. It has also been stated that stress research has mostly focused on men and measures of stress have been male-oriented (Messing 1998).

The complexity and diversity of service work is a challenge for prevention and reduction of work-related disorders as focused in intervention studies. The variation in relations between customer and service worker, types of customers, types of service and differences within organisations where such work is performed indicate that interventions may be performed at both the organisational and the individual level. If interventions may succeed it claims a good understanding and insight into work content including the relational aspects of the work, the work environment and the organisation. The intervention may then be targeted more specifically at the different individuals or work situations.

Finally, an overall challenge for research in general is the lack of knowledge about service work in general. Still most of the studies are performed in traditional industry, and the use of similar approaches used in both traditional industrial work and service work is not able to identify or include specific aspects of service work. Explorative studies are therefore
still needed. Additionally, interdisciplinary research is essential in order to get a broader understanding of the complexity and diversity of service work.

References


The study of work-related stressors among female General Practitioners (GPs) in Taiwan

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Introduction
In common with other countries there is an increasing participation of women in the labour market in Taiwan. This is also reflected in the medical system. In 1999, 27% of the students enrolled in medical school were female and by 2001 this figure had reached 31%. In 1999, 24% of medical school graduates were female. By 2001, the number had increased to 26% (Ministry of Education ROC, 2003). Even though the number of female students and graduates has grown, this has not been reflected in the actual numbers practicing. For example, according to Taiwan Medical Association the number of female doctors actually in practice was about 10% in 2000 (Taiwan Medical Association, 2003). The impact and effect of job stress on female doctors may be a factor in the low participation of women in the medical workforce, but this is poorly researched in Taiwan.

Previous studies have focused on stressors related to speciality, practice style and the impact of extrinsic factors. There is however a lack of research evidence on the impact of gender (Richardsen & Burke, 1993). Female doctors may have a different perception of domestic responsibility to their male colleagues, which may interact with their medical career (Uhlenberg & Cooney, 1990). Studies of the work-related stressors of doctors have mainly focused on medical work and seldom explored the impact of family domain as a source of stressors, presumably under the false assumption that home is a source of happiness and comfort. This hypothesis may not be exactly applicable to female doctors. Even when studies do investigate stressors of the home/work interface, it is not sufficient to explain the situation of female doctors. Therefore, it is important to give equal weight to both work and family domains when investigating work-related stressors for the female medical profession. Concerns about stress amongst doctors is a global issue because the consequence of stress will not only harm doctors themselves but also hamper the quality of care they provide (Firth-Cozens J & Greenhalgh J, 1997). The present study aims to explore and understand work-related stressors of female GPs in the current working environment in Taiwan.

Method
Interviews were conducted with fifteen female GPs. Participants in the study were recruited by means of personal networking and a list provided by Chinese Medical Women’s Association (CMWA). The interview was semi structured and the GPs were asked key themes, which were identified from both literature reviews in the academic papers and suggestions from female doctors of the CMWA. Seven themes were daily work schedule, general attitude toward work, the government initiated National Health Insurance (NHI) scheme, work and family, professional advancement, doctor-patient relationships and interpersonal relations. The GPs’ ages ranged from 35-67 years old. All but one of the participants were married; 13 to other doctors, 1 to a civil servant. The hours worked by these fifteen GPs varied. During the week, the longest working time was eight hours per day, and the shortest was three hours. On Saturday, the longest working time was 7.5 hours and the shortest was none. Most of GPs did not open their clinic on Sunday; if they did the longest working time was 3 hours. The number of consultations made by each GP was in the order of 10–100 patients a day. Most GPs considered the number of patients they had to see during each session too many. Eleven GPs were single-handed; the remaining four worked in group practices. The NHI intervention appears to have had an enormous impact on many aspects of GP’s work. The increased bureaucracy associated with the NHI made GPs feel frustrated, paperwork increased and professional autonomy decreased.

Results
Like other career women, female GPs have multiple roles to play in their daily lives. It is almost impossible to find a substitute person to cover their medical work, because of their professionalized occupation. As a result of this unique circumstance, female GPs tried to minimise their work/home conflict in three ways. Firstly, they had a positive thought for work and home. If one constantly thinks that work and home are both greedy institutes that ask for one’s time, it might be easy to feel stress. Secondly, great support from the husband. In the interviews, many married GPs expressed deep appreciation of their spouses. They felt less stress while at
work if their spouses understood and tolerated them not being a good wife/mother all the time. Thirdly, getting support from an outsider to complete housework. No matter how much effort female GPs made to minimize conflict between work and home life, there was still a conflict expressed by interviewed GPs. Half of the GPs revealed that it is difficult to balance running clinics and mastering clinical knowledge. Some GPs also expressed that academic achievement may be low because clinical work already occupied most of their time and there was lack of time for them to conduct research and publish papers.

Female GPs believed that they were seen as more patient and more willing to listen to patients’ suffering, from the patient’s point of view, compared to their male counterparts. Some GPs perceived that patients went to clinic not because of physical illness, but only because they wanted to talk to them and obtained some emotional comfort. Four of the interviewed GPs described that their relationship with patients was like friends and perceived this relationship as positive. Almost all interviewed GPs were single-handed, the interpersonal relationship they had was with their staff, who were mainly nurses. According to the interviews, GPs perceived that their relationship with the staff was good. If any quarrels happened, GPs would try to sort it out without too much personal emotion.

Conclusion

Four work-related stressors were especially mentioned by female GPs. These were: time pressure, seeing too many patients within a short timeframe; bureaucratic workload; feeling of reduced professional autonomy due to the involvement of the government; and difficulty in establishing an acceptable balance between their domestic and working lives. This study could serve as a reference for those female medical students, to understand what kind of stressors they would encounter when they become GPs. Moreover, the findings of the current study served as a guide to develop contents for my large quantitative questionnaire survey.

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Come Fly with Me: Risky flying operations or pilots at risk?

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Introduction

The context of the study

Several authors have observed that competition in globalised markets is based on ‘quality, innovation and customisation’ and therefore demands ‘more flexible arrangements of both production and work (Dell’Aringa & al. 2003:3).’

Aviation has entered into its third generation. Air traffic is expected to become safer, cleaner, quieter, more affordable, and more secure. Its front-line workers, i.e. the pilots and cabin attendants, will not be recruited from the supermen and women any longer. New demands from the travellers, the carriers and the aviation industry itself will eventually produce a more sustainable concept of air traffic. Meanwhile, the pilots and cabin attendants are apparently taking a heavy beating. Many air carriers try to compensate the loss of customers by increasing the pressure upon their employees, which in turn can have a detrimental effect on the ideal sustainable standards of business. The impacts of such strategies would be of focal interest.

International helicopter transportation places itself in the midst of these industry changes, and offshore transportation seems to follow the rule, rather than be the exception to this trend. World wide about 1000 helicopters serve the offshore oil and gas industry. However, offshore helicopter transportation is recognized as more risk-prone than the average aviation operations, due to tougher weather conditions, as well as simpler navigation and landing infrastructure.

During the period 1966-1990, fatal accidents caused by North Sea offshore helicopter transportation were 4.1 per million flying hours. During the next decade, 1990-1998, a series of measures were introduced, reducing the average to 2.3 fatal accidents per million flying hours. At face value, offshore helicopter transportation has been safer. The introduction of new procedures and equipment, like new monitoring systems to manage maintenance, improved radar and radio coverage, separation of flying routes, implementing quality management and assurance standards, new helicopter types, improved landing robustness and stability, etc., are all factors conducive to improved safety. However, predictions about the present and near future operations are less optimistic; net reduction in risk level will be lower than in the previous periods. Consequently, more emphasis has to be put on measures to improve the frequency of accidents and failures, rather than consequences. Design of new helicopters has to focus on safety rather than efficiency, range and lifting capacity, and helicopter companies are recommended to implement optimal working environment and working conditions for the crew (Sintef 1999).

Objective and research questions

Offshore helicopter transportation is a sub-segment of aviation, run very much on different business logic than the major bulk of the aviation industry. The “glamour” of international aviation is totally lacking, and the working environment is tougher. This study highlights the effects of changing demands on health and well being for pilots in an international offshore helicopter company, where downsizing and new shift rotation systems can be seen as integral to their global restructuring strategies.

This paper focuses on the following research questions:

- How do the management and the pilots assess the (organisational and individual) risk profile of offshore helicopter transportation?
- Does co-operation between the OHS personnel, the management and the representatives of the pilots (stewards) promote a preventive safety culture conducive to safer flying operations and an improved working environment?
- Do organisational changes of this type (i.e. downsizing and reorganisation) have unintended psychosocial health effects?

Additionally, two working hypotheses were formulated at the outset of the inquiry:
H1: Strong interaction between management and pilots in developing a safety culture, increases the competence and effectiveness of both parties in implementing appropriate working environment measures.

H2: Rigidity of reorganisation will tend to shift market pressure onto their employees, thus causing increased individual time and job demands, subsequently leading to increased health strains.

Theory

Organisational accidents, as opposed to individual ones, during the last decade have attracted increasing attention by researchers. Turner and Pidgeon (1997) argue in their Man-Made-Disaster (MMD) theory that accidents in complex organisations are neither incidental episodes caused by technological failures, nor foreordained interventions guided by ‘God’s hand’. Perrow (1984) distinguished between minor accidents, due to component failures, and system accidents involving active and unanticipated failures in complex systems, which he labelled normal accidents (NA). Sagan (1993) and Reason (1997) argue against the notion that accidents will inevitably occur in complex, high-technology organisations. They claim that high-technology systems can be designed, organised and managed in a safe manner. High reliability organisations (HRO) are performing activities often connected with a high risk potential and serious consequences. However, the subsequent quest for resilient organisation models has led to a bootstrap problem, since theories of organisational accidents often point at different aspects than measures for resilience (LaPorte & Consolini 1991).

Empirically, all three theories deal with complex, high-risk organisations, like aircraft operations. In some way or another they are focusing upon the interaction between organisational systems, technology and human behaviour and attitudes. Although they are pointing at resilience and robustness as an ideal of organisational and technological design, they differ as to which measures should be applied to achieve the optimal state. NA claims that redundancy often causes accidents because the system becomes more complex, while HRO is in favour of redundancy to avoid both structural and cultural vulnerability. MMD claims that system vulnerability is concealed by social processes that prevent evaluation of risk for both individual and organisational accidents.

If organisations are to be competitive, more productive and economically sustainable, they will require highly skilled knowledgeable, innovative and stable employees. An increasing number of companies implement management systems and practices with greater employee involvement to increase productivity and quality, and to gain competitive advantages. Critical organisational processes such as information sharing, training, decision-making and rewards are being moved down to the operative levels in the organisation. The high-performance organisations (HPO) create conditions for great motivation; improve intra-organizational interactions, and lower employee turnover (Armstrong 2001). This strategy for high performance organisations is now spreading worldwide (Lawler & al, 1998).

A common aspect of most HPO’s is that they share the objective about flawless systems opposed to the short term objective of profit making. Organisations that are unable to balance the two objectives will sooner or later fail. The reliability of the HRO-systems can in fact be a crucial factor when seeking maximum profit. The operative challenges for these systems are two-sided; be able to manage complex technology and at the same time avoid failures, and have sufficient spare capacity to meet extreme loads whenever they occur. Such a balance can be obtained by a series of measures including organisational learning, decentralised decision making, and organisational redundancy (LaPorte & Consolini 1991; LaPorte in Weick & Sutcliffe 2001). The other side of the coin is to take more out of the employees’ work capacity.

This paper argues that improving the efficiency of operations by downsizing and reorganising work loads can reduce organisational redundancy and increase the health strain on the employees. It can also impair the reliable operations and increase the risk of both organisational and individual accidents. Intensification of work by means of lean production concepts or as a response to increased customer demands can lead to reduced well-being, new health strains as well as increased sickness absence (Brödner & Forslin 2002; Green 2002).

Method

The paper reports results from an exploratory and intervention study undertaken within a subsidiary of a multinational helicopter company operating for a long time in Norway, thus applying an embedded, single case approach (Yin 1944).

Supplemented by secondary information describing company performance indicators, the material consists of qualitative data collected using in-depth, semi-structured individual interviews with union stewards, management, OHS representatives and a representative group of 15 (i.e. 10% of the) pilots. These data are mapping physical illness and psychosocial consequences, etc) of business revitalisation actions amongst the pilots. Three consensus workshops (dialogue conferences) were also carried out, addressing OHS
Additionally, a company narrative (story telling) about the organisational culture characterising the pilots’ perceptions of their job based on open-ended interviews with top management, union representative and pilot safety delegate was presented to the workshop participants. Such narratives are often applied when it comes to uncovering persons’ interpretation and meaning of significant experiences (Mattingly 1998; Williams 2000). Furthermore, internal validation of the qualitative data has been secured by letting the participants assess the report from the succeeding workshops.

### Results

Findings indicate that both organisational and psychosocial working environment have been influenced negatively during the period of reorganisation. Additionally, life style, health resources and stress tolerance amongst the pilots have also been influenced negatively. Older pilots seem to be in an extremely marginal position in terms of coping with their own possible redundancy and simultaneously handling the reorganisation process, including losing their operating licences or pension rights. Troubles pile up; e.g. hearing impairment, back pain, stress, and strain and risk perception of daily work assignments topped with failing communication between pilots and management point at some kind of systemic failure which individualise the burdens of reorganisation. The reorganisation triggers health risk factors amongst the pilots, which are not lessened when assistance was offered through the occupational health services (OHS), from the union representatives or from the HRM division of the company.

A summary of the findings are listed in the table below:

<table>
<thead>
<tr>
<th>Model element</th>
<th>Organisational characteristics</th>
<th>Working environment</th>
<th>Health strains</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empirical</td>
<td>Mechanistic/bureaucratic</td>
<td>Unsatisfactory</td>
<td>Musculoskeletal strains most frequent; mostly neck, shoulder, back</td>
<td>Increasing;</td>
</tr>
<tr>
<td></td>
<td>Top-down communication Dim/invisible operative management</td>
<td>cockpit arrangements; - noise, vibrations, non-ergonomic equipment, uncomfortable uniforms</td>
<td>Also headache, concentration problems and fatigue occur</td>
<td>- sickness absence</td>
</tr>
<tr>
<td></td>
<td>No dialogue with management or performance appraisal of pilots</td>
<td>Increasing intensity; - job/time demands - shift/rotation systems Weak client dialogue</td>
<td></td>
<td>- presence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- productivity</td>
</tr>
</tbody>
</table>

A paradoxical situation appears; the quest for flexibility increases the presence of the pilots towards the company. Several pilots are working maximum hours and also working overtime in order to meet peak loads. This increases the productivity of the company measured as flying hours delivered. On the other hand, the sickness absence due to increasing health strains also increases, thus threatening the productivity gains.

The company introduced a new kind of flexibility scheme; a need for variety in hours of duty, hours worked, conditions of employment etc. is threatening the collective agreements and the established norms of working conditions for the pilots. State of the offshore transportation market, technologies challenges due to new types of helicopters, changing customer requirements drive the changes of the personnel policy. Working environment is thus becoming a topic for collective bargaining rather than a framework condition for operating the offshore transportation. However, the Work environment act and provisions regulates this kind of numerical flexibility.

On the other hand, the company is also trying to keep and improve its system of functional flexibility; i.e. the willingness and possibility to shift between work assignments and ways to do the job tasks. This implies delegation of responsibility to its eight base crews, a flat organisation, and a training and job variety program. High functional flexibility combined with ability to change and with measures for adaptation, can reduce the need for numerical flexibility.

However, it seems that the need for higher numerical flexibility is coupled with a sense of lower employment security amongst the pilots. This threatens the functional flexibility and pulls the organisation towards a more traditional, hierarchical system.
Recent research focuses on alternative strategies as response to a harsher and more competitive climate; one can choose the “high road, the low road or the no road” strategy, respectively (Hague & al. 2003). The high road solution emphasises such strategies for increased competitiveness which imply organisational options for the employees to apply and develop their ability to learn and be creative. The company seeks the competitive edge by increasing its innovative potential, rather than by cost efficiency. Low road solutions focus upon how to achieve competitive advantages by being cost efficient, flexible, quality based and having higher work pace. No road companies have no particular change strategies and extend their “don’t’ rock the boat” approaches.

The reorganised helicopter company resembles what is labelled a “low road” company focusing upon cost efficiency, numerical flexibility and increased work load.

Some reorganisation lessons, where the traditional management regime encounters the more participative decentralised style, where autonomous teams are delegated management control of defined responsibilities, seem to emerge from the study, which point at options for improvement, such as:

- Transparency of motives and actions for senior pilots work assignments
- Clear criteria for redundancy assessment
- Open, two-way information exchange
- Back-up capacity for coping with health and strain effects

A transfer towards a more team-based organisation model will require tools and strategies for improving performance, reducing stress, improving communication skills, effectively managing work and personal life balance issues, and increasing the satisfaction of both the pilots and the customers of the company.

Likewise, findings indicate that a large-scale reorganisation of the working environment is a risky affair when OHS lacks capability and credibility, the local union lacks strategies, the management lacks measures and the potential redundant lacks coping capacity. However, those who learn from experience suffer the least.

References
Enhancing the use of resources: the role of self-regulation

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Salutogenetic perspectives of psychological health and well-being focus on resources as a major protective factor. In a work-related context organisational and social as well as personal, resources are included. There is evidence that in modern work structures it is more and more difficult to access and maintain these resources (e.g. Brödner, 2002). In the context of the structural optimisation of work processes and organisational features, most individuals –managers as well as employees- are left alone to cope with the problems of an increased scope of action (e.g. how to achieve a given objective) and a decreased room to negotiate these objectives (e.g. which objective is to be attained) – and with the question of how to efficiently employ available resources towards attaining these objectives. In this regard, processes of self-regulation can be seen as the “pivotal point” in terms of matching resources and given objectives. The Dual-Process-Model of Coping (Brandstätter & Renner, 1990) introduced two major concepts relevant to coping effectively with blocked goals and shrinking resources: (1) Assimilative tenacity as a disposition to maintain personal goals even against obstacles and (2) accommodative flexibility as a readiness to flexibly adjust goals and ambitions to constraints and shrinking resources. As the interaction of these two concepts reflects a very attractive combination in terms of effective self-regulation, the Dual-Process-Model was applied to the working context of middle management. In the present study, social support was taken as a sample resource to illustrate the mechanisms of self-regulation in terms of the Dual-Process-Model of Coping. 99 managers from several organisations were recruited as participants. A questionnaire containing the following domains was administered: (1) Measures of job satisfaction included sense of meaning, perceived work efficiency, as well as general ratings of job satisfaction. (2) Subdomains of managerial competencies, including communication skills, personal work and leadership style, and entrepreneurial ability were rated on an critical incident basis with respect to job-related importance, individual competence, and perceived social support. (3) In addition, the scales of Tenacious Goal Pursuit (TGP) and Flexible Goal Adjustment (FGA) were used to assess individual differences in coping style (Brandstätter & Renner, 1990).

Results
As a first step, correlations between job satisfaction, individual competence, and perceived social support were assessed, which supported the notion that available social resources foster personal self efficacy as well as subjective well-being. Secondly, hierarchical regression analyses were performed to examine the interaction between perceived social support, accommodative flexibility, assimilative tenacity and self-efficacy in greater detail. In predicting self-efficacy, the regression solutions obtained strong effects for perceived social support-, FGA- and TGP-scales. This indicates the importance of self-regulatory flexibility and tenacity in making resources –social support in this case- available. Thirdly, moderated regression analyses were performed in the competence domain “leadership style” to illustrate differential effects of self-regulatory processes: Participants showing higher-than-average scores on the FGA-scales were significantly more able to perceive their social surrounding as a resource.

Conclusion
Effective self-regulation and, especially, accommodative flexibility are critical for accessing social resources in the working context. The results suggest that, in terms of self-regulation, (social) resources can be seen as a relational construct, i.e. helpful only for those, who are able to flexibly construct and, therefore, perceive this supporting resource. Elaborating this self-regulatory perspective for counselling and coaching is discussed as a future line of research.

References
Health circles in a kindergarten

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Introduction

As the European Network for Occupational Health stated in the Cardiff Memorandum, programmes for occupational health in small enterprises are necessarily needed (2001). Concepts and examples of good practice are known predominately for larger enterprises of the industrial production. Although labour shifted towards the service sector we find a lack of programmes for these in general, but especially for the psychosocial professions.

The idea of this project was to develop and evaluate a method to enhance the health of employees in small enterprises of the psychosocial services. Since health circles have proven to be beneficial in the industrial setting this concept was adapted to the conditions of a kindergarten. A manual for health circles was worked out, performed and evaluated. The field of intervention was a kindergarten in Berlin with major problems concerning sick leave, conflicts with parents and within the team, and a high level of noise due to inappropriate building-conditions. The personnel complained about an overload of work and displayed typical symptoms of the burnout-syndrome. Since their self-efficacy was low it was expected that the work within the circle would enhance these cognitions.

The reported strains resemble the ones investigated by several scientists. Dippelhofer-Stein and Kahle (1995), Bamberg (1995) and Netz (1998) found out that the following factors are stressful:

- children furniture for grown ups
- feeling overstrained due to multiple expectations from the parents
- difficulties with children suffering from attention deficiency disorder
- too many children in one group
- negative and low image of the profession in public
- low wages
- time conflicts
- not sufficient rooms for work
- insufficient possibilities for additional learning
- strains due to carrying children
- adaptation of own working time to working time of parents
- organisational problems since supervisor is also care-taker
- expectations of society to balance out dysfunctional families
- lack of possibilities for long-term problem solving

Typical physical problems are back pain, nervousness, fatigue, headache and often colds.

Concerning occupational safety regulations, we can state that the noise level in the kindergarten exceeds the threshold of 85 dB(A) (Buch and Frieling, 2001). Consequently this would mean that the child care givers could wear ear-flaps for their personal protection.

Although the strains in this work-field are rather dominant, positive factors do exist. For instance the child care givers enjoy the work with children, the possibility to see them grow up and working in a close team (Künkels and Watermann, 1994). One very important resource for wellbeing at work is the feeling of control or the so-called self-efficacy (Bandura, 1997). A well-developed self-efficacy, meaning the belief in one’s own strength and skills to cope with problems, reduces the level of stress-reactions (Schwarzer, 1994). This explains the importance of the factor self-efficacy for occupational health programmes. Ways to increase these persuasion are operant methods of behavioural psychology, cognitive restructuring and learning from a model (Weinert, 1998).

Method

A programme for the health circle with eight sessions was developed. This concept merged two different approaches to health circles that were designed for industrial settings (Schröer and Sochert, 1997). In the
original plan for health circles the shareholders and a few workers meet in temporary sessions to discuss health-related problems at work and start to solve them. Adapted to the work-field kindergarten were mainly the grouping and the content. All employees of the kindergarten should join the sessions and possibilities for model-learning of self-efficacy (e.g. successful problem-solving) were focused. 
This concept was realised in one kindergarten where the employees complained about numerous health problems, difficult working conditions and major conflicts with parents. Nearly the entire staff, including the supervisor, joined the meetings, which were steered by the author using the "metaplan-technique". After the group (seven child care givers and one cook) summarised all work-related strains they ranked them according to their feasibility. Beginning in the third assembly they started to investigate strategies to solve the designated problems. Checklists helped to document the process.

**Results**
As a result of the beginning activities for problem solving, some of the minor strains were gradually removed within the first weeks. That success provided a motivation to continue with the process, e. g. seek conflict talks with parents or start to change the interior building in order to reduce noise.

The leading questions for the evaluation of the manual were:
- Was it possible to realise the chosen procedures?
- Was the concept of health circles helpful to pursue the aims?
- Was the process of problem solving a long-term success?

On the basis of the feedback of the participants, the manual was revised. For instance, the session in which coping strategies against stress were taught was deleted. The evaluating interviews took place at three measuring dates: one month, seven months and four years later. At all of these times the feedback was very positive: the staff reduced their strains, smoothened conflicts with parents, began with fundraising activities in order to gain money for rebuilding and in general described the atmosphere in the team as calm but motivated. They felt personally strong, showed more self-efficacy and valued the experienced social support.

<table>
<thead>
<tr>
<th>Topics of the health circle</th>
<th>1. evaluation date [one month later]</th>
<th>2. evaluation date [seven months later]</th>
<th>3. evaluation date [four years later]</th>
</tr>
</thead>
<tbody>
<tr>
<td>General factors of strain</td>
<td>Successful reduction of daily strains with creative problem solving strategies</td>
<td>On-going reduction of strains [especially planning phase for the remodelling activities]</td>
<td>Avoiding of strain factors is addressed in the plans for the new building Noise reduction due to reconstruction and problem solving with easy methods</td>
</tr>
<tr>
<td>Conflicts with parents</td>
<td>Starting helpful conflict discussions with parents</td>
<td>Child care givers organise the work with parents in a more professional manner</td>
<td>Cooperation with parents [e.g. during the fundraising for the new building]</td>
</tr>
<tr>
<td>Change of pedagogical concept</td>
<td>The child care givers felt too „tired“ to develop a new concept. They wanted to go back to the daily routine and not deal with change.</td>
<td>Search for support from experts for a more professional approach to the work with children and parents. Development of a new pedagogical concept.</td>
<td>Quality-management for the ISO-certification with integration of health factors</td>
</tr>
<tr>
<td>Team development</td>
<td>Altogether helpful but the distance to the employees who where not members of the health circles increased.</td>
<td>Joint experience of taking part in health circle strengthened the team-feeling</td>
<td>Joint experience of taking part in health circle strengthened the team-feeling Employees use the method of the health circle for other problem solving processes</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Realisation of own possibilities for action</td>
<td>Employees were motivated to optimise their place of work</td>
<td>The employees experience themselves as competent and qualified for their job</td>
</tr>
</tbody>
</table>

Table 1: overview of qualitative evaluation results
This example shows that the instrument "health circle" is appropriate for health promotion in small enterprises of the psychosocial sector. Especially advantageous is the combination of diagnosis and intervention within this method since it saves resources. The participation of the employees motivates them to optimise their working conditions and strengthens their commitment towards the company.

Further studies in this field are helpful to optimise the concept of health circles in kindergartens and allow quantitative studies.

References


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WHO Collaborating Centres on Occupational Health: Benefits of International Collaboration

E. KORTUM
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Risks in the working environment

For the majority of the three billion workers worldwide, working conditions do not meet the minimum standards and guidelines set by the WHO and the ILO for occupational health, safety and social protection. Throughout the world, poor occupational health and safety leads to two million work-related deaths, 271 million injuries and 160 million occupational diseases per year. The majority of the world's workforce does not have access to occupational health services; only 10-15% of the total global workforce has access to some kind of occupational health services. Whereas developing countries, even more so than countries in transition, still struggle to control traditional occupational hazards, such as physical, biological and chemical hazards, they are now also confronted with modern hazards, which include psychosocial and ergonomic problems. This constitutes a double burden to a large extent. In industrialised countries, the curve for traditional hazards actually descends to quite a low level, while the curve for modern hazards rapidly increases. An additional problem is the massive inclusion of children in the workforce, completely unprotected. From a public and occupational health point of view, global competition increases health and safety risks. Manufacturing firms everywhere face global competition, and often argue that any additional expenditure on safety or prevention for workers threatens their viability, instead of recognizing the expenditure on occupational health as an investment.

The objective of WHO is the attainment by all peoples of the highest possible level of health. The two main functions of WHO are to act as the directing and coordinating authority on international health work, and to encourage technical cooperation for health with Member States. This is done through assistance to governments, upon request, in strengthening their health services; through the establishment and maintenance of epidemiological and statistics services; through the provision of information; the promotion and conduct of research; as well as through assistance in developing an informed public opinion on health matters. However, the task to control and eliminate workplace hazards is so great that WHO cannot be effective on its own. Therefore, collaboration with specialised institutions is of utmost importance in order to attain the objectives of WHO.

WHO policy on collaboration

WHO policy on collaboration was defined in 1949, and has been followed constantly since then. It states that WHO should not consider “the establishment, under its own auspices, of international research institutions” and that “research in the field of health is best advanced by assisting, coordinating and making use of the activities of existing institutions”. Hence the idea of WHO Collaborating Centres was born.

A WHO Collaborating Centre is a national institution designated by the WHO Director-General to form part of an international collaborative network carrying out activities in support of WHO’s mandate. The activities may take place at the country, inter-country, regional and/or global level. Collaborating Centres also include departments within ministries, universities or national research institutes.

WHO Collaborating Centres work closely with WHO headquarters and regional offices to meet two major needs: to address WHO programme priorities and to strengthen institutional capacity in countries and regions. Their key functions include:

· collection, provision and dissemination of information
· participation in collaborative research

5 ILO, 2002
education and training, including research training
• advice on scientific, technical and policy issues.

The WHO Occupational Health Programme involves now 70 Collaborating Centres worldwide. Additional support is provided by three non-governmental organizations (NGOs) in formal relations with the Programme: the International Commission on Occupational Health, the International Occupational Hygiene Association, and the International Ergonomics Association. WHO is also closely collaborating with the International Labour Office (ILO) on a range of priority areas concerning occupational health and safety issues.

The Global Network of Collaborating Centres in Occupational Health was established in June 1990 and meets every two to three years to exchange experiences and to discuss ongoing and future collaboration. The Network meeting in Beijing 1994 led to the WHO Global Strategy on Occupational Health for All, which outlines priorities and guides current activities.

• The Programme within WHO which focuses on the health of the workers is the Occupational Health Programme. It is a partnership of WHO and other bodies working together to achieve the objectives of the WHO Global Strategy on Occupational Health for All, which was approved by the World Health Assembly, the supreme decision-making body of WHO, in 1996. In the Plan of Action, the eight major objectives are taken as the starting point for the implementation of the Global Strategy on Occupational Health for All. These are:

1. strengthening of international and national policies for health at work;
2. promotion of a healthy work environment, healthy work practices, and health at work;
3. strengthening of occupational health services;
4. establishment of appropriate support services for occupational health;
5. development of occupational health standards based on scientific risk assessment;
6. development of human resources;
7. establishment of registration and data systems and information support; and
8. strengthening of research.

At the last Network meeting in February 2003, members emphasized the importance of being part of a team of experts from various parts of the world, allowing them to see the world through the eyes of others and to exchange experience. The Network makes it possible to use and adapt experience to different situations. Enthusiasm and perseverance are vital ingredients to achieve project objectives. The Collaborating Centres have actively participated in the Network and furthered the purpose of its existence. Also, the Network is constantly growing and attracting new centres of excellence.

The Network has many successful examples of collaboration between centres in industrialized and developing countries, which are listed in the Compendium of Activities of the Network of Collaborating Centres in Occupational Health (www.who.int/oeh). The Compendium includes a large number of projects to benefit the developing world, as well as countries in transition. At the same time, industrialised countries benefit from new insights and approaches. The Network provides a range of publications and services, including training courses for occupational health personnel, establishment of guidelines, and direct support to projects in developing countries.

These projects are contained in 15 Task Forces with different foci, although many of the project topics can be cross-linked. The following Task Forces contain over 300 funded collaborative projects:

| Task Force 1: | Guidelines |
| Task Force 2: | Intensive partnership in Africa |
| Task Force 3: | Child labour/adolescent workers |
| Task Force 4: | Elimination of silicosis |
| Task Force 5: | Health care workers |
| Task Force 6: | Health promotion activity |
| Task Force 7: | Psychosocial factors at work |
Task Force 8: Promotion of OSH in small enterprises and in the informal sector
Task Force 9: Prevention of musculo-skeletal disorders
Task Force 10: Preventive technology
Task Force 11: Training programmes and modules
Task Force 12: Internet resources and networks
Task Force 13: National and local profiles and indicators
Task Force 14: Economic evaluation of interventions
Task Force 15: Global burden of disease

The challenge to improve the health of workers worldwide is great. However, there is a growing understanding and interest amongst partners to regard occupational health as an essential element for sustainable development and poverty reduction. The necessity of synergy and co-ordinated action to make the difference for the workers in the world is also understood increasingly.
A prospective study of early development of burnout in nurses

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2 Institute of Work, Health and Organisations (I-WHO), University of Nottingham, United Kingdom

Introduction
Most studies of burnout in nursing populations have involved groups of qualified workers, often relatively advanced in their careers. Despite interest in burnout in student health workers, only a small number of authors (for example, Schaufeli, van Dierendonck and van Gorp, 1996; Gunnoo, 1996; Constantini, et al., 1997) have considered the significance of the nature and stage of the training experience in the aetiology of burnout. Given the implications for the health and well-being of future professionals, it is surprising that, with notable exceptions (Burisch, 2002; Guthrie et al., 1998), little attention has been paid to the ontogeny of burnout as novice health workers progress through professional training into working life.

Reports of burnout studies involving student nurses (novices) as sole participants are relatively infrequent, (Haack, 1988; Dick and Anderson, 1993; Basson and van der Merwe, 1994, Burisch, 2002; Schaufeli, et al., 1996), but most suggest similar burnout levels to qualified staff. If this is true, the implications are serious, both for the providers and purchasers of nurse education and for the health and well-being of future professionals. It is widely reported that student nurses are exposed to stress. Baldwin et al. (1998) found that the training period was more stressful than the early years of practice as qualified nurses and there is ample evidence from the literature that they experience additional demands related to their role as students in higher education (Howard, 2001; Lindop, 1999; Baldwin et al., 1998; Jones and Johnston, 1997; Hamill, 1995; Rhead, 1995; Bradby and Soothill, 1993). However, because burnout in health carers is assumed to be embedded in the client/helper relationship, it is unlikely that the experience of burnout in novices would be equivalent to that of qualified nurses if they were continually supervised during clinical training, experienced limited contact with clients in the early stages and had very different work roles and responsibilities. The introduction of the Project 2000 (UKCC 1986) system of nurse education across the United Kingdom in the early 1990s provided such a scenario.

The most widely used burnout measure, the Maslach Burnout Inventory-Human Services Survey: MBI-HSS (Maslach and Jackson 1981, 1986; Maslach, Jackson and Leiter, 1996) was constructed from empirical data collected in the context of human service occupations and burnout itself is operationalised by the item statements. Respondents are required to express their experiences in terms of the items in the inventory, since certain occupational conditions are deemed necessary for the genesis of burnout. For instance, item statements that are contingent upon contact with clients will have little meaning to someone whose work does not necessitate client-helper interactions.

The aims of the study described in this paper were to establish whether burnout, according to measurement with the MBI-HSS, occurs in student nurses, to compare MBI-HSS scores with those of qualified nurses in published studies and to identify any developmental patterns in burnout during the educational programme. It is proposed that methods to measure burnout would yield evidence beyond mere comparability of numerical scores if students and qualified nurses share a common experience of burnout. For example, there should be no difference in salience and interpretation of the inventory item statements and this would be reflected in a replicable 3 factor solution across all time points in this study. A prospective longitudinal study was conducted in which burnout was measured five times over four years. The time span included training and the first year of work as qualified nurses.

Method
Participants
The study population comprised a cohort of student nurses in a large, multi-site School of Nursing in the United Kingdom. 54 participants were lost to the study by recorded attrition prior to completion of training.
Table 1  Participant Characteristics

<table>
<thead>
<tr>
<th>Time</th>
<th>N</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Gender not stated</th>
<th>Age (SD)</th>
</tr>
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<tbody>
<tr>
<td>Time 1</td>
<td>252</td>
<td>39 (15%)</td>
<td>210 (83%)</td>
<td>3</td>
<td>24.7</td>
</tr>
<tr>
<td>Time 2</td>
<td>164</td>
<td>29 (18%)</td>
<td>134 (85%)</td>
<td>1</td>
<td>25.5</td>
</tr>
<tr>
<td>Time 3</td>
<td>162</td>
<td>24 (15%)</td>
<td>138 (86%)</td>
<td>2</td>
<td>26.7</td>
</tr>
<tr>
<td>Time 4</td>
<td>174</td>
<td>24 (14%)</td>
<td>150 (86%)</td>
<td>2</td>
<td>27.6</td>
</tr>
<tr>
<td>Time 5</td>
<td>120</td>
<td>16 (13%)</td>
<td>103 (87%)</td>
<td>2</td>
<td>29.0</td>
</tr>
</tbody>
</table>

Questionnaire

The questionnaire booklet comprised sections for:

- Demographic data
- The Maslach Burnout Inventory-Human Services Survey (Maslach & Jackson, 1986 edition): a 22 item self-report instrument containing subscales for Emotional Exhaustion, Depersonalisation and Personal Accomplishment. According to the manual’s categorization of normative data, high burnout is characterized by high scores on the Emotional Exhaustion and Depersonalisation subscales and low scores for Personal Accomplishment.
- The Life Orientation Test (Scheier & Carver, 1985): an 8 item measure of dispositional optimism.

Procedure

The questionnaire was administered as a group measure at 5 time points over 4 years: Time 1 (on entry); 14 months (Time 2), 28 months (Time 3) completion of training at 36 months (Time 4) and 12 months post-qualification (Time 5). Questionnaire administration at Time 1 to Time 4 took place by prior appointment during theory blocks in the School of Nursing. At Time 5 questionnaires were distributed and returned by mail.

Data analysis

Group subscale means, standard deviations and internal reliability alpha coefficients and test-retest coefficients were computed for all time points for the MBI and the LOT. These simple analyses formed the basis for considering the preliminary question of equivalence of burnout between student nurses and qualified staff. In order to see if there were variations in the factor structure of the MBI, perhaps as a function of perception of item content in the study population (Byrne, 1993), the data from Time 2 to Time 5 were subjected to exploratory factor analysis (EFA) following a system of pre-analysis checks advocated by Ferguson and Cox (1993). The aim of EFA in the present study was to simply comment on the comparability of the data. For methodological consistency with the original work and other studies, the procedure used for extraction and rotation was principal components analysis with orthogonal (Varimax) rotation and a factor loading criterion of .40.

Results and Discussion

Only the main findings related to the MBI-HSS are summarised.

Table 2 Serial Maslach Burnout Inventory (MBI-HSS) Group Scores
The administration of the MBI at Time 1 was intended purely as a baseline measure so that burnout scores at Time 2 would take account of scores at Time 1. The scores were not expected to be meaningful theoretically. By the third year of the educational programme (Time 3) scores corresponded to normative levels, as suggested by previous authors (Constantini, et al 1997; Haak, 1988; Basson and van der Merwe, 1994) and to those recorded in other samples of nurses. An interesting feature was the development of scores for Personal Accomplishment which followed an atypical trajectory until Time 5 by rising, rather than falling, in synchrony with the other two subscales. For example at Time 2 the mean score of 32.0 for Personal Accomplishment, would be categorised according to manual norms in the high range of experienced burnout. In view of the context and nature of the learning experience to date, we suggest that the scores represent appraisal of current lack of professional competence rather than part of the burnout process.

**Exploratory Factor Analysis**

Results for Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett Test of Sphericity (BS) and eigenvalues for the first three principal components prior to rotation are shown in Table 3.

<table>
<thead>
<tr>
<th>KMO</th>
<th>BS</th>
<th>Time 2</th>
<th>Time 3</th>
<th>Time 4</th>
<th>Time 5</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Variance %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Time 2</td>
<td>.826</td>
<td>116714***</td>
<td>5.47</td>
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<td>.813</td>
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<td>1.73</td>
</tr>
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<td>1193.94***</td>
<td>6.58</td>
<td>3.13</td>
<td>1.93</td>
</tr>
</tbody>
</table>

*** p <.001

Table 4 shows factor loadings following extraction and rotation of 3 factors. Although the 3 factor model is generally reported as superior to other models in the literature, there are frequent reports of items cross loading or loading onto the wrong factor. For example items 6, 12, 11, 16, 20 and 22 are consistently found to be questionable (Koeske and Koeske, 1989; Byrne, 1993; Schaufeli and Van Dierendonck, 1993; Leiter and Durup, 1994;
Table 4 Factor Loadings of Maslach Burnout Inventory Items Time 2 to Time 5

<table>
<thead>
<tr>
<th>Time 2</th>
<th>Item</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>Item</th>
<th>F1</th>
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<td>1 EE</td>
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<td>.76</td>
<td>.11</td>
<td>.17</td>
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</tr>
<tr>
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EE = Emotional Exhaustion  DP = Depersonalisation  PA = Personal Accomplishment  
F = Factor
Sölderfeldt et al., 1996). Typically, the Personal Accomplishment item 12 loads onto the Emotional Exhaustion factor, and the Emotional Exhaustion item 16 loads onto Depersonalisation.

The key finding in the present study was that the factor structure anticipated by Maslach's model was most evident at Time 5 when the participants had experienced a full year as qualified nurses. This is consistent with the argument that the MBI-HSS was designed for and is sensitive to a particular occupational condition. It seems that, at Time 5, the MBI was used as intended and captured elements of work typical of qualified nurses. This transition into professional working life is recognised as stressful (Gerrish, 2000; Charnley, 1999; Baldwin et al., 1998; Luker et al., 1996; Macleod Clark et al., 1996; Kramer, 1974) and linked to development of burnout (Cherniss, 1980; Farabaugh 1984; Leiter 1991). However, the 3 factor solution at Time 5, whilst the most parsimonious, was not without problems.

At Time 2 and Time 3, the same 3 items failed to load the expected factors, but behaved in a manner typical of that reported in other studies. At Time 4 when the participants were about to begin their working careers, the 3 factor solution appeared surprisingly fragmented, with the Emotional Exhaustion items split across two factors. It is noteworthy that the items clustering on the second factor express physical fatigue. Similar findings have been reported elsewhere (Densten, 2001; Higashiguchi et al., 1999; Firth et al., 1985). Another point of interest is that at Times 2, 3 and 4 two Emotional Exhaustion items (6 and 16) consistently loaded the factor comprising Depersonalisation items instead of the correct factor. This pattern and reports of similar problems in the literature suggest some ambiguity related to the semantic content of both items which refer explicitly to people. At Time 5, even though both items loaded on the Emotional Exhaustion factor, they had also unacceptably high loadings on the Depersonalisation factor which led to their elimination. The persistence with which the items migrated onto the Depersonalisation factor suggests that they were being interpreted in a consistent and meaningful manner by the participants. While all items loaded onto the appropriate factors at Time 5, some items repeatedly identified as problematic in other studies also revealed cross loadings. The anticipated 3 factor solution proved to be the most parsimonious and was maintained unambiguously when the data were re-analysed following removal of three items with substantial cross-loadings.

During the four years of this study, burnout scores increased in spite of a nurse education programme that dictated gradual exposure to clinical demands and continued supervision. The development of burnout scores at identifiable points in the course and the corresponding factor structure suggest developmental processes that may be unique to student health care professionals. Interpretation of item statements in the Maslach Burnout Inventory-Human Services Survey involves representation of the working relationship with clients, which changes as the novice progresses towards proficiency in nursing practice. It is proposed that burnout scores in student nurses should be interpreted with caution and take account of the context in which subscale scores change, stability of the factor structure over time and the timing and nature of the training experience.

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Health and safety in English and Greek SMEs: the managers’ perspective

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Introduction

SMEs were and are of considerable importance. On a European level they make up the very large majority of enterprises, employ more than two thirds of the workforce and generate over 65% of the total turnover. The presence of SMEs is greatest in the distributive trades, hotels, restaurants and catering and construction sectors (The European Observatory for SMEs, 1994). Very small (or micro) enterprises (0 to 9 employees) alone account for 40% of EU enterprises, employing 25% of the EU workforce (European Foundation for the Improvement of Living and Working Conditions, 2001). There is evidence to show that SMEs do not manage health and safety as effectively as large ones. A substantial proportion of work accidents occur in SMEs. According to the European Foundation for the Improvement of Living and Working Conditions (2001), the highest accident rates occur in companies with 25-100 workers. Accidents appear to be concentrated in SMEs primarily because they employ a very high (and increasing) percentage of the population, rather than because they are intrinsically hazardous.

A study by the European Foundation (2001) highlighted such problems for SME workers as long and unsociable working hours, lack of training, lack of participation and consultation with workers, job insecurity, musculoskeletal and other physical health problems, and stress. A European study on safety, health and environment in small process plants (Harms-Ringdahl, Jansson and Malmen, 2000), focusing on Finland, Sweden, Germany, Italy and the UK, found three main priority themes amongst the firms studied: the provision of simpler and clearer legislation, the provision of further education and training, and a greater appreciation by authorities of SMEs’ problems. A further need for improved information material was indicated. In the UK, a survey by the British Chambers of Commerce (1995) indicated that the majority of small firms regarded health and safety as important, but adopted a ‘common sense’ approach to it. They also considered that regulations were too complex and time consuming and were reluctant to approach the UK Health and Safety Executive for fear it might stimulate a visit. Another survey in Spanish and UK SMEs (Vassie, Tomas and Oliver, 2000) indicated that respondents from both samples spent only between three and five hours per week on health and safety management matters. However, 80% of the participating UK SMEs had in place a written safety policy, risk assessment and accident reporting.

Research aim

The main focus of this research was the exploration of SME managers’ knowledge and understanding of occupational health and safety issues as well as their views on the health and safety practices in the firms they managed. The importance of the involvement of management, and its association, with health and safety standards has been widely identified in the scientific literature (Champoux and Brun, 2003; Walker, Cox and Tait, 1998; Vickerstaff and Parker, 1995). Moreover, EC health and safety legislation is based on employee participation and social dialogue. As such, the successful implementation of legislation at the company level depends on the way employers and managers understand health and safety issues, whether they prioritise them at their workplace and whether they make statutory provisions available in their organisations. The study focused on England and Greece. The particular Member States were chosen because they represent different economic, social and cultural realities, and comparison between them should be informative. Moreover, their background differs, as the UK has a long tradition in health and safety while Greece has introduced a more structured health and safety framework in the past two decades.

The aim of this study was to explore managers’ understanding of some basic health and safety concepts, their general knowledge and views on issues of concern, and health and safety practices in their firms. Moreover, the study sought the views of the managers on the association of organisational size with health and safety involvement and the reasons for their reported views. Overall, the study aimed to gain a general insight on managers’ views and to identify differences between the two countries. It focused on both owner/managers and acting managers in the participant SMEs.
Sample

The focus of this research was SMEs in the service sector of the EU. The service sector was chosen as the great proportion of European SMEs are operating in it, but also because of its great expansion over the past decades. The service sector encompasses a vast and varied group of economic activities and it is difficult to define precisely. In general, services are classified in: distributive trade; hotels and restaurants; transport, storage and communication; financial intermediation; real estate, renting and business activities; public administration; education; health and social work; and other community, social and personal services. The choice of firms for participation in this research was not an easy one. The reason, apart from the general difficulty in reaching SMEs, was the difference in the definition of SMEs in the UK (usually 0-249 employees, but up to 500) and Greece (usually 0-100 employees). However, it was decided that for the purposes of this research, the EC SME definition (0-249) would be used and an effort would be made to match the companies approached for participation in the study, in terms of their number of employees and turnover. This resulted in a low representation of micro enterprises in the sample, as most SMEs in the UK were of a larger size. A further effort was made to match English and Greek SMEs in terms of services sub-sector activity (10 sub-sectors altogether).

Method

Procedure

A letter was sent to the managing directors of all twenty participating organisations, explaining the aims of study and asking for their cooperation. Subsequently, the researcher contacted the directors by phone, discussed further with them the scope of the study and explained that the survey instrument was to be completed by all executives with managerial responsibilities in the organisations. A total of 240 managers were identified both in England and in Greece. The survey instrument was posted to all managerial staff, through the University of Nottingham in England and the Hellenic Institute of Occupational Health and Safety in Greece. The respondents were asked to complete the questionnaire and return it in the pre-addressed envelopes provided to the above organisations. A total of 202 questionnaires were returned from England and Greece together, corresponding to a response rate of 84%.

Survey instrument

For the purposes of this research, the survey method was used. The survey instrument consisted of two sections: one on the availability of health and safety information and services, and one on demographics. The instrument was constructed by the researcher on the basis of the literature. It was piloted both in Greece and England.

Sample characteristics

A total of 202 questionnaires was returned, out of 240 distributed (response rate 84%). 78 responses were received from Greece and 124 from England. 104 of the respondents were male and 98 were female. 41 of the respondents from Greece were male and 37 were female. From England, 63 were male and 61 were female. In both countries, most of the respondents fell in the 41-45 years age group (37.6%) or the 46-50 years group (29.2%). Most of the respondents had a University degree (33%) while an additional 22.3% had a postgraduate qualification. However, only 28.7% of the respondents from Greece had such qualifications, compared to 75.8% of those from England. The respondents had been working from 3.5 to 30 years in the specific organisations.

Analysis

Frequency and chi-square analyses were conducted to explore managers’ knowledge and understanding of health and safety issues, the availability of occupational health and safety information and services in the particular organisations, and the main differences between English and Greek respondents. SPSS v.11 was used for all analyses.

Results

Understanding of health and safety issues

The survey asked the respondents to identify the frequency (not at all, every day, once a week, once a month, four times a year, twice a year, once a year or other) that they use or come across the terms ‘health and safety’, ‘accident’, ‘disease’ and ‘hazard’ in relation to their work. Almost half of the respondents (47.5%) came across or used the term ‘health and safety’ in relation to their work only once a month to four times a year. It was notable that 7.7% of Greek managers reported that they do not come across or use the term at all. This finding was consistent across all four terms for Greek managers, while all English managers came across the terms at least once a year ($\chi^2=24.814$, df=6, p<.0001). Similar were the findings for the term ‘hazard’, with 58.9% of the
respondents using it once a month to four times a year, and again 7.7% of Greek managers not using it at all ($\chi^2=45.972$, df=6, p<.0001). The findings were slightly different for the term ‘disease’, with 73.7% of the respondents using it once a month to four times a year, and 2.6% of Greek managers not using it at all ($\chi^2=37.209$, df=6, p<.0001). Finally, the term ‘accident’ was used once to four times a year by 79.7% of the respondents and 15.4% of Greek managers not using it at all ($\chi^2=32.867$, df=6, p<.0001).

The respondents were asked to indicate where they come across these terms and a significant difference was identified between the two countries ($\chi^2=99.757$, df=14, p<.0001). The majority of the respondents (44.1%) reported that they come across these terms in government publications, while this percentage reflects mostly English (61.3%) rather than Greek managers (16.7%). Information provided at the workplace featured second (40.6%) with similar results for the two countries, while professional publications were third (30.2%). A striking difference between the two countries was found in relation to information provided by trade unions, where 30.6% of English managers come across the terms in comparison with only 7.7% of Greek managers. The percentage for education/training initiatives was similar in the two countries. The respondents were also asked to indicate what the term ‘occupational health and safety’ mainly refers to in their work situation. The majority of them indicated physical injury (91.6%), or illness and disease (90.5%). The findings are presented in Table 1 below.

| Table 1 Definition of occupational health and safety (SME managers in England and Greece) |
|-----------------------------------------------|------------------|
| Term                           | Frequency (%)    |
| Physical injury                | 91.6%            |
| Physical illness and disease   | 90.5%            |
| Mental health                  | 7.3%             |
| Psychological issues           | 8.4%             |
| Organisational issues          | 4.6%             |
| Social issues                  | 11.6%            |
| Chemical hazards               | 5.8%             |
| Biological hazards             | 5.8%             |
| Mechanical hazards             | 5.8%             |

Knowledge on occupational health and safety

Subsequent questions of the instrument explored the respondents’ knowledge of occupational health and safety. Only 7 of the respondents (3.5%), all from Greece, were not aware of any national legislation on health and safety at the workplace. The respondents in both countries mentioned, in general, legislation on disability, accidents, insurance and working hours, and the main health and safety laws in the two countries. Both groups mentioned EU work law and EC Directives. Almost all of the respondents (99.5%) were aware of organisations dealing with occupational health and safety issues at the workplace as well as of their main responsibilities and activities.

An interesting finding was that all English managers mentioned that they had received training on health and safety issues compared with less than half (44.9%) of Greek managers. Most of the respondents (99.9%) had received training on occupational accidents and diseases, while 45.9% of them had received training on chemical, biological and mechanical hazards and 33.3% of them on psychological, organisational and social issues. Approximately 39% of English managers had received training on all of these issues, compared with only 14.3% of Greek managers. Most of the respondents rated the training provided to them as adequate (53.5%).

When asked whether their Union has informed them on health and safety issues, a striking 78.2% of the respondents replied negatively (79.5% in Greece and 77.4% in England). The information that had been provided to them by Unions related to health and safety legislation, occupational accidents and diseases, employers’ responsibilities and employees’ rights. Almost 30% of the respondents did not believe that Union membership is related to an involvement with health and safety issues and another 19% did not know. These percentages were higher for Greece than for England ($\chi^2=8.965$, df=2, p<.01). Finally, the majority of the respondents were aware that health and safety requirements apply to full-time and part-time personnel as well as subcontractors, although 22.3% did not mention the latter.
Health and safety in the particular SMEs

A health and safety committee existed in only half of the participant SMEs (49.5%). That is in 32.1% of the Greek SMEs and 59.7% of the English ones ($\chi^2=17.695$, df=2, $p<.0001$). Most of these had 5-7 members. All committees consisted of members of the management and employees. 56% of the Greek managers were members of the committee, compared to 29.7% of those from England. Most of these committees convened about four times per year (34.3%), while for 33.8% of English SMEs they convened once a month, and for 24% of Greek SMEs whenever necessary ($\chi^2=40.944$, df=5, $p<.0001$). The main topics of discussion in the committee meetings were occupational accidents and diseases, while some of them also discussed organisational issues. All committees informed employees in the particular organisations about the topics discussed, usually through announcements on bulletin boards (76.7%) and, to a lesser extent, through presentations or e-mail.

When asked who is responsible for occupational health and safety issues in their organisations, 96.5% of the respondents mentioned the employer, 22.2% the occupational physician and 14.8% the safety officer. One respondent from Greece answered ‘no one’ and two did not know. The frequency that the respondents were in contact with the person who was responsible for health and safety issues in their organisations varied. Approximately 61% of Greek managers did so as frequently as once a week, compared to 12.1% of English managers ($\chi^2=58.235$, df=4, $p<.0001$). The majority did so once a month or every two months. These people provided relevant health and safety information to 64% of the respondents, mostly in relation to occupational accidents and diseases. Only one manager in England had received information on psychosocial issues at work. Other occupational health and safety services mentioned as available in the participant SMEs (either internal or external) were safety engineers, ergonomics specialists and health promotion services. These services were mostly found in English SMEs. In addition, occupational psychology and counselling were only mentioned by English managers.

All respondents from England reported that they had received occupational health and safety training by external consultants, compared to 39% of Greek managers. This training had mostly covered occupational diseases and accidents (72.3%), but also psychosocial issues (44.1%). Sixty-one percent of all SMEs studied had been inspected by a government agency with regard to their health and safety standards. This percentage was lower in Greece compared to England ($\chi^2=18.554$, df=2, $p<.0001$). Three Greek managers were not aware whether their organisations had been inspected or not.

The respondents reported that a register of occupational accidents existed in 67.7% of English SMEs and 39.7% of Greek ones ($\chi^2=19.047$, df=2, $p<.0001$). Four Greek managers did not know whether a register existed. The same was true for a register of occupational diseases. It existed in 38.5% of Greek SMEs and 67.7% of English ones, according to the respondents ($\chi^2=20.349$, df=2, $p<.0001$). Occupational accidents had happened in 42.1% of the participant SMEs, with a higher percentage in England (52.4%) compared with Greece (25.6%) ($\chi^2=16.270$, df=2, $p<.0001$). Two Greek managers did not know whether any accidents had occurred. 29% of the respondents reported that there had been 1-3 accidents in the past year. When asked whether there had been a recurrent or common type of accident in their organisations, 40% of the respondents answered positively and indicated back strain (20.3% of the participants), needle stick injuries (9.9%) and limb injuries (16.3%). A high percentage of the respondents (83.2%) reported that there have been illnesses that are associated with the type of their organisations or their work, citing back pain, migraines, hypertension, visual problems, musculoskeletal disorders and stress.

Organisational size and health and safety

The last set of questions related to organisational size and asked the respondents whether they believe that the size of an organisation has an effect on the availability of health and safety information and quality of health and safety practices. Ninety-eight percent of the respondents answered positively. When asked which organisations (small, medium or large) are mostly involved with health and safety issues, 99.5% of the respondents cited large ones. However, this reflected mostly the opinion of Greek managers (96.2%, in comparison with 46.8% from England). Approximately 34% of all respondents cited medium and large organisations (2.6% from Greece and 53.2% from England), one respondent from Greece cited medium-sized organisations and none small organisations ($\chi^2=55.828$, df=2, $p<.0001$). The main reasons given for this were availability of necessary funds (91.6% of the respondents), (interestingly) management style (74.3%), availability of resources (70.8%), access to information (41.1%) and access to expertise (37%).
Discussion

A number of interesting findings were revealed by the study, some of which are in agreement and others in contradiction with the literature. Almost half of the respondents reported that they use or come across the term ‘health and safety’ only once a month to four times a year. This finding is alarming and reveals a minimised preoccupation of SME managers with health and safety issues. Some of the Greek managers even reported that they do not come across or use the term at all. The same was reported by them for the term ‘hazard’, ‘disease’ and ‘accident’. This finding either denotes a lesser concern for occupational health and safety, or the reluctance of Greek managers to objectively report the situation. A higher percentage of respondents uses or comes across the term ‘disease’, indicating perhaps a higher prevalence of such issues. Indeed, a high percentage of the respondents consider that there have been illnesses in their workplaces that are associated with its type or work.

Only 16.7% of Greek managers reported that they come across the above mentioned terms in government publications. This might reflect the limited availability and dissemination of health and safety information in Greece (Ioannou, 2002). A very interesting finding was that a very small number of Greek managers reported that they come across the terms in information provided by Greek trade unions. This percentage was not very high for English trade unions either. Indeed, almost a third of the respondents did not believe that Union membership is related to an involvement with health and safety. The question then that becomes apparent is how much trade unions have prioritised health and safety in their agendas. The situation seems to be better in England than in Greece, where health and safety has never featured as one of trade unions’ main concerns (Ioannou, 1998; 2002).

Much of the training provided to SMEs does not seem to be related to health and safety issues, as only a third of the respondents have come across the terms in training received. This finding is not surprising as most SMEs seek training in relation to financial and administrative issues and not health and safety (Lamm, 1999; Storey, 1994). Occupational health and safety still relates mostly to physical injuries and illnesses for SME managers. However, an emphasis on mental health and psychological issues was also noted. This might be related to the shift in focus from a more ‘traditional’ approach to the work environment to a more ‘holistic’ understanding of health and well-being and the changing world of work (Cox, 2003).

Although the majority of respondents were aware of national health and safety legislation, the seven Greek managers who responded negatively pose a concern. In addition, only 60.3% of Greek managers were aware of EC health and safety legislation. As the survey was completed by all managerial staff in the participating organisations, this ignorance might reflect their seniority and expertise. All English respondents were aware of both UK and EC health and safety legislation. It is interesting that when asked whether they are aware of organisations dealing with health and safety issues, almost all managers did and cited the main ones in the two countries. Perhaps then, the previous finding relates to the inability of some of the Greek managers to recall specific health and safety legislation. This could be related to the large amount of national legislation in Greece and a difficulty in understanding its relevance for SMEs (Spyropoulos, 2000).

An important finding was that all English managers reported that they had received training on health and safety issues compared to less than half of the Greek respondents. This finding does not reflect the general picture in the UK and could mean either that it is related just to the specific organisations studied or that English managers do not present an accurate picture. The content of the training provided centred mostly around occupational accidents and diseases, although one third of it was devoted to psychosocial issues at work. Less emphasis on these issues was given in Greece. This reflects the lack of relevant expertise in the country (Ioannou, 1998, 2002; Spyropoulos, 2000).

Although only 14.3% of Greek managers received training on a wider variety of health and safety issues, they rated the training provided to them more favourably than their English counterparts. This could mean that the limited availability of comprehensive training in Greece does not allow for an accurate judgement of quality. A health and safety committee was reported in half of the participant SMEs. It was interesting that these committees were reported as having 5-7 members, both managers and employees. Relevant legislation requires fewer members for health and safety committees in SMEs (1-3). This finding might reflect the nature of the work environment in smaller organisations which is largely based on team work and support (Champoux and Brun, 2003; Lamm, 1999; Watkins, 1992). More of the respondents were members of these committees in Greece than in England, indicating a greater involvement of the management with such issues and perhaps a more controlling management style. This was also indicated by the more frequent contact that Greek managers had with the people who were responsible for health and safety in their organisations. An alarming finding was that two Greek managers did not know who those people were, and one reported that no responsible person existed. Again,
perhaps this finding is related to the seniority of the particular managers. Most of the responsible individuals for health and safety had provided the respondents with information on accidents and diseases, indicating a lack of internal expertise on psychosocial and organisational issues. An additional lack of external expertise in relation to these issues in Greece was apparent by the fact that only English managers mentioned occupational psychology and employee counselling as additional services provided to their employees.

Sixty-one percent of the respondents reported that their organisations had been inspected by a government agency with regard to their health and safety standards. This percentage is very high and may again reflect the particular sample, even more so for English firms of which almost 72% had been inspected. Three Greek managers were not aware whether their organisations had been inspected or not and four did not know whether a register for occupational accidents and diseases existed. A lower number of such registers were reported in Greece than in England as well as less occupational accidents in the past year. Almost one third of the respondents reported that 1-3 accidents happened in the particular SMEs in the past year. The types of illnesses reported by the respondents are common amongst service sector workers (European Foundation, 2001), namely musculoskeletal disorders, migraines, hypertension, stress and visual problems.

It was not surprising that almost all of the respondents associated organisational size with the availability of health and safety information and the quality of health and safety practices. The great majority of them cited large organisations as the ones mostly involved with health and safety. This view was stronger in Greece than in England where medium-sized organisations were also associated with increased health and safety involvement. This might be related to the fact that more medium-sized organisations are occupying above 100 employees in the UK than in Greece (The European Observatory for SMEs, 1994). The main reasons for the favourable situation in larger organisations, as recognised by the respondents, were availability of necessary funds, management style, resources, access to information and access to expertise. These are recognised in the literature as the main problems that SMEs face, militating against not only their health and safety standards but also their survival (Storey, 1994; Vickerstaff, 1992). It is interesting that SME managers have identified management style in larger organisations as crucial for their better health and safety environment, perhaps recognising the value of the practice of more modern management systems in such organisations.

Conclusions

The findings of this study underline the necessity of further research on health and safety in SMEs. This research should be conducted comparatively so as to address the variability of the characteristics of the SME group in the different Member States. It should include micro-enterprises and the self-employed, as the situation for them may be sharply different due to their further limited resources. Additionally, subsequent research should examine different employment sectors comparatively as well as the different Member States, as national health and safety legislation and structures in each one of them may impact differently on the SME group within each country. The manager group deserves additional attention as their influence on the SME environment is important. More qualitative research on their perception of different health and safety issues and their prioritisation in their work environment will be beneficial. This research could be accompanied by an investigation of their management style and its effects on the work environment and work relations in the particular enterprises. Finally, more research is necessary on psychosocial issues in SMEs as these did not feature as a priority for the SME managers of the present study but, nevertheless, were recognised by them as important in their work environment. The situation appears to differ in the two countries, with less preoccupation with such issues in Greece, but an overall minimised concern with them is evident in SMEs in both countries.

References

Quality of Finnish work life and its relation to the content of occupational health services

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Introduction

The quality of Finnish work life is surveyed every third year using a computer-aided telephone interview. The survey covers all types of occupational exposure and the health and well-being of employed people (Kauppinen et al. 2000). This survey is similar to the European survey carried out by the European Foundation for the Improvement of Living and Working Conditions.

The quality of Finnish work life is influenced partly by actions taken by or with the help of occupational health services (OHS). Specifically the amended Finnish Occupational Safety Act and the Act on Occupational Health Services now include, more comprehensively, psychosocial issues at work in addition to the traditional occupational risks and health hazards; e.g. bullying and harassment are mentioned as occupational risks.

In the EU, action has been taken to create indicators describing the status and trends in working conditions. In Finland, national indicators in occupational safety and health have been constructed. Psychosocial factors are among these indicators (Rantanen et al. 2000).

The aim of this paper is to present the indicators of psychosocial factors or work organization factors applied in Finland, the changes in these indicators during 1997-2003, and how these indicators are related to the level of the occupational health services provided.

Method

Based on the results of the latest Work and Health Survey in 2003, the psychosocial factors at work, as well their management, are described. Their relation to the organization of OHS in the workplace are also described.

Altogether 2335 employed persons were interviewed in 2003, the response rate being 67%. The trends in the quality of work life indicators are described for the period 1997-2003, and their relation to the way in which the OHS were organized.

The indicators applied in Finland for the psychosocial work environment are described in figure 1. The 12 indicators for psychosocial factors at work or for work organization deal with time pressure and job control, opportunities for personnel training, as well as indicators describing social interaction. Social interaction at work was described by coworker and supervisory support and bullying or mental violence. Common discussions about work goals focused on task-oriented collaboration. Gender inequality and balance between private life and work life illustrate the equality issues. A common measure of psychosocial factors was the perceived psychological work load. Well-being was indicated by job satisfaction and strain symptoms.
Results

When looking at the trends in 1997-2003, a slight decrease can be seen in time pressure and psychological work load. This is probably related to the slowing down of national economic activity, leading to lowered time pressure at work. The quality of social interaction at work has improved slightly. The coworker help and support was best in 2000, as 75% of the employed persons reported receiving rather or very much support. The help and support from the supervisor had increased slightly during 1997-2003. The supervisor/employee discussions about work goals and about reaching them were least satisfactory in 2000 (71%) but somewhat better in 2003, when 76% reported that these discussions were very or rather satisfactory. Bullying and mental violence at work had decreased from the year 2000 when it was highest, 4.3%, being 2.9% at the time of the interview in 2003. This points to a slight positive trend, because the prevalence has usually been about 4%. At least some unequal treatment at work between men and women was reported by 29%. This, on the other hand, was a slight increase from 2000.

Psychosocial factors at work were monitored or developed at workplaces according to 63% of the respondents in 2003, as compared to 52% in 1997 and 54% in 2003. In 2003, work climate surveys were carried out by 57% and organizational development activities by 44% of the workplaces. In 1997, occupational health care personnel had participated in carrying out these activities in 46% of the workplaces, but in 2003 in a little less 42%. Also the need for information expected from the OHS personnel concerning psychosocial and other work-environment-related issues, had decreased during 1997-2000 from 30% to 20%, which could be interpreted as improved awareness of these issues.

The situation of workplaces differs according to the coverage of the actual OH services. In 2003, 13% didn't have any OHS, 6% had only the obligatory preventive OHS, and 81% had occupational health services which included, in addition to the preventive, also some individual health services. Those without OHS were usually entrepreneurs/self-employed or employees from SMEs with less than 10 employees. Often persons employed in agriculture and in traffic and transportation had no occupational health services. Also those working in services for other firms often had no OHS.

Furthermore, those persons who had only the obligatory OHS had a similar background. In addition, employees in social and health care occupations and in construction work, and those employed by municipalities, belonged to this group more often.
Those having access to only the obligatory occupational health care reported more continuous negative changes in their work and at their workplace in the past years. They experienced more often their work climate as apprehensive and stagnated, as well as more tense and with social conflicts. Especially the prevalence of mental violence and bullying, was more common at these workplaces. It had risen to 5% from 3.1% in 2000. This trend was opposite to the general trend at workplaces. Also, the information flow and support from the supervisor was poorer, and these people reported more unjust behavior at workplace than those with more comprehensive OHS.

Time pressure was highest among those having only the obligatory OHS. In 2003, 39% of them reported time pressure to be high rather or very often (in 2000, 29%). However, job control was best for those without any OHS. It was at a somewhat lower level for both those having either obligatory or more comprehensive OHS. Opportunities to utilize one's own skills and knowledge in the work were about the same in all groups regardless of the type of OHS.

Those having the most comprehensive OHS had less stress symptoms, 11% in 2003 and 13% in 2000. The stress symptoms were highest for those having no OHS, 17% in 2003 and 16% in 2000.

In response to the question, how interested the employer was about the health and well-being of the employees, again those with only the obligatory OHS reported the lowest interest. 28% were not interested about these at all.

The flexibility issues surveyed covered the type of work contract and possibilities to control the length of the work day. Those having a temporary work contract had more often only obligatory OHS, or none at all. Possibilities to control one's own working hours were not related to the coverage of OHS.

**Discussion**

In most cases those having both preventive and curative OHS had a better psychosocial work environment and less strain than those with OH services fulfilling only the minimum requirements, or no OHS at all.

In general, those having only the obligatory OHS reported a less satisfactory quality of work life than those with OHS including some primary health care. Also those with no OHS often reported a better quality of work life than those with only the obligatory services. This was understandable, because they were more often entrepreneurs or from small workplaces.

The results indicate that better coverage of OHS was generally related to better quality of work life, as well as flexibility, which was controlled by the employees themselves. These results and the trends in Finnish work life reflect either the positive impact of the better coverage of OHS, or they may imply a better quality of work life in general.

**References**


Direct Participation as a Moderator between Weekly Working Hours and Mental Strain

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Introduction

Countless studies indicate that long working hours can lead to increased symptoms of stress, fatigue and general health impairments (cp. Luczak, 1983; Schmidtke, 1965). This is not only due to stress exposure time and the well-documented accumulation of stressors (cp. Spurgeon, Harrington & Cooper, 1997), but in the diminishing “rest-time” which is necessary as a “recovery period” (BAuA, 2002). If the length of actual working time cannot be influenced, we must consider which other influential factors can effectively reduce the pressure on full-time employees and especially on those who consistently work long hours. There are numerous indications in the literature that job control reduces the effects of stress, particularly for very demanding work. Concerning the link between workload and stress, Karasek (1979) demonstrated that highly demanding work combined with a considerable degree of job decision latitude and job control resulted in scarcely any symptoms of stress. It is possible that participation has a similar beneficial effect, with a positive influence on job satisfaction, innovation success, productivity and performance, as well as fluctuation and work absence, that is well-documented in psychological literature (see Heller et al. 1998; Locke & Schweiger, 1979; von Rosenstiel et al., 1987). Though participation is predominately seen as an intrinsically motivated, constant need for competent and autonomous dialogue with one’s environment (cp. Deci & Ryan, 1985), it can also be perceived as an external resource (cp. Hobfoll, 1998) which has a moderator effect on workload and strain (cp. Lazarus & Launier, 1978). The conclusion that a high level of participation in demanding work has an effect similar to that demonstrated by job decision latitude and job control, is self-evident. In particular, employees who tend to work a lot of overtime and who enjoy a high participation level can be expected to exhibit less strain than those with a low participation level. Furthermore, we assume that part-time workers with a high participation level actually show higher strain levels than part-time workers who participate less because, for this group of people where time pressure is high anyway, participation simply represents additional workload.

Method

The study used a standardized written questionnaire which was given to a sample of 254 office staff in ten different branches. 55% of those interviewed were women and 45% men. Average age was approximately 36 years.

To measure participation, the “Questionnaire on Direct Participation in Office Work Places” from Prümper et al. (2002) (German title: „Fragebogen zur Erfassung der direkten Partizipation im Büro“ - FdP-B) was used. With 32 items in eight different areas, this questionnaire maps employees’ possibilities for participation in their daily work environment and the associated change requirements on a five-level scale. An example item is: “In decisions regarding the improvement of work processes in my field, I am … (‘not at all’ to ‘very much’) … involved” (for more details concerning the scale, see Lohmann & Prümper, submitted). For this study, the eight sub-scales of direct participation were added together to obtain an average value and divided at the median to acquire a difference between low (M ≤ 2.31) and high (M > 2.31) participation.

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6 The questionnaire was developed during the project CCAll, supported by the Federal Ministry of Labour, BMA (currently the Federal Ministry of Economics and Labour, BWMA), and carried out under contract to the Verwaltungs-Berufsgenossenschaft, VBG, between October 2000 and June 2002. This article is a translation of a German publication by Lohmann and Prümper (2003).
To measure strain the “Irritation” scale from Mohr was used, a seven-point scale with eight items. An example item is: “I get irritated easily, although I don’t want this to happen” (answers ranged from ‘strongly disagree’ to ‘strongly agree’).

For weekly working hours, the weekly working time was calculated. In this study, a differentiation was drawn between “up to 30 hours” (part-time, n = 43), “over 30 to 40 hours” (full-time, n = 92) and “over 40 hours” (employees consistently working overtime, n = 119).

The effect of participation on strain in different working time scenarios was calculated with a two-way MANOVA. Specific mean differences were checked by a priori contrasts in an ANOVA procedure.

**Results**

When we examine the independent variable *weekly working hours* and the interceding variable *participation*, weekly working hours demonstrate a significant main effect (F = 9.84; p < .001). Participation, however, does not (F = .22; p = .64). This means that irritation increases with longer working time and, furthermore, that participation has no direct influence on the level of irritation. Simultaneous observation of *weekly working hours* and *direct participation* shows, as expected, a significant interaction (F = 5.16; p < .01). Depending on the number of working hours, participation acts as a moderator variable on irritation (see fig.1). Those persons who work more than 40 hours a week and have a high participation level (n = 80), demonstrate significantly less irritation (t = -2.17; df = 248; p < .05) than those working more than 40 hours a week with a low participation level (n = 39). In contrast, persons working 30 hours a week or less who have a high level of participation (n = 21) demonstrate a higher irritation level (t = 2.42; df = 248; p < .05) than those working 30 hours a week or less with a low level of participation (n = 22). For those working between 31 to 40 hours a week (n – high participation = 51; n – low participation = 41), participation has no influence on the level of irritation (t = -.57; df = 248; p = .57).
The results show that, depending on the number of working hours, direct participation has a moderator effect on the relationship between working hours and strain. For those persons working more than 40 hours a week, participation reduces strain. This confirms the assumption that, as Karasek demonstrated for job decision latitude and job control (1979; 1990), direct participation can also have a moderator effect on the relationship between workload and strain. Ultimately then, participation can provide a beneficial influence on employee health. Part-time employees who work less than 30 hours a week, however, do not benefit from increased participation - on the contrary, their strain actually increases. For this group, participation is not a resource as it is for those employees who commonly work long hours – far more, it becomes an additional stress factor, mainly because of the additional workload that participation introduces into the already short working time.

In practice, this does not mean that part-time employees should be shielded from making decisions - this would prohibit numerous other positive effects of participation on this group. Instead, especially in the case of part-time employees, “participative action”, scheduled as “participation time”, should be part of every job description.

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A phenomenological study of motivation among people with client-related and non client-related jobs

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Background

In 1999, the Association of Swedish Local Communities, SVEKOM, started an R&D project named *Issues of Strategic Employment*. The intention of this project was to find ways to increase the opportunities to employ people in the local communities (Eriksson, 2001). A study of motivation among people with client-related and non client-related jobs in 10 local communities in Sweden was performed during 2002 and 2003. A questionnaire was distributed to 1270 employees, of whom 884 answered, giving a response rate of 69.6 %. The questionnaire aimed to measure the variables *intrinsic motivation*, *extrinsic motivation* and *amotivation*. The theories behind the constructs of intrinsic motivation, extrinsic motivation and amotivation are developed by Deci and Ryan (Deci & Ryan, 1985; Ryan & Deci, 2000) and Csíkszentmihályi (Csíkszentmihályi, M. 1992, 2001). According to these theories, an individual that is intrinsically motivated is driven by a willingness to perform a specific task for the performance itself. An individual that is extrinsically motivated, on the other hand, is driven by extrinsic rewards, such as payment or commendation. The items in the questionnaire were constructed to measure these factors of motivation. The authors presumed that intrinsically motivated individuals are driven by a satisfaction in the process of problem-solving for itself, a striving to improve their own competence, and an engagement in reaching specific goals. Motivation by personal development corresponds to Deci and Ryan's (Deci & Ryan, 1985; Ryan & Deci, 2000) theory of motivation. According to this theory an individual can be motivated by opportunities to develop his/her own competence. The factor measures willingness to be involved in activities that develop the individual's competence. The authors presumed that extrinsically motivated individuals are driven by payment as a reward for the performed job, striving for something situated outside the job, and social confirmation. The term *amotivation* represents a state where the individual feels no enthusiasm or motivation for the job, but is striving away from it (Ryan & Deci, 2000).

Method

Analyses of the responses to the questionnaire give a picture of what motivates people. But this picture is situated at a theoretical and abstract level. It is situated at a theoretical level because the items in the questionnaire are grounded on theories and the only thing that might come out of the results is a confirmation of the existing theories. The picture is situated at an abstract level because the only thing the respondents can do when responding to the items is to confirm or disconfirm the statements in the questionnaire. Concrete, and abstract, phenomena that occur in the everyday life of the respondents do not necessarily appear in the results of the statistical analysis of the responses to the questionnaire. To supplement and deepen the analyses of intrinsic and extrinsic motivation according to the theories, a phenomenological study was carried out and the respondents were asked to write down their answers to the following open-ended question:

*Please describe freely your experiences at your job. You may also describe your experiences about your job and outside your job (family and leisure).*

The intention was to make the employees feel free to write about things that were relevant to them personally. The respondents that scored high on the scale of intrinsic motivation and low on the scales of extrinsic motivation and amotivation formed a group called *intrinsically motivated*. In the same way, the respondents that scored high on the scale of extrinsic motivation and low on the scales of intrinsic motivation and amotivation formed a group called *extrinsically motivated*. Finally, the respondents scoring high on the scale for amotivation and low on the scales for intrinsic motivation and extrinsic motivation...
formed a group called *amotivated*. Eight subjects from each group were matched according to type of job (client-related vs. not client-related job), age (<40 years vs. >40 years), and sex, and selected for phenomenological analysis of their answers to the open-ended question. The phenomenological approach to analysis of the experience of situations (Sages, 1998) is a method of text analysis based on Husserl's phenomenological psychology (Husserl, 1925-1968). Each of the texts written by the respondents was divided into *meaning units*. A meaning unit includes a description of how a specific phenomenon is experienced to interact with its environment. The meaning units are the pure meanings developed by the respondents. Every meaning unit is situated in a context of everyday life of the respondent. The next step in the analysis was to categorize the meaning units in eight *modalities*. The construct of *modality* represents dimensions in which a meaning unit is expressed. The modalities used in this study are:

1) Belief: The certainty in which a meaning unit is expressed.
2) Function: Abstract vs. Concrete expressions.
3) Time: The tempos in which a meaning unit is expressed.
4) Affect: If a meaning unit is expressed as something experienced positive, neutral or negative for the respondent.
5) Will: The intention behind the expression of the meaning unit.
6) Motive: If the situation expressed in the meaning unit corresponds to intentions of the respondent.
7) Subject: The person who is lying behind the expressed meaning unit.
8) Interaction: Concerning the personal or impersonal relationships with the environment.

Each meaning unit is divided into *partial intentions*. A *partial intention* is the smallest piece of information that lies in a meaning unit. This step of the analysis is aiming to get an understanding of how the experiences described in the text are formed. These experiences are based on specific ways of understanding the environment. The ways to understand the environment form the way in which a situation is experienced, and therefore also form the way in which the situation is described.

**Results and Discussion**

All of the chosen respondents described their job situation in the local community as afflicted with a lack of resources for performing their job. There are different resources and different outcomes of the lack of resources described by the respondents, but they do all express dissatisfaction with elements in their situation. Here the similarities end. With the exception of the above mentioned similarity, the respondents described their situation in different ways. The descriptions made by respondents in the intrinsically motivated group clearly differ from the respondents in the extrinsically motivated group and the amotivated group. The differences between the extrinsically motivated group and the amotivated group are not that clear. The table below is a summary of the descriptions from each of the groups.
Table 01: Summarize of the descriptions made about the experiences of the individuals chosen for the study.

<table>
<thead>
<tr>
<th>Group</th>
<th>Results of the analyses</th>
<th>Constructs frequently used in the descriptions (the context in which they are situated in parenthesis)</th>
</tr>
</thead>
</table>
| Intrinsically motivated | The respondents are striving towards either development or stimulation in their jobs. Nothing hinders respondents to reach their goals. As a consequence of this they are close to their goals. | - Development (in which “I” am involved)  
- Appreciation (which comes from others)  
- Challenges (which is offered in the job)  
- Resources (there is a lack of…) |
| Extrinsically motivated | There are conditions that hinder the respondents in reaching their goals. There are intervening instances to reach before a reaching of the final goals is possible. The respondents express no will to involve themselves in a change of their situation at their job. However they sometimes express that they want others to change the situation. | - Workload (which is on a high level)  
- Payment (which is unfair)  
- Reorganizations (…out of our control)  
- Resources (there is a lack of…) |
| Amotivated | It is impossible to accomplish the demands made by the management because of scarcity of possibilities to control the situation. The management undervalues the competence of the employees. The employees express that they are being exploited. | - Workload (which is on a high level)  
- Payment (which is unfair)  
- Management (who is controlling)  
- Resources (there is a lack of…) |

One of the most frequently occurring differences between the intrinsically motivated on one hand and the extrinsically motivated and amotivated respondents on the other hand was the way they described the relationship between themselves and their environment. The intrinsically motivated respondents described themselves as an individual that interacts with the environment to form the situation in the job and in the organization. The intrinsically motivated respondents described personal relationships in the job, in relation to co-workers but also to clients. The extrinsically motivated and the amotivated respondents described the relationships in an impersonal manner. They perceived themselves as being the object of the actions of others. This was described in different ways. Some of the respondents described themselves as an individual striving to adjust to the expectations of the organization. Some of the respondents described themselves as an individual that has to obey the commands of the management.

The intrinsically motivated and the extrinsically motivated respondents described their relationships with their jobs. In the first group the respondents expressed that they have goals within their job. Their goal is to solve single tasks in their job, or to reach a more complex goal consisting of several steps. Among the respondents that have client-related jobs, the interactions with the clients are mentioned and a willingness to satisfy their needs is expressed. What is common in all descriptions is that the individuals are always close to their goals. This closeness is a consequence of a lack of hindrance. There is no need to reach secondary goals before reaching the main goal. The closeness to their goals is seemingly something that makes the intrinsically motivated individuals enjoy the situation they describe. The extrinsically motivated respondents, on the other hand, are describing their situation as somewhat problematic. They have goals, but these goals are not close to them. They have to reach sub-goals before it is possible for them to reach their main goals. The extrinsically motivated individuals therefore do not feel the same enjoyment in their jobs as the intrinsically motivated individuals. The respondents in the group of amotivated do not express any goal at all, except the goals set by the management. The intrinsically motivated group diverge from the other groups by the expressions of the goals as situated within the job itself. The extrinsically motivated and the amotivated groups are more diffuse in their descriptions about their goals. Among these groups there are insinuations expressed that the individuals are striving for something lying outside the job. Some of the respondents in these groups are talking about money as the main reason for them to be involved in their job. Most of the respondents in the extrinsically motivated group and in the amotivated group said
nothing about their involvement in the tasks of their jobs. But there were some exceptions. One of the respondents expressed engagement in the job of geriatric care and in satisfying the needs of the clients. Surprisingly this person had a strikingly low degree of intrinsic motivation according to the questionnaire. At the same time, the person expressed no will to change anything in the present situation. Alternative attitudes to consider in relation to the situation were mentioned in the description, but the person expressed satisfaction with the situation as it currently stands. There is no motivation to change anything, but there are motives to maintain the situation as it is at present. The absence of a main goal to reach, and striving to maintain things as they are, manifests sub-goals.

References


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Motivation among people with client-related jobs, with respect to organizational position and age

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Background

Local communities in Sweden today have difficulty in providing different sectors with manpower. The Association of Swedish Local Communities, SVEKOM, has predicted that local communities will have to employ around 600,000 persons until 2008 to fulfill public expectations. In Sweden, services such as education, child-care, some medical care, geriatric care and the social security system are supplied by the local communities (Svenska kommunförbundet, 1998). SVEKOM has experienced considerable difficulties in attracting and employing 600,000 persons. They emphasized that it must be more attractive to work in local communities in the future.

The R&D project Issues of Strategic Employment was started in 1999 from the initiative of SVEKOM. The Association of Swedish Local Communities intended to increase the attractiveness of local communities in the labor market. From the beginning, thirty-four local communities were involved in the project (Eriksson, 2001). Four research projects were started. The project to be presented here aimed to study the motivation of employees in local communities. By studying motivation a picture of the meaning of work could be obtained. Ten local communities in different regions of Sweden decided to participate in the project.

The degree of intrinsic motivation and extrinsic motivation among the employees was measured in the study. The term intrinsic motivation refers to a striving to perform a specific task for the performance itself (Csikszentmihályi, M. 1990, 1997) and a willingness to develop one's own competence and feel proficient (Deci & Ryan, 1985; Ryan & Deci, 2000). The term extrinsic motivation refers to a striving towards rewards like payment or commendation.

A considerable amount of jobs in the local communities are client-related. The term client-related jobs refers to jobs where the provider interacts directly with people in need of care or service (as patients, pupils, students, customers etc). Research has indicated that people with client-related jobs are motivated by the feedback they get from their clients. The degree of well-being is often higher among people with client-related jobs than among people with other kinds of jobs (Bent & Freathy, 1997). Doing and completing a good job determines the feeling of satisfaction about the job (Gallie & White, 1993). The feedback from clients confirms that the job is completed and that the result is satisfactory. This feedback might be rewarding and offer opportunities for the providers to increase their competence and professional skill. People who are intrinsically motivated find it meaningful to increase their own competence (Deci & Ryan, 1985; Ryan & Deci, 2000).

It is possible that the development or maintenance of intrinsic motivation is related to the way in which the individual interacts with others in the context of performing the job tasks. The motivation of an individual is directed towards the environment. Therefore the motivation might be affected by what is occurring in the environment according to the experiences of the individual. In an individual's environment there are persons and things, non-persons, with which the individual interacts. The individual is interacting in different ways depending on the type of interaction. An individual can interact with others on a personal level (Hershkowitz, 1980). Interaction on this level involves an understanding of others, their feelings, thoughts and motives. On this level, the individual has opportunities to develop empathy for others. According to Kohlberg (1984) people are reasoning on a collectivistic moral level, implying that they feel obliged to take responsibility for the well-being of others because they belong to the same group, the same society or the same humanity. An individual can also interact with others on an impersonal level characterized by individualistic moral reasoning. In this kind of interaction and reasoning, where people are experienced not only as subjects but also as objects, there is little room for understanding of others, their feelings, thoughts and motives. Therefore, there is no room for empathy.

People in client-related jobs might be affected by patients, pupils, customers to whom they offer service and care, and from whom they get direct feedback on their performance. Interaction on a personal
level and reasoning on a collectivistic moral level might be related to intrinsic motivation and willingness to take responsibility, whereas interaction on an impersonal level and reasoning on an individualistic moral level might be related to a low willingness to take responsibility and to hierarchical organizational values. Accordingly, the main hypothesis is that there are differences between people with client-related jobs and people with non client-related jobs in terms of motivation, hierarchical organizational values and willingness to take responsibility.

People with a high motivation to develop themselves and their job, and a willingness to take responsibility, are often recruited as supervisors and managers, whereas people characterized by amotivation seldom are. In the R&D project *Issues of Strategic Employment* it was emphasized that the organization in the local communities ought to be flattened and that it should not be characterized by hierarchical organizational values. This goal should be reached primarily by the work of managers in the local communities. Therefore, a second hypothesis is that managers and subordinates should differ regarding motivation, hierarchical organizational values and willingness to take responsibility.

The majority of the employees in the local communities in Sweden are women (Kommunförbundet, 1998). With respect to this fact, and that there are more females engaged in client-related jobs than males, together with an understanding that the local communities face difficulties in attracting younger people, it is hypothesized that there are differences between females and males and between younger and older people primarily regarding motivation, but even concerning hierarchical organizational values and willingness to take responsibility.

### Method

**Procedure and respondents**

A questionnaire containing 52 questions was constructed to measure intrinsic and extrinsic motivation, hierarchical organizational values and willingness to take responsibility. It was distributed during autumn 2002 and spring 2003 to 1270 employees, of whom 884 answered, giving a response rate of 69.6%. The group of respondents was comprised as shown in table 1.

<table>
<thead>
<tr>
<th>type of job</th>
<th>position</th>
<th>gender</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client-related</td>
<td>manager</td>
<td>male</td>
<td>&lt;41 years</td>
</tr>
<tr>
<td>not client-related</td>
<td>sub-ordinate</td>
<td>not known, missing</td>
<td>490</td>
</tr>
<tr>
<td>not known, missing</td>
<td>female</td>
<td>known</td>
<td>&gt;40 years</td>
</tr>
<tr>
<td>not known, missing</td>
<td>not known, missing</td>
<td>not known</td>
<td>not known, missing</td>
</tr>
<tr>
<td>55.4 %</td>
<td>43.3 %</td>
<td>1.2 %</td>
<td>14.9 %</td>
</tr>
</tbody>
</table>

**Questionnaire**

A factorial analysis was performed on the items presumed to measure intrinsic motivation, extrinsic motivation, hierarchical organization-values and willingness to take responsibility. Concerning intrinsic motivation two factors were extracted each consisting of four items: intrinsic motivation by striving for performance and intrinsic motivation by opportunities for personal development. The first factor is equivalent to motivation according to the theory of Csikszentmihalyi (1990, 1997). The second factor is equivalent to intrinsic motivation according to the theory of Deci and Ryan (Deci & Ryan, 1985; Ryan & Deci, 2000). Reliability analysis of the items loading on these factors resulted in Cronbach alpha values of .699 and .787, respectively.

Three factors were extracted in the factorial analysis of extrinsic motivation items: extrinsic motivation by payment, consisting of four items, extrinsic motivation by social confirmation, consisting of four items and extrinsic motivation by imaginative escape from the job, consisting of five items. The first and the second factors are equivalent to extrinsic motivation according to the theory of Deci and Ryan (Deci & Ryan, 1985; Ryan & Deci, 2000). The third factor is equivalent to amotivation according to the theory of Ryan and Deci (2000). Reliability analyses of these three scales resulted in Cronbach’s alpha values of .830, .536 and .799 respectively. The reliability of the second scale suggested its exclusion from further analysis.

When performing factorial analysis of the items presumed to measure hierarchical organization-values two factors were extracted. Reliability tests of the two scales based on these factors resulted in unacceptably low Cronbach alpha values. Therefore a hierarchical organizational scale was calculated on
all eight items presumed to measure hierarchical organization-values with a Cronbach’s alpha value of .729.

Finally a factorial analysis was performed on the items presumed to measure willingness to take responsibility, resulting in three factors. However, one factor was comprised of only two items and all three factors could not be interpreted in a psychologically meaningful way. Therefore, a responsibility scale was calculated based on all 11 items presumed to measure willingness to take responsibility. The Cronbach’s alpha value for this scale was .705.

Results

Table 2 shows statistically significant differences for intrinsic motivation, extrinsic motivation, amotivation, hierarchical organizational values and willingness to take responsibility with respect to gender, age, position and type of job.

Statistically significant differences with respect to type of job, i.e. between employees with client-related jobs and employees with non client-related jobs, were found for intrinsic motivation: development, and willingness to take responsibility, implying higher intrinsic motivation and willingness to take responsibility among people with client-related jobs. Concerning position, managers and subordinates differed with respect to intrinsic motivation: development, and extrinsic motivation: payment. Managers scored higher on intrinsic motivation: development and lower on extrinsic motivation: payment, than subordinates. With respect to gender, females differed from males concerning amotivation and willingness to take responsibility. Males had a higher degree of amotivation indicating that they were more prone to imaginatively escaping from the job than females, whereas females were more willing to take responsibility than males. On three of the six variables, statistically significant differences were noted regarding age. Younger people scored higher on intrinsic motivation: performance and on amotivation but they were less willing to take responsibility than elderly people.

Discussion

Intrinsic motivation

The hypothesis that there is a difference between people having client-related jobs and people having non client-related jobs was confirmed by intrinsic motivation: development. People with client-related jobs scored higher on the scale for intrinsic motivation: development. This is consistent with the earlier research of Bent & Freathy (1997) indicating that people having client-related jobs feel satisfaction in performing the tasks of their jobs. The fact that managers scored higher on the scale of intrinsic motivation: development could be explained by expectations of managers to be more involved in their jobs than subordinates. Managers should be engaged in development activities for their job, forming and adapting the organization to its environment.

Those respondents who were up to 40 years old had a higher degree of intrinsic motivation: performance than those respondents who were older than 40 years. It is possible that younger employees
are more focused on performing something in their job than older employees. Another possibility is that younger employees feel more satisfaction in performance than the older employees do.

No differences were noted between females and males concerning intrinsic motivation.

Extrinsic motivation

The fact that extrinsic motivation: payment is influenced by the organizational position could be explained by the higher degree of intrinsic motivation: development among the managers. The higher degree of intrinsic motivation: development might reduce extrinsic motivation: payment as a result of concentration on what is performed in the job instead of the payment given for it.

Males had a seemingly higher degree of amotivation than females. They were more dissatisfied with their tasks than females and therefore had a greater tendency to imaginatively escape from their job. The younger respondents scored higher on the scale for amotivation than did the older respondents. As for males, interpretation is that older respondents were more satisfied with their tasks than younger respondents.

Willingness to take responsibility

The type of job had an effect on willingness to take responsibility, where those respondents having client-related jobs scored higher than those respondents having non client-related jobs. This relationship might be a result of the personal interaction with the clients. It is easier to understand ones own responsibility in the job if there is a personal interaction with the receivers of the service. The female respondents scored higher on the scale of willingness to take responsibility than the male respondents did. This gender difference is difficult to explain. However, the fact that respondents older than 40 years, with a long working life experience, had a higher degree of willingness to take responsibility than younger respondents, with less experience, can be explained in terms of generation differences.

References


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Stress Audit of a “Lean Production” Portuguese Company

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Key words: stress, stress audit, lean production

Introduction

Although lean production began in the automotive sector (Womack, Jones & Roos, 1990), the concept of lean production has spread to organizations throughout the world and has been applied beyond auto manufacturing into new production domains and the service sector (Landsbergis, Cahill, & Schnall; 1999, Womack, & Jones, 1996). The goal of lean production approach is to simultaneously improve efficiency, quality, and responsiveness to customers (Parker, 2003). The goals of lean production are to empower employees, to give them more control and improve job conditions, while at the same time increasing productivity (Womack, et al., 1990, 1996). Several critics see lean production as having negative consequences for employees and their job quality, considering that it is just an extension of “mass production”. Others view lean production as a way of achieving world-class performance in a humane way, with positive effects on employees (Parker & Slaughter, 1988; Tsutsui, 1998). Critics (e.g., Babson, 1993; Turnbull, 1988) use terms such as "mean production" or "management by stress" to convey the negative consequences of lean production for employee motivation and well-being.

Unfortunately, the question of the positive or negative effects of lean production on work characteristics and employee outcomes has not been resolved by empirical evidence. Negative consequences of lean production have been documented in a number of studies (Parker & Slaughter, 1988). For example, in one study, Landsbergis and colleagues (1999) tentatively concluded in a review of lean production studies that this practice is likely to result in increased demands and work pace, and modest or no changes in decision-latitude and autonomy. To further confuse the picture, several studies have identified positive consequences of lean production and related practices (Mullarkey, Jackson, & Parker, 1995), or a mixture of both positive and negative consequences (Jackson & Mullarkey, 2000).

In Portugal, the study of the individual and/organizational consequences of lean production are nonexistent. The present study aims at determining the levels and sources of stress in a Portuguese lean production company (stress audit) and at testing the efficacy of a low cost intervention to reduce stress.

Aims of the Study

This study will report the first phase of a three phase intervention strategy. A company was chosen because it employs lean production techniques and was willing to experiment a different type of intervention for stress management in the workplace that is innovative and low-cost. Stress has been studied extensively in the workplace in many countries, however, that is not the case in Portugal. Some studies have been done in health settings in Portugal and have shown that Portuguese health professionals have high levels of stress in comparison to other countries (McIntyre, McIntyre & Silvério, 1999; McIntyre, McIntyre & Silvério, 2000a; McIntyre, McIntyre & Silvério, 2000b).

As was mentioned before, this study involves 3 phases:

**Phase 1.** The first phase, a stress audit, was done on a sample of 451 employees from a company in northern Portugal. The conclusions of this phase are presented in this paper

**Phase 2.** Two weeks after the end of the first phase, 100 participants were randomly chosen (50 for the experimental group and 50 for the control group). The experimental group was invited to write about highly stressful episodes for 15-20 minutes per day, during 3 days, The intervention for this study is based an experimental paradigm developed by James Pennebaker (Pennebaker & Seagal, 1999; Niederhoffer &
Pennebaker, 2002). Immediately before and after the writing exercise, an evaluation of the subject’s mood was also conducted.

**Phase 3.** The effects of the intervention were evaluated at six weeks. After six weeks, the effects of the intervention on stress levels was again evaluated. This low-cost intervention proven intervention, applied to the area of stress management in the workplace, could prove to be of interest to employers in reaping the benefits of stress reduction. Lean production organizations could especially benefit from this approach.

**Method**

**Sample**
The sample is selected from a multi-national company located in Northern Portugal with 1200 employees. The company uses assembly-lines, 6 Sigma, TQM and Just in Time processes. There are two major distinctions between the employees. There are the “direct workers” or those directly involved in the production of the product; and the “indirect workers”, or those who provide support, planning and management.

The sample is a voluntary sample of company workers composed of 451 employees, or 38% of the total population. Tables 1 and 2 show the composition of the sample. The main sociodemographic characteristics are the following:

- **gender**: 23.7% are males; 76.3% are females. This is typical of the Portuguese companies involved in manufacturing: there is still a strong tendency to use employees with lower education and mainly women, lowering the costs with labour force.
- **structure**: the organization is mainly constituted of employees directly involved in production (direct workers); in our sample 74.8% participants are direct workers, and 25.2% are indirect workers.
- **age**: the average age is 31 years old, with a standard deviation of 6.43 (minimum age 18 years; maximum age 56 years).

**Table 1. Sample: males and females N = 451**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>104</td>
<td>23.7%</td>
</tr>
<tr>
<td>Female</td>
<td>334</td>
<td>76.3%</td>
</tr>
<tr>
<td>Total</td>
<td>451</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 2. Sample: direct and indirect workers N = 451**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>&quot;direct&quot;</td>
<td>326</td>
<td>72.3</td>
</tr>
<tr>
<td></td>
<td>“indirect”</td>
<td>110</td>
<td>24.4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>436</td>
<td>96.7</td>
</tr>
<tr>
<td>Missing</td>
<td></td>
<td>15</td>
<td>3.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>451</td>
<td>100.0</td>
</tr>
</tbody>
</table>
An important aspect that needs to be emphasized is that during the course of this study the company underwent a significant “downsizing”, which delayed the obtaining of results, especially for the second and third phases.

**Instruments**

Phase 1, stress audit, was done using the following measures:

*Stress levels* were measured by the General Health Questionnaire – 12 (Goldberg, 1992; McIntyre, McIntyre & Redondo, 1999). A validated Portuguese version of the GHQ-12 was used to assess the general stress levels of the study. Other such studies in healthcare settings have been done in Portugal (McIntyre, McIntyre, & Silvério, 2000b). In this study, as in other studies in other countries, a 2/3 caseness cutoff was used to determine stress levels with clinical significance.

*Organizational climate* was measured by the **Organizational Climate Questionnaire** -QuACO or **Questionário de Avaliação do Clima Organizacional** (McIntyre, McIntyre, & Silvério, 1999). The questionnaire consists of 26 items in a Likert scale format, three open-ended questions, including four sub-scales (meetings, autonomy, participation and workload) and one question on global job satisfaction. For this study, a smaller version of the previous questionnaire was used consisting of 13 items in order to assess the organizational climate. A factor analysis was performed (Principal Component Analysis, with varimax rotation), and 3 factors were extracted, explaining 64.8% of the total variance. The factors are:

- Participation (explaining 38.2% of the variance);
- Team communication (explaining 15.3% of the variance);
- Autonomy (explaining 11.3% of the variance).

The sub-scales Participation, Team Communication and Autonomy have a value of alpha of Cronbach which ranges between .80 (Participation) and .88 (Autonomy) with the sub-scale Team Communication presenting a Cronbach alpha of .87.

*Perceived sources of stress* assessed by the **Sources of Stress Questionnaire** (experimental version by McIntyre, Salgado, & Almeida, 2003). For this adaptation of the Sources of Stress Questionnaire, an interview of 10 minutes with 20 employees, who were randomly invited to participate, was initiated. The question asked was: “What are the major sources of stress in your work?” The purpose of this interview was to collect a larger pool of items, in order adapt the previously used instrument (in healthcare settings) to this particular organization. The scale which was developed using this information is composed of 23 items. However, in this study a smaller version was used (13 items) in order to assess the organizational climate. The reliability of the scale is very good (Cronbach alpha = .92), with all items performing in a satisfying way. This pattern of results enables to work with the total score of this questionnaire in additional analyses.

Additionally, an exploratory factor analysis of this data was performed (Principal Component Analysis, with varimax rotation) and four factors were extracted, explaining 55.1% of the total variance, namely:

- high levels of demands and urgency (37.7%)
- threats to the self or personal life (6.5%)
- interpersonal conflicts (5.9%).
- insufficient material or technical conditions of work (5.0%)

**Procedure**

For the first phase, all the participants (N = 451) were invited to participate in the study by a researcher and informed about the general purposes of this study, including issues related with confidentiality. Questionnaires were answered on the location, in their work breaks. All data were collected in a period of one and a half months.

**Results**

1. **Prevalence of clinically significant symptoms (GHQ-12)**

In Table 3, following the cut-off point used in Portugal and other countries (2/3) (McIntyre et al., 2000b), the results indicate a serious prevalence of clinically significant symptoms in our sample: 47.2% of the
employees report psychological and physical symptoms, probably associated with occupational stress. We will refer to these participants as the “Clinical Group”.

Table 3 Clinically Significant Symptoms of GHQ-12

<table>
<thead>
<tr>
<th>Clinically Significant Symptoms</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes (clinical group)</td>
<td>52.8 %</td>
</tr>
<tr>
<td>No</td>
<td>47.2 %</td>
</tr>
</tbody>
</table>

We compared these results with the ones obtained by McIntyre and colleagues (2000b) in a stress audit in health professionals in Portuguese hospitals, where almost 39% of health professionals had reported psychological and physical problems related with stress. We found that the prevalence of stress responses in our sample is even higher, and that this difference is statistically significant (Pearson Chi-Square = 6.670, df = 1, p< .01).

Additional analyses were performed in our sample in order to investigate the role of some demographic variables in the prevalence of clinically significant problems. The results show that:
- women present a higher prevalence of clinical symptoms (women: 50.9%; men: 37.5%; Pearson Chi-Square=5.689, df = 1, p< .05);
- marital status is not correlated with GHQ-12 scores;
- professional variables, such as type of shift and the distinction between direct and indirect work are not significantly correlated with GHQ-12 scores.

2. Perceived sources of stress

2.1 Major Perceived Sources of Stress: The “Top 10”

Based on the average score of each source included in the Sources of Stress Questionnaire, the following are the top ten sources of stress for these employees:

1. Pressure of quick response
2. Work overload
3. Work routine
4. Excessive and urgent demands
5. Unscheduled work tasks
6. Accumulation of tasks
7. Extra hours/overtime
8. Lack of recognition of work
9. Deficient physical and technical conditions

2.2 Analyses of the relationship between perceived sources of stress, demographic and professional variables

The impact of gender, marital status, and type of work (direct/indirect) on the perceived sources of stress was not significant. The perception of stress has a negative and low, but yet significant correlation with age (r=−.125, p < .05).

2.3 Perceived sources of stress and clinically significant symptoms related with stress.

Independent samples t-tests were computed between clinical and non-clinical groups regarding the perceived sources of stress. As expected, the average level of perceived stress is higher in the clinical group (t=−5.490, df = 387, p < .001).

3. Correlations between Perceived Stress, Job Stress Symptoms (GHQ) and Organizational Climate

As Table 4 shows, the perception of stress and the symptoms associated with stress have significant but low correlations with the three dimensions of organizational climate assessed.

Table 4 Correlations Between Perceived Stress, GHQ and QuACO sub-scales N = 451
<table>
<thead>
<tr>
<th></th>
<th>S</th>
<th>GHQ</th>
<th>Part.</th>
<th>Comm.</th>
<th>Autonomy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived stress (PS)</td>
<td></td>
<td>.326**</td>
<td>-.140**</td>
<td>-.191**</td>
<td>-.132**</td>
</tr>
<tr>
<td>GHQ</td>
<td></td>
<td></td>
<td>-.197**</td>
<td>-.198**</td>
<td>-.180**</td>
</tr>
<tr>
<td>Participation (Part.)</td>
<td></td>
<td></td>
<td></td>
<td>.423**</td>
<td>.370**</td>
</tr>
<tr>
<td>Communication (Comm.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.237**</td>
</tr>
<tr>
<td>Autonomy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Correlation is significant at the .01 level (2-tailed).

These results show that:
- job stress symptoms are positively related with the perceived amount of stress;
- greater participation, satisfaction with the type of control and higher autonomy are associated with lower levels of perceived stress and job stress symptoms.

**Discussion**

This study is perhaps the first study of a lean production company in Portugal. The data presented here represent only the first phase of a larger study and much work is still to be done. Although a few studies have been done in healthcare settings, this study examines stress in a very different environment. Some studies have raised the question of whether lean production methods actually create more, and not less stress for the workers. The data in this sample suggest that stress may actually be higher in this kind of organization and showed a high prevalence of stress symptoms, higher than those in a Portuguese hospital setting, which is a complex organization. These data illustrate the value of using a stress audit, even with relatively simple instruments, which identifies the need for a stress intervention.

Another conclusion of this study is that stress symptoms are significantly related with the perceived amount of stress and with the organizational climate, which supports existing job stress theories. Greater participation, satisfaction with the team communication and higher autonomy are associated with lower levels of perceived stress and stress symptoms. This data is in line with Karasek’s Demand-Control Model (Karasek, Brison, Kawakami, Houtman, Bingers, & Amick, 1998), that is that high demands and low control are associated with higher stress levels, whereas higher control is associated with lower stress levels. These relationships are important in terms of developing effective interventions to diminish occupational stress in lean production companies.

The methodology used in this study can be interesting for Portuguese companies as a simple way for them to assess the level of stress of its employees and to assess its consequences. It is necessary to conclude the present study and to replicate the study in other settings to develop a better picture of organizations in Portugal. However, in this particular case, these data allow the organization to secure a more realistic picture of their occupational health, on a scientific basis, and allows researchers to verify theoretical models which are often imported to Portugal from other countries and cultures.

**References**


Validation of a method of vocational counselling

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2 HERMES SoftLab Research group, Slovenia

Abstract
The reduction of perceived stress amongst vocational counsellors should be achieved with an expert model to support the decision making process. Two different methodological approaches were validated: (1) the method of artificial intelligence, apriori; and (2) determination of graph cycles with graph theory. Graph theory determines the power of influence of external and internal factors. Following from this, possible gripping points for the counselling process were determined. Advantages of graph cycles on the basis of graph theory determination were demonstrated.

Key words: Expert model, vocational counselling, graph theory, artificial intelligence, gripping points.

Introduction
The process of choosing an adequate profession is one of the most important in a young person’s life. The decision has to be made early, at the end of the elementary school. Children do not know their abilities; they do not know their good points or their strong points. A variety of factors may influence the effectiveness of vocational decisions and career development.

Vocational counselling is a process with long term output; it starts with a child and the output is realized when the child grows up. During this time, many different factors may influence the final decision. External factors, changes in global economy, and changes in the labour market may modify the child’s basic decision (Umar, 2001). The stability of this decision depends on the quality of the decision made, and the quality depends on the input data considered. According to analyses of young children’s decisions regarding a profession (CEDEFOP, 1995) and according to public opinion, the child’s vocational decision is shaped by their attitude and motivation. Young people should choose professions on the basis of their attitudes and other impact factors should not have an influence.

As a consequence, the vocational decision can be wrong. About 20% of young people in Slovenia do not succeed in secondary school. The high proportion of limited success may also be a consequence of inadequate vocational decisions and career development.

To reduce risk in the vocational counselling process, vocational counsellors should be introduced. Their support in the decision making process should help to avoid wrong decisions and increase the reliability of the child’s decision. To achieve a higher level of reliability, counsellors are looking for support tools that should help children in their decision process. The application of a standardized tool should reduce the perceived level of stress for professional counsellors that results from their individual responsibility for supporting the process of decision making (Molan, M. 2003).

Positive experiences of the use of models regarding artificial intelligence in medicine have initiated the development of a model for decision making support in the process of vocational counselling. Focused expert models for the support of decision making in clinical branches of medicine, demonstrate the great advantage of using expert models to reduce the expert’s subjective influence in the decision making process.

The expert model should be a tool for reduction of the perceived level of counsellor’s stress. It should be a tool for shaping the most adequate decisions on the basis of available data.

In preventive health care activities, expert models are less frequent. The predictive validity of models should be long term (Molan, M. 1999). However, it is difficult to identify all factors that might influence the nature of the phenomenon in the longer term. In preventive health care activities, unlike clinical branches, there is no immediate measure for the predictive validity model. The process of vocational counselling demonstrates all the characteristics of preventive health care activity, including:

- variety of input data,
- imprecisely defined external factors,
- prediction in the longer term,
- a measurable output in reasonable time.
Predictive validity of the expert model for vocational counselling should be long term. The bases of validation are not precisely defined, input data and external influential data are not taken into account. Counsellors reflect a great need for an expert model to support the counselling process, which leads us to the development of a model. The output of our research work will be an expert model, which should be a valid tool for practical use in the process of vocational counselling. The main research goals of our work are:

- identification of the impact factors shaping a child’s decision regarding a profession
- identification of the power of influence
- testing modern methods of artificial intelligence for use in the development of an expert model for vocational counselling.

**Method**

The main research goal of the project “Development of a model for vocational counselling”, sponsored by the Slovenian Ministry of Science, is to develop a counselling method that would establish and consider a child’s work habits, social attitudes and other factors that are influencing his choice of career. A very important part of the model is the validation of different methodological approaches and comparison of the obtained results. On the basis of this comparison, the most appropriate methodological approach for integration of all input data in the model should be selected.

The developed model should be a tool to support the work of the counsellor. It should describe to what extent certain factors influence a child’s choice of profession. The most important factors, according to our previous research are (cit.):

**External factors:**
- the child’s parents (advice)
- the child’s friends (interests)
- reputation of a vocation in the society

**Internal factors:**
- the child’s personal interest in a vocation
- the child’s dislike of a vocation
- the child’s gender

All data were collected as part of a research project conducted in Ravne, involving 155 children (65 girls and 90 boys). The QPI questionnaire identifies 12 profession interest areas (PIA), 113 desired professions (DP), and 4 influential factors (IF). The questionnaire was completed by the children as a part of routine medical exams in the 7th class of primary school. For analyses of the obtained data, four methods of artificial intelligence (AI) and the application of graph theory (GT) have been chosen.

**Results**

Artificial intelligence *apriori methods* (Agrawal, R., 1994) determine only the influence of the internal factor gender. Four AI methods have identified, with great confidence, the connection between gender and same profession interest areas (described in Table 1). Other connections are too weak and too dispersed to be identified with the AI method.

**Apriori - confidence**
Minimum support: 0  
Minimum metric <confidence>: 0.9  
Number of cycles performed: 899

Best rules found:  
1. ME_yes=C 4481 ==> Gender=M 4481  conf:(1)  
2. ME_yes=L 6144 ==> Gender=M 6016  conf:(0.98)  
3. ME_yes=A 4736 ==> Gender=F 4608  conf:(0.97)

**Apriori - conviction**
Minimum support: 0
Minimum metric <conviction>: 1.1
Number of cycles performed: 899

Best rules found:
1. ME\_yes=C 4481 \(\rightarrow\) Gender=M 4481  \text{conf:(1)}
2. ME\_yes=L 6144 \(\rightarrow\) Gender=M 6016  \text{conf:(0.98)}
3. ME\_yes=A 4736 \(\rightarrow\) Gender=F 4608  \text{conf:(0.97)}

**Apriori - leverage**
Minimum support: 0
Minimum metric <leverage>: 0.1
Number of cycles performed: 899

Best rules found: NO RULES

**Apriori - lift**
Minimum support: 0
Minimum metric <lift>: 1.1
Number of cycles performed: 899

Best rules found:
1. ME\_yes=A 4736 \(\rightarrow\) Gender=F 4608  \text{conf:(0.97)}
2. Gender=F 16640 \(\rightarrow\) ME\_yes=A 4608  \text{conf:(0.28)}
3. ME\_yes=C 4481 \(\rightarrow\) Gender=M 4481  \text{conf:(1)}

According to the results of the AI method’s application, the influence of gender is important. Boys have a greater interest for technics and informatics, whereas girls show a greater interest for manual work. The structure of the sample has influenced the results. Other collected data were too dispersed for use of the AI model.

**Graph theory application**
Connections are presented with an application of graph theory (Molan, G. 1999). All attributes (input data) are presented with vertices and all connections are presented with edges. Graph cycles are connecting corresponding vertices of PIA and vertices of Desired Professions (DP).

**Figure 1** This is the graph for one selected child, X. Edges between PIA vertices and DP vertices represent the connection between profession interest area and the professions from this area. Directed arcs between PIA vertices and IF vertices represent the child’s choice of selected profession interest areas. Undirected edges between child X and DP vertices represent the child’s desired professions. Graph cycles are directed. Cycles with directed arcs named “Yes” represent positive cycles and cycles with directed arcs named “No” represent negative cycles. In this article only positive cycles are presented.
Numbers of graph cycles are counted for every influence area, for both external and internal factors. Table 1 presents the power of influence of external factors as the percentage of graph cycles. The power of influence is calculated as:

\[
\text{power of influence} = \frac{\text{found graph cycles}}{\text{all possible graph cycles}}
\]

According to the results of GT the influence of the internal factor, a child’s personal interest in the activity, is the most important.

The distinction between different external factors has been made. The most important external factors are parents’ recommendations. Possible gripping points were best defined on the basis of results obtained by the GT method. The comparison of both methods AI and GT exposes the advantages of GT.

<table>
<thead>
<tr>
<th>Graph vertex name</th>
<th>M ME_yes</th>
<th>P PARENTS_yes</th>
<th>F FRIENDS_yes</th>
<th>R REPUTATION_yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0,6</td>
<td>-</td>
<td>2,6</td>
<td>1,9</td>
</tr>
<tr>
<td>B</td>
<td>11,6</td>
<td>14,8</td>
<td>4,5</td>
<td>8,4</td>
</tr>
<tr>
<td>C</td>
<td>16,1</td>
<td>14,8</td>
<td>3,9</td>
<td>4,5</td>
</tr>
<tr>
<td>D</td>
<td>11,0</td>
<td>4,5</td>
<td>1,9</td>
<td>6,5</td>
</tr>
<tr>
<td>E</td>
<td>1,3</td>
<td>-</td>
<td>1,9</td>
<td>1,9</td>
</tr>
<tr>
<td>F</td>
<td>8,4</td>
<td>3,2</td>
<td>1,3</td>
<td>5,2</td>
</tr>
<tr>
<td>G</td>
<td>9,7</td>
<td>5,8</td>
<td>1,9</td>
<td>6,5</td>
</tr>
<tr>
<td>H</td>
<td>11,6</td>
<td>10,3</td>
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<td>3,2</td>
</tr>
<tr>
<td>I</td>
<td>44,5</td>
<td>39,4</td>
<td>36,8</td>
<td>33,5</td>
</tr>
<tr>
<td>J</td>
<td>1,9</td>
<td>0,6</td>
<td>3,9</td>
<td>1,9</td>
</tr>
<tr>
<td>K</td>
<td>2,6</td>
<td>4,5</td>
<td>3,2</td>
<td>6,5</td>
</tr>
<tr>
<td>L</td>
<td>10,3</td>
<td>6,4</td>
<td>2,6</td>
<td>6,5</td>
</tr>
<tr>
<td><strong>ALL</strong></td>
<td><strong>33%</strong></td>
<td><strong>26%</strong></td>
<td><strong>19%</strong></td>
<td><strong>22%</strong></td>
</tr>
</tbody>
</table>
**Conclusion**

Comparison of the AI method with GT method exposes the advantages of GT method, which are:

- that the power of influence is more clearly determined
- the comparison between different influence factors is possible
- the method determines the power of influence of the majority of factors

The disadvantages of GT method are:

- demand for special knowledge of GT
- need for the development of a tool (program) for calculations
- no application can be used without cooperation of a GT expert.

On the basis of comparison between both methods (AI and GT), we have decided to support GT. Due to the nature of the collected data (data with great variety), the use of classical AI methods is not reasonable, although they are the most developed and modern. The results obtained with GT are easier for immediate use and more easily understood. After the first step of evaluation and more practical data analyses, the power of influence and the input data for the development of the model are defined. The direction of influence is determined with AI and GT, but more distinct differences, which should be of interest in the vocational counselling process, are more precisely determined with GT. GT seems to be of greater use in the development of the vocational counselling model.

An ultimate decision for GT has been made on the basis of the obtained results, which will be incorporated in the final version of the model.

**References**


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Well-Being of Workers in the Post-Transition and Globalization Period

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Abstract
The well being of workers in the financial institution, after the transition, were analyzed. According to the results, the impact of education, age, and position within the workplace were identified. Workers aged approximately 40 years old have the most adequate education. They are in good health and their perceived level of well being is the most adequate. This group of workers have influential power in the decision making process within the institution. They occupy the best positions within the workplace. This group of workers do not work in customers services on a divided working schedule, like the younger workers. They are in better health and have a higher level of education than older workers.

Key words: Transition period, well being, education, ages, work place position.

Introduction
A third of the entire working population in the European Union is affected by work-related psychosocial risks, with effects that are manifested in work–related stress. Work-related stress is also a consequence of an inadequate organization, which is marked by:

• lack of control - workers do not have control over the sequence of their tasks, they have no influence over working methods and no control of their working hours
• tight deadlines - almost two thirds of workers report tight time deadlines (Sedlatschek, C. 2002).

Europe is undergoing the transition to a knowledge–based economy. This process is accompanied by deep changes, which affect our economies and societies (Klappenburg, H. 2002). Changes in the world market economy have caused a new pressure for management and workers (EU Treaty. 2002). During the last decade, a crucial condition for the survival of production companies has been to adapt to this economy and organization. In post-transition countries, only the best and the most flexible have survived. In these countries, competition in the services market started much later than in production companies. European capital was invested in the countries of middle and Eastern Europe a few years ago; banks and insurance companies have since started to purchase banks in this part of Europe. As a consequence, new spirit has come into the service sector.

Banks and insurance companies have to adapt to the new globalised market. The level of security, social security in the sense of workplace stability, has decreased as the level of competition has increased. These changes have affected the well-being of workers; perceived levels of stress have increased and the well-being of workers has decreased. Stress has thus become the reality of a normal working day. The perceived level of stress may also be the result of changing external social circumstances however, and not only a reflection of the workload.

The well-being of workers depends on different internal and external factors within the workplace. The impact of different components of workload on the well-being of workers has been described in our previous work (Molan, M. 2001).

Analyses of the well-being of workers have identified the influence of technology, ecology, human resources and the organization. According to our results, the impact of organizational factors is very important in companies where these other impact factors are less important. The highest importance of organizational factors is apparent in the services sector. Inadequate human resource management in the previous period and informalized, ‘clumsy’ organization models have caused a low level of human resource availability in services. In the globalisation period, competition in the service market caused disturbance and, as a result, the level of social security decreased and the perceived level of stress increased. As a
consequence, interest in intervention and investments in human resources and the organization has also increased (Fikfak-Dodić, M. 2002).

Perceived level of worker well-being should be the issue of intervention in the real working environment.

**Method**

The well-being of workers was estimated with the QAA (The Questionnaire of Actual Availability), which is a tool developed as part of the AH model. The normative values of the questionnaire were determined (Molan, M. 1998). In the questionnaire, a decrease of well-being is the term used to denote perceived levels of:

- physical fatigue
- mental fatigue
- exhaustion
- decrease of concentration
- decrease of motivation
- depressed mood
- stress

The research goal was to evaluate the well-being of bank workers after changes in the structure of bank owners.

Bank workers had to estimate their average level of well-being at the end of the working day, by completing the QAA questionnaire to determine their actual availability. The questionnaire comprises 47 items related to well-being, stress, motivation and fatigue.

The sample comprised 81 men and 161 women. All workers were divided into 8 groups according to their age from 20 to 25, from 25 to 30, and so on, up to and including from 55 to 60.

**Results**

All parameters of perceived well-being were worse in the female group. They perceive themselves to be much more exhausted and stressed, and they report a perceived decrease in concentration. Variability is also much higher in the female group.

**Table 2 Impact of education and position of the working place.** Positions 4 and 5 of the work place scale preset customer services – the lowest education level. Positions 6 and 7 of the work place scale preset support activities – middle education level. Positions 8 and 9 of the work place scale preset decision makers – the highest education level.

<table>
<thead>
<tr>
<th>Position of the work place:</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of workers: 4</td>
<td>2</td>
<td>101</td>
<td>32</td>
<td>28</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
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<td>1.60</td>
<td>1.90</td>
<td>1.68</td>
<td>1.59</td>
<td>1.50</td>
<td>1.30</td>
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<td>Standard deviation</td>
<td>0.14</td>
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<td>0.49</td>
<td>0.50</td>
<td>0.41</td>
<td>0.26</td>
</tr>
<tr>
<td>Mental (mean)</td>
<td>1.28</td>
<td>1.89</td>
<td>1.69</td>
<td>1.59</td>
<td>1.67</td>
<td>1.38</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.20</td>
<td>0.56</td>
<td>0.49</td>
<td>0.44</td>
<td>0.70</td>
<td>0.22</td>
</tr>
<tr>
<td>Exhaustion (mean)</td>
<td>1.44</td>
<td>2.00</td>
<td>1.83</td>
<td>1.75</td>
<td>1.67</td>
<td>1.58</td>
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<tr>
<td>Standard deviation</td>
<td>0.09</td>
<td>0.61</td>
<td>0.64</td>
<td>0.71</td>
<td>0.62</td>
<td>0.07</td>
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<tr>
<td>Decrease of motivation (mean)</td>
<td>1.40</td>
<td>1.67</td>
<td>1.51</td>
<td>1.51</td>
<td>1.32</td>
<td>1.20</td>
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<tr>
<td>Standard deviation</td>
<td>0.28</td>
<td>0.57</td>
<td>0.53</td>
<td>0.53</td>
<td>0.40</td>
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<tr>
<td>Decrease of concentration (mean)</td>
<td>1.00</td>
<td>1.65</td>
<td>1.38</td>
<td>1.50</td>
<td>1.40</td>
<td>1.00</td>
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<tr>
<td>Standard deviation</td>
<td>0.00</td>
<td>0.84</td>
<td>0.61</td>
<td>0.79</td>
<td>0.60</td>
<td>0.00</td>
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<tr>
<td>Mood (mean)</td>
<td>1.30</td>
<td>1.84</td>
<td>1.63</td>
<td>1.64</td>
<td>1.60</td>
<td>1.60</td>
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<tr>
<td>Standard deviation</td>
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<td>0.61</td>
<td>0.59</td>
<td>0.63</td>
<td>0.62</td>
<td>0.20</td>
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<tr>
<td>Stress (mean)</td>
<td>1.50</td>
<td>1.94</td>
<td>1.76</td>
<td>1.60</td>
<td>1.64</td>
<td>1.55</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.39</td>
<td>0.56</td>
<td>0.55</td>
<td>0.48</td>
<td>0.55</td>
<td>0.39</td>
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</table>
According to our results, the most stressful positions in the workplace are in the area of support for non-banking services. These are working places of business communicators and lawyers. The main task in these groups is imprecisely defined and the position within the organization’s structure is also undefined.

Workers in these workplaces have to adapt themselves as fast as possible to new business trends and new regulations, including the need for the introduction of foreign regulation and laws in our legislation and business. Tasks for these workers are often poorly defined and have tight deadline. They have a lot of work, but are not in the position of decision makers. They are merely support for the bank services. Bank service for the residents is the most visible part of bank work. Direct interpersonal communication and service for different customers demands a high level of vigilance and concentration. Time pressure is frequent. Consequently, the work of cashiers and commercialists is increasingly exhausting and stressful. This group of employees work the whole day, using divided working schedules. There are great differences between these individuals. Some workers have been able to adapt themselves to the divided working schedules, but women with small children perceive this organization to be very stressful because all support services (such as schools and kindergartens) within our society are poorly matched to the divided working schedule.

Workers in other working places, where tasks are well defined and time pressure is less intense, perceive less fatigue and stress. Levels of perceived well-being are much higher and more adequate; the workers have not yet perceived changes in work-related values. Some of them have more defined tasks, with the possibility of influencing the decision-making process. These workplaces are well organized and, as a consequence, the perceived level of well-being is more adequate.

Age also has a strong influence on the perceived level of well-being. The most adequate level of availability was established in the group aged approximately forty years old, where the level of motivation is the highest. Workers from this group have a high level of education and sufficient work experience. They do not work in the service on behalf of residents. They may have started in resident services, but have made progress and acquired better working places in the non-operating services. They occupy positions with high impact on the work process and in decision-making.

Younger workers are employed more often in resident services and they have to work the divided working schedule. On the other side, there are young women with small children, who often feel overloaded. The majority of these workers have an adequate level of education, but they do not have adequate experience. They have only limited work experience, thus do not know the whole system and processes in the bank.

Figure 2 Distribution of well being parameters according to their age: from 20 to 25, from 25 to 30, ..., from 55 to 60
Other workers (above 55) have work experience from the pre-transition period. Their education is much lower than the group of young or middle-aged workers.

Due to the impact of globalisation on the financial market in Slovenia, many older workers have taken early retirement. Only a few of them have been able to adapt themselves to the new situation; these few have been able to learn new procedures, new behavioural patterns and have to keep themselves flexible.

Older workers have positions with high impact on the work process. Some of them are important decision makers and, as the consequence, they are motivated. The group of people aged from 55 to 60 in our sample are motivated, but their availability has decreased. They are not able to compete with the group of people aged approximately 40, who have a high level of availability, a high level of motivation, enough experience and adequate education.

The basic education level of workers does not have a particular impact. During the last decade, workers have had to complete their education. In the new recruitment process, only workers with the adequate education level for a particular position have been selected.

The majority of workers have an education level corresponding to the demands of the workplace, hence the comparison of different educational level groups does not identify any differences. The perceived level of well-being is adequate.

**Conclusion**

The analyses of the well-being of workers have identified positive impacts of education. There is a strong positive impact on the position obtained within the organizational structure. Workers who have impact on the work process, like analytics, do not perceive any decrease in their well-being. They have responsible tasks, but also a possibility to participate in the decision making process.

Dealers on the stock market have high individual responsibility, but are independent in their work; they have the possibility to deal in a frame independently.

The lowest level of availability and well-being is in the resident’s service. They have no impact on the process and have to work on the divided working schedule.

The most important negative impacts on the well-being of workers are caused by the position in the organizational structure, the degree of influence over decision making, and age. An adequate level of
education increases the perceived level of well-being, worker’s availability and flexibility, whereas age decreases the perceived level of well-being and flexibility.

In the last decade, only workers with adequate education have been recruited. In this period they have had the possibility to gain work experience. An adequate level of education, experience, motivation and individual flexibility ensure the highest level of availability of the people around forty years of age. These people form the group of decision makers with the most important influence on all processes in the bank.

It is obvious that an adequate level of competence is the combination of education, work experience and psychophysical condition, the main factor of the latter being age. Older workers are not able to compete with employees who are in the forty year old age bracket. Moreover, young women with small children are not able to compete with them.

The results describe the well-being of workers in a modern financial institution, open to the European market. The perceived level of well-being of workers is also influenced by external social factors. Workers who have not been able to adapt themselves have somehow been eliminated and young people who may not be able to adapt themselves have not been recruited.

The results present the well-being of workers in a realistic situation after the transition of a competitive company that has adapted to the new global market.

The liberalisation of banking and insurance services is connected with the movement of capital to Eastern Europe. Our banks and insurance services have to be competitive with new-comers in the area, in terms of capital, quality of service provision and organization.

References
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Coping with stress at work: An interview study in a downsizing organization

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Introduction

Working life of today is characterized by continuous, and often extensive, changes. This restructuring process is due to different factors such as global competition, economic recession, new technology and transition from manufacturing to service production. In order to handle the situation, organizations are keen to minimize their costs, and this has often resulted in organizational downsizing (Sverke & Hellgren, 2002). The consequences of downsizing are manifold, some employees lose their jobs, and those who keep their jobs (survivors) are expected to work harder/more effectively and to cope with uncertainty about their future employment. Several studies indicate that downsizing can influence employees’ health and well-being in a negative way (Hertting & Theorell, 2002; Isaksson & Johansson, 2000; Torkelson & Muhonen, 2003b). Stressful working conditions are considered as one of the underlying causes for the dramatic increase of long-term sickness absence in Sweden during the last five years. Several researchers have also suggested that women suffer more from work related health problems than men (Alexanderson & Östlin, 2001; Bildt, 2001; Davidson & Fielden, 1999). Women are also confronted with additional stressors such as conflicts between work and family responsibilities.

Coping strategies can be categorized into problem-focused and emotion-focused strategies (Folkman & Lazarus, 1980). While problem-focused strategies focus on solving the problem or changing the stressful situation, the aim of emotion-focused coping strategies is to adjust the emotions that are aroused by the situation. It is often considered more effective to use the problem-focused strategies since they aim to eliminate the stressor, rather than only modifying the negative effects of stress, as in emotion-focused coping (Lazarus & Folkman, 1984; Endler & Parker, 1990). However, it appears that problem-focused strategies may not be efficient in situations where the individual has little control, like in organizational downsizing. There are some indications that problem-focused coping can even increase rather than decrease stress during organizational change (Ashford, 1988). The emotion-focused strategies can therefore be adaptive in handling the feelings of powerlessness in an uncertain situation (Callan, 1993).

Studies of workplace stress have often been performed in organizations where women have been employed in different positions to men, which make comparisons difficult. In studies where gender differences are found, the results may be due to the fact that women and men were working in different types of jobs and at different levels in the organization. The purpose of the present investigation was to gain an understanding of stress and coping at work for women and men working in similar positions and with the same type of jobs.

Method

Interviews, based on the Critical Incident Technique (Flanagan, 1954), were conducted with 40 employees in a Swedish telecom company. The company studied has been subjected to organizational changes, which have resulted in the reduction of staff. The organizational change and reconstruction process is still in progress.

The total group of 40 interviewees consisted of 10 female managers, 10 male managers, 10 female non-managers and 10 male non-managers, since the aim was to include both women and men working in similar positions and with the same type of jobs. The mean age of the participants was 41.5 years (SD = 8.7) and they had been working in the same company for approximately 15 years.

The interviews lasted about 45 minutes in general. All informants consented to our request to audiotape the interviews. The interviews were transcribed verbatim and formed the basis for the analyses.
**Results and discussion**

Content analysis of the data revealed that organizational change and downsizing were the major sources of stress for both women and men, irrespective of the organizational level. The work-family/leisure conflict was also a prevalent theme among the female managers.

The results showed that participants used several strategies in order to cope with the organizational change and downsizing process. The most commonly used coping strategies were both different active strategies, seeking instrumental as well as emotional social support, acceptance, denial and resignation.

In a way it is surprising that participants reported using different problem-focused strategies, since this stressor was not under their control. The participants could probably handle the stressor momentarily, but there was no guarantee that the same situation would not appear again. When one cannot influence the process, one can try to subdue anxiety by using emotion-focused strategies, such as seeking emotional social support, acceptance and resignation. The organizational reconstruction process in the company has been going on for a long period of time. In view of the fact that there have been frequent organizational changes and the efforts to influence the process have been fruitless, many of the participants have decided to simply accept or resign to the situation.

The results also revealed that the work-family/leisure conflict was a source of stress mainly for the female managers. This is in line with other studies that have showed female managers to be more stressed than male managers by greater responsibilities for home and family (Lundberg & Frankenhaeuser, 1999) and by stress caused by the work/family interface (McDonald & Korabik, 1991).

No clear-cut gender differences or differences between organizational levels could be found concerning coping. This might be due to the fact that the overriding source of stress was downsizing, a factor that even the managers could not influence or have control over. In our initial quantitative study, the men and women used basically the same coping strategies at a managerial level, whereas at a non-managerial level traditionally conceived coping patterns were evident (Torkelson & Muhonen, 2001). Even though few gender differences in perceived stress were found (Torkelson & Muhonen, 2003a), there were some gender differences concerning factors predicting health problems (Muhonen & Torkelson, 2003; Torkelson & Muhonen, 2003a).

It seems that the labor market will continue to be characterized by increasing flexibility and frequent organizational changes (Burke & Cooper, 2000). Further research is needed with a focus upon gender aspects of stress and coping, with special attention to downsizing and job insecurity at different organizational levels.

**Acknowledgments**

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**References**


Management of work-related and non work-related chronic illness at work

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Introduction
Chronic illnesses are recognised as one of the most expensive health problems in modern industrialised countries (World Health Organization, 1992). They are defined as ‘illnesses that are prolonged, do not resolve spontaneously and are rarely cured completely’ (US Centers for Disease Control & Prevention and National Center for Chronic Disease and Health Promotion, 1999). Common examples are asthma, diabetes, arthritis, digestive disorders and psychological conditions such as depression and anxiety. Evidence suggests that by the age of 50, at least a third of the workforce is likely to be managing a chronic illness, usually a cardiovascular or musculoskeletal disorder. (Ilmarinen, 2001). Whilst national statistics portray the substantial impact that chronic illnesses in general have on labour force participation (e.g. Kessler Greenberg, Mickelson & Wang, 2001), much of the interest to date has focused on documenting and addressing the causes of work-related illnesses (Hodgson, Jones & Elliot 1995; Health & Safety Executive, 2003). Nonetheless, there are many individuals who manage a non work-related chronic illness at work. Such illnesses may have a considerable impact on employees’ performance at work if not carefully managed by employees themselves, with or without the knowledge of their employers. Relatively little research has been done to identify the problems faced by such individuals, and the possible implications for their overall quality of life. Evidence from individuals with a declared disability indicates that, where they find themselves in a work environment unresponsive to their needs, they experience lower levels of job satisfaction, psychological well-being and job productivity, and higher levels of stress and absenteeism (Akabas & Gates, 1993). They are also more likely to leave the labour market (Daly & Bound, 1996). Equivalent published studies of employees with chronic illnesses do not currently exist.

In this study, we explored the prevalence of self-reported work-related and non-work-related chronic illnesses in a large organisation and examined the possible factors associated with performance at work in both groups. We also examined the presence of any organisational support for the two groups.

Method
Sample
All 5,500 employees from a UK university were invited to complete a tailored questionnaire eliciting information on the prevalence of chronic illnesses and their impact on work. The questionnaire was designed following semi-structured interviews with a representative sample of employees and with a group of experts and key stakeholders. The questionnaire and a letter with information about the study from the research team were sent to all employees via the University internal mailing system. All employees were assured that the questionnaire was confidential and individual responses would not be made known to anyone within the organization. A 44% response rate was achieved for completed returned questionnaires, of which 725 (34%) had declared at least one chronic illness.

Measures
The questionnaire comprised six sections eliciting information from employees on (i) their chronic illness, (ii) the effect of that chronic illness on working life, (iii) absence attributed to that illness, (iv) disclosure and social support, (v) work adjustments sought and received, and the workplace policies, facilities and services they would find useful in managing their chronic illness at work; and (vi) demographic details. This paper presents the findings from four of these sections as detailed below:

Chronic illness; respondents were asked to indicate whether they had any chronic illness (self-report) and to indicate which primary condition (if more than one was listed) most affected their work. An explanation of the meaning of ‘chronic illness’ was provided together with examples (e.g. asthma, diabetes, back pain and arthritis). Respondents were asked how long they had suffered from that illness (years, months), severity of the condition (mild to severe), whether work was considered a contributing factor by their medical
practitioner (yes or no), if respondents used medication because of their illness whilst at work (yes or no) and if they needed time off work for treatment (yes or no). Respondents were also asked to estimate how many days they came to work when they were having a ‘bad’ day, and were not performing well (‘presenteeism’), because of their chronic illness (every day, several times a week, about once a month, about twice a year, or once a year or less).

Chronic illness and working life; respondents were asked whether their chronic illness affected their work on a daily basis (for example, whether their condition caused difficulty with completing tasks on time) (yes or no). Respondents were also asked to indicate from a choice of three items, whom, if any, they were most likely to seek support to help them manage their chronic illness at work (their line manager, their colleagues, or outside work: for example, family, friends or support groups).

Work adjustments; respondents were asked if their work or workplace had been adjusted to help them manage their chronic illness better. They were asked to indicate from a list of ten items what changes had been made to their work, what changes they had asked for but had not received, and what changes they would like but had not asked for. The items included reduced working hours, flexible working hours, different tasks, reduced workload, provision of special equipment (e.g. chair), adjustments of physical demands (e.g. less lifting) and adjustments to the physical work environment (e.g. access, doors).

Demographics; respondents were asked information on their age, gender, occupation and tenure (length of employment).

Analyses
The International Classification of Diseases (ICD-10; World Health Organization, 1999), was used to group responses on reported chronic illnesses (Table 1). Ten groups were identified from employees’ reports, of which nine were included in ICD-10. A further group, classified as ‘Other’, represented smaller numbers of other reported chronic illness. A small number of respondents (n=26) did not disclose their illness and were therefore not included in subsequent analyses.

In order to identify significant variables associated with performance at work (and thus simplify the relationships between a large number of variables), data on each aspect of chronic illness and working life and work adjustments were separately entered into a univariate logistic regression analysis against the outcome variable of ‘work affected on a daily basis’. Those proven to be significant predictors at \( p < .25 \) (Hosmer and Lemeshow, 1989) were retained and subjected to exploratory factor analysis with varimax rotation. Items that cross loaded were removed. Six factors emerged: (1) self-management of the illness (use of medication at work, time off work for treatment), (2) severity of the illness (reported level of severity and level of presenteeism), (3) social support (talking to colleagues and line manager), (4) support from other sources (dealing with difficulties at work alone and receive from support outside of work), (5) workload/task adjustments (different job tasks, reduced workload, help offered with completing tasks), and (6) adjustment of work hours (flexible hours, reduced working hours).

The six factors, type of chronic illness and demographic variables (age, gender, length of time managing a chronic illness, occupational group and tenure) were entered into two separate logistic regressions for (i) work-related, and (ii) non work-related chronic illness groups. Stepwise logistic regression analysis was run, adjusting for demographics, to identify the most important predictors \( (p < .05) \). To identify the most parsimonious model of the data, the regression analysis was run a number of times, with the least significant variable removed from the model each time the regression was run, until only a significant set \( (p < .05) \) of variables remained in the model. Parameter coefficients were monitored throughout this process to ensure important variables were not removed.

Results
We received 2172 completed questionnaires, which represented a response rate of 45%. Of these, 734 (34%) employees reported managing a chronic illness, of which 509 (72%) reported it to be not related to work. Table 1 shows the proportion of staff reporting a particular work-related or non work-related chronic illness. For the work-related group (n=199, 28%), psychological conditions were the most reported chronic illness, of which the majority were anxiety and depression. Musculoskeletal disorders were the second most reported chronic illness and largely represented by those with arthritis and back problems. Among the
non work-related group (n=509, 72%), musculoskeletal disorders were the most reported chronic illness, and likewise, largely represented by those with arthritis and back problems. Respiratory conditions were the second most reported condition, of which the majority reported asthma.

Table 1: Categories of Chronic Illnesses Across the Two Groups: Work-Related and Non Work-Related

<table>
<thead>
<tr>
<th>Work-Related</th>
<th>Non-Work Related</th>
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<tbody>
<tr>
<td>n</td>
<td>%</td>
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<tr>
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<tr>
<td>Reproductive</td>
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<td>Other</td>
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</tbody>
</table>

Table 2 presents the results of two separate logistic regression analyses for the work-related and non work-related chronic illness groups. For both groups, the increasing degree of severity of their chronic illness was associated with an increase in the likelihood of reporting work being affected on a daily basis. For those with a work-related illness, each increase (i.e. mild to severe) in the severity of their condition was associated with a 153% increase in work being affected. However, this group were three times more likely to seek and receive social support from their line managers and their colleagues, and were twice more likely to receive workload/task adjustments to help them manage their chronic illness. For those with a non work-related illness, each increase in the severity of their condition was associated with a 297% increase in the likelihood of work being affected. This group were twice more likely to receive support from other sources outside of work (i.e. from family, friends or through self-support) to help them manage work and their illness. In terms of organisational support, they were twice more likely to receive adjustments to their working hours to help them manage their illness. The other main effects were not significant for either model.

Table 2 Stepwise Logistic Regressions for Work-Related and Non-Work-Related Chronic Illnesses, and their Effect on Performance at Work

<table>
<thead>
<tr>
<th>Predictors of work affected on a daily basis</th>
<th>β</th>
<th>Odds Ratio</th>
<th>Confidence Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work-related conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of the condition</td>
<td>0.93</td>
<td>2.53*</td>
<td>1.22-5.26</td>
</tr>
<tr>
<td>Social support</td>
<td>1.77</td>
<td>3.57*</td>
<td>1.22-10.47</td>
</tr>
<tr>
<td>Workload/task adjustment</td>
<td>0.74</td>
<td>2.11</td>
<td>1.16-3.83</td>
</tr>
<tr>
<td>Non-work-related conditions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity of the condition</td>
<td>1.37</td>
<td>3.97**</td>
<td>1.77-8.88</td>
</tr>
<tr>
<td>Support from other sources</td>
<td>0.73</td>
<td>2.07*</td>
<td>1.02-4.20</td>
</tr>
<tr>
<td>Adjustment of working hours</td>
<td>1.04</td>
<td>2.84*</td>
<td>1.14-7.03</td>
</tr>
</tbody>
</table>

*p<.05  **p<.001
Discussion

This study examined the prevalence of work-related and non work-related chronic illnesses in a large organisation, and their possible association with performance at work and subsequent organisational support. In the present study, about a third of the sample who suffered from a chronic illness reported it to be work-related. Psychological conditions (depression and anxiety) and musculoskeletal disorders were the most reported health problem within this group. In contrast, over 70% of the sample reported managing a non work-related illness. Musculoskeletal disorders were also the most reported health problem within this group, followed by respiratory conditions. Evidence from the self-reported work-related illness survey for 2001/02 (Health & Safety Executive, 2003) suggests that musculoskeletal disorders, depression and anxiety, are the most prevalent causes of work-related ill-health, followed by respiratory conditions. Our findings suggest that the prevalence of musculoskeletal disorders and respiratory conditions in the workplace may be higher.

The work-related and non work-related groups both reported increased severity of their chronic illness affected their work. However, the work-related group were more likely to seek and receive social and practical support from their line manager to help them manage their condition and their work better. The practical support included work adjustments, such as different allocation of job tasks and reduced workload and help offered with completing tasks. In contrast, those with a non work-related illness were more likely to seek and receive support from other sources such as family and friends to help them manage their work and condition better. The type of organisational support they were more likely to receive was adjustments to their work hours, such as flexible hours or reduced working hours. There are two possible explanations for these findings. First, it may be that employees are choosing not to disclose their chronic illness and the effect on work to their employers, as they may feel they cannot discuss their personal health problems - which are often hidden – at work. Instead, they are more likely to reduce their work hours or make the most of flexible work hours to better manage their work and their chronic illness. Second, there may be a perception that support is only available to those with a work-related illness, and that employers may not see it as their responsibility to provide workplace intervention or adjustments for those conditions that are not perceived as work-related. Such perceptions would be erroneous. The 1995 Disability Discrimination Act in Britain, and European and British health and safety legislation and employers’ guidance make it clear that employers need to design and manage ‘healthy’ work. Part of this requirement involves designing work to suit employees’ needs and abilities (Health & Safety Commission, 1999; European Commission, 1989). However, evidence suggests that many employers and employees are not fully aware of employer’s duties to all their employees (Collins, 2001). This emphasises the need to provide more adequate information for both employers and employees.

Given that the present study found the prevalence of non work-related illnesses was twice that of work-related illnesses, providing chronic care or disability management only to those people with a work-related illness may lead to the neglect of large numbers of individuals. Creating a supportive work environment for all chronic illnesses regardless of cause, may help employees better manage their condition at work and minimise the extent to which it may affect work, or cause such employees to leave the labour market prematurely. One of the main problems in creating a responsive and supportive work environment is overcoming barriers to disclosure and attitudes towards chronic illnesses by employers. The present study did not find people with any one type of chronic illness to be affected or disadvantaged at work. A possible consideration is that as the present study included working people only, the results are likely to underestimate the impact of certain chronic conditions, which may cause many workers to leave the labour force (e.g., cardiovascular disease and cancer). Additionally, as some of the chronic illness groups were small, it is also likely that some findings were too small to be significant. A natural next step would be to carry out a larger study that would further explore the possible psychosocial and environmental factors that affect the disclosure and management of non work-related chronic illnesses.
References


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Workplace absence and alcohol and drug use

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Introduction

Workplace absence is a major problem both for employers and employees. Several studies document strong, but complex connections between alcohol and drug use and workplace absence. On the basis of American studies and studies from many other countries, it is estimated that employees with heavy drinking problems are absent between two and eight times as often as employees without such problems (Bross, 1992, Webb et. al. 1994; Henderson, Hutcheson & Davies, 1996). Similar estimates have not been done for illegal or prescribed drug use, but the same consequences are reported in some studies (French et. al., 1995).

The objective of two Norwegian studies was to investigate the connections between alcohol use and workplace absence. Grimsmo & Rossow (1997) made secondary analysis on data from four other surveys. Their conclusion was that a considerable share of the short-time absence (1-3 days) was connected to alcohol use, but due to some methodological problems, their estimates based on different premises, varied from 14% to 50% of the total short-time absence. The alcohol-related absence was highest among heavy drinkers and among young men.

Hammer (1999) made an analysis of the correlations between alcohol and drug use and absence among young employees, on the basis of data-sets from a national eight-year longitudinal survey with 2000 respondents between 17 and 21 years old at the start of the study. Hammer found no significant correlation between alcohol and drug use and the overall absence. However, she found a high alcohol-related short-time absence; 34% of the one-day-absence among employees, 25 to 28 years old. Also Hammer found that the short-time absence was strongest correlated to alcohol use among employees with a heavy drinking pattern.

In a relatively recent study from the US, McFarlin & Fals-Stewart (2002) documented the same correlation between alcohol use and short-time absence. In this study McFarlin & Fals-Stewart used an interesting method of asking 280 employees from three large companies whether they had been drinking on specific days and whether they had been absent from work the following day(s). This method made it possible to do a sequential analysis that showed a double probability of being absent from work the day after drinking, but no higher probability of being absent the following days.

From this research literature it is safe to say that there is a well documented relationship between alcohol use and short-time absence and some documentation of a correlation between drug use and workplace absence. However, neither the referred studies nor any other studies that we know of have discriminated between alcohol use with different relations to the workplace. Nor have other studies taken other workplace-related factors into their analysis of the relationship between alcohol and drug use and workplace absence.

The objective of this study is to investigate how alcohol and drug use, with different relationships to the workplace and in covariance with other workplace factors, are connected to workplace short-time and long-time absence.

Method

The material of this study consists of data from a survey about alcohol and drug habits and work, among employees in 74 private sector companies in Norway. The 74 companies were selected from the national register of companies, in a two-step procedure. First we had to randomly select a larger sample of
companies from three size categories (2-20 employees, 21-200 employees and over 200 employees) and	hree industries (category one: manufacturing, mining and petroleum industry; category two: transportation,
hotel/restaurant industry and retail; and category three: so called business services like finance, consultants,
IT and so on.) Then we had to write to these companies, asking them to join the survey. The 74 companies
we ended up with as part of step two, were proportionally distributed within the same categories as the
larger company sample from step one.

We then got the addresses of the employees of these companies and sent the questionnaires directly to each
employee’s home address. In companies with less than 50 employees the survey included all employees, in
companies with 51 to 200 employees we randomly selected half of the employees, in companies with 201
to 500 employees we randomly selected 25% of the employees, and in the few companies with over 500
employees we randomly selected 10% of the employees. This gave us a total sample of 3655 employees of
all categories.

The questionnaire was made as short as possible, containing questions about demography, the workplace,
conditions of work, workplace absence, alcohol and drug habits, and norms, and expectations and
consequences of alcohol and drug use. When it came to alcohol use, we asked for the specific amount of
alcohol consumed (in standard alcohol units, AU = 12.8 g pure alcohol) and also the situation for drinking,
each of the last fourteen days before filling in the questionnaire.

With this design and no possibility of sending out any reminders, we did not expect a high response rate.
However, we received sufficiently completed questionnaires from 1245 employees (response rate: 34).
Controlling for variables such as age, sex, represented companies and the share of heavy drinkers compared
to other studies, we conclude that the sample is fairly representative when it comes to alcohol use but we
are more uncertain when it comes to the use of illegal and prescribed drugs.

**Results**

“Only” 2% of the sample had used illegal drugs (almost entirely cannabis) the last year. 19 % of the sample
had used prescribed drugs the last year, but “only” 3% had used such drugs each week. 95 % of the sample
had used alcohol the last year and 62% hade used alcohol the last fourteen days before filling in the
questionnaire. Since there are so large differences in the use of different drugs, and as we will see, also
large differences in the significant correlations between the use of different drugs and workplace absence,
we will first present some main results for illegal and prescribed drugs and then present the results for
alcohol use in more detail.

There is a weak but statistically significant (p<0,05) correlation (r = 0,08) between the use of illegal drugs
and the number of absences, but no significant correlation between such use and days of absence. Our
analysis shows that the use of illegal drugs also is weakly connected to other workplace factors.

There is a strong significant (p<0.01) correlation (r = 0.30) between the use of prescribed drugs and days of
absence, but a much weaker correlation of such use and the number of absences. Our analysis reveals that
the use of prescribed drugs also is correlated to other workplace factors, most notably to the working
environment.

The use of alcohol shows a skewed distribution among the employees. While most of the drinkers drink
relatively small amounts, relatively fewer drink moderate or large amounts of alcohol. 4 % of the women
and 5 % of the men are “heavy drinkers”, as defined by WHO (above 13 AU for women and above 21 AU
for men).

From studies on alcohol use in the general population we know that men drink twice as much as women
and that those in the age group 20-30 years old drink twice as much as those 50 years or older. Our analysis
shows that such demographic factors play a lesser role in explaining the variance in use of alcohol among
employees.
Our analysis shows that the variance in alcohol use can be partially explained by workplace factors such as the number of days of business travel abroad, unregulated working hours and working outside regular worksite. It can also be partially explained by workplace cultural factors such as expectations about drinking as a way to cope with a heavy workload and a way to strengthen social relationships at work. This is in accordance with the international research literature which focuses on the workplace alcohol culture and integrative models of both cultural and other workplace factors in explaining heavy drinking (Bacharach, Bamberger & Sonnenstuhl, 1999; Macdonald, Wells & Wild, 1999). We find no significant correlation between poor working conditions and heavy drinking. In the international research literature we find some indications of such a correlation, but the research has shown rather contradictory results (Grunberg, Moore & Greenberg, 1998).

When it comes to absence, our analysis shows no significant correlation between the employee’s overall drinking and workplace absence. However, when we extract the work-related drinking from the overall drinking, the picture becomes very different. There is a significant (p<0.01) correlation between work-related alcohol use and the number of absences (r = 0.30), but no significant correlation between such drinking and days of absence. Work-related drinking is here defined as drinking with colleagues, in social arrangements organized by the workplace, on business travel and so on, but not drinking during regular working hours.

A multivariate regression model shows that the rate of absence can be best explained by heavy drinking alone, and that all those factors that made a contribution in explaining heavy drinking in the first analysis, have no independent explanatory power in the multivariate regression model. On the other hand, the working conditions that did not contribute to explaining heavy drinking, do explain part of the variance in workplace absence. Both physical and psycho-social working conditions are significantly (p<0.01) correlated to days of absence, but not to the number of absences.

Discussion and conclusions

The results indicate that the use of alcohol, prescribed drugs and illegal drugs are differently correlated to workplace absence.

The use of cannabis is in a way isolated from the work arena, physically, socially and culturally, and therefore weakly correlated with workplace absence (at least until the use becomes a major addiction problem). The use of prescribed drugs seems to indicate a more general sickness among the users with a high degree of long-term absence.

For alcohol use the picture is very different. Drinking is strongly related to working life both by offering many opportunities for drinking and by developing drinking norms and expectations. This study indicates that it is work-related heavy drinking that has the strongest direct effect on short-term absence. The workplace factors (conditions of work and alcohol culture in the workplace) that explain heavy drinking, do not give any explanation to workplace absence. This is a bit of a puzzle.

In some of the research literature there is made a distinction between employees with drinking problems and heavy drinking employees without such problems. In studies with such a distinction workplace absence is connected to the first category but not the last. Our results indicate that this may be the case also in this study. From other research on alcohol problems in the workplace (Sagvaag & Nesvåg, forthcoming) we have seen that there is necessarily no relationship between defined alcohol problems and heavy drinking. It is primarily the kind of behaviour related to drinking that is seen as a problem. Our analysis may indicate that while workplace factors can explain heavy drinking it is other factors that contribute in turning the drinking into a problem and it is this problem drinking that is correlated to workplace absence.

However, the drinking that becomes a problem cannot be totally isolated from the workplace, as long as it is the work-related drinking that is correlated to the workplace absence. This may indicate that it is the
consequences of problem drinking in work-related situations that is coped with by being absent the day after drinking.

A high rate of short-term absence has been seen as an indicator of a drinking problem among employees. This study and our hypothesis about the relationship between drinking and workplace absence, gives support to this view. However, this study also underpins the need to investigate how heavy drinking is related to the workplace itself.

1) Prescribed drugs in this study include prescribed painkillers, sleeping pills and sedatives.

References


Psychosocial hazards and risk analysis: estimating exposure rates to psychosocial hazards with Latent Class Analysis.

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From a theory of stress to a framework of risk assessment: calculating psychosocial risks

Contemporary models of occupational health usually describe at least two pathways linking exposure to the hazards of work to their effect on health (Cox, 1993, Cox et al. 2000). One pathway traditionally defines occupational hazards in terms of the largely physical-chemical effects of the more tangible hazards of work. The other pathway, which is complementary rather than alternative, is mediated by psycho-physiological and social-behavioral processes, some of which appear to be associated with the experience of stress (Cox, et., al. 2000).

Fig. 1. The core of dual pathway ‘hazard – harm’ (Cox, et., al. 2000)

The consequence of this is that the employees’ psychological and social health is harmed. In this last step, much of the evidence surrounding harm relates to psychological health and to the risk of cardiovascular disease (Cox, et., al. 1996). In this transactional theory of stress, it is important to note that a considerable part of the experience of the stress mechanism is cognitive in nature (Cox, S. et., al. 2000). Central to this, on the one hand, the appraisal theory of Lazarus (1999) is pertinent. On the other hand, coping with these hazards is essential to understand this cognitive process.

A consequence of this indirect pathway is that estimation or calculation of the hazard – risk – harm relationship becomes very difficult. Interesting though, is the direct relationship between physical work environment and psychological and social health. Exposure to physical work environments is often omitted in current stress research. (Levi, 1984). The psychological effects of physical hazards reflect not only their direct action on the brain and their unpleasantness but also the worker’s awareness, suspicion or fear that they are being exposed to harm. It is the latter which can give rise to the experience of stress (Cox, et., al. 2000).

Lamotte and Van Emelen (1995) integrate the transactional stress model of Cox (1993) in a framework of prevention of hazards. They formulate a conceptual framework for risk assessment that not only deals with the psychological and social health of employees but also with the physical consequences (i.e. injuries).
Conceptualizing risk factors as those factors that can influence hazards, and consequently as factors that contribute to the occurrence of risk, not only withholds the experience of stress as a mediating factor between hazard and harm but incorporates the broader environment in which the job is designed.

For Lamotte and Van Emelen, influencing the risk factors is actually changing the level of exposure to hazards and thus exposure to the risk. In this way, the authors deal with the formal definition of risk (i.e. risk = f(hazard, exposure)) and risk assessment: minimizing the risk. In a strict sense this advocates the need for calculating and estimating exposure, and the link with the probable health consequences. However, in order to minimize the risk, identifying the processes and determining the factors that transform hazard into harm are the first steps to be taken. Cox (1993) proposes the use of the control cycle to minimize risks. The control cycle begins with problem recognition and hazard identification. These must be based on a thorough analysis of the work situation. This must include consideration of the tasks and people involved, of procedures and work organization, and of the work environment and relevant technology. The second step ‘assessment of associated risk’ should both offer an explanation of and quantify the hazard – harm relationship. After that, the implementation of appropriate control measures is to be conducted.

The fourth step initiates the monitoring system. In this step the effectiveness of control strategies should be investigated and questioned. After this step, risks can be reassessed. This is the last step of a recursive system that is designed to ensure continuous improvement of occupational health and safety at work. This control cycle, as a systematic and comprehensive approach to assessing the risks within the work environment, satisfies current legal requirements (Cox, et., al, 2000).

**Exposure**

The central element in the control cycle is the assessment of hazards. For Cox (1993) this step should be able to explain and to quantify the hazard-harm relationship. Van Emelen & Lamotte (1995) also stress the need to calculate and / or to estimate the link with the probable consequences. Cox tries to deal with the quantification in two steps. In the first step, the risk assessment team discusses the degree of exposure to, or the likelihood of, hazards. They can categorize this degree as ‘absent’, ‘low or present’, ‘medium or very obvious’ to ‘severe’. In the second step, the degree of harm is assigned next to organizational indices for the estimation of severity of harm. The result is a 3 by 3 ‘risk matrix’ where two values are assigned to each stressor: first, an exposure estimate, and second, an outcome estimate. When the estimation of the severity of outcome is made, account should be taken of existing control and support measures and their effectiveness. When visualized, Cox (et., al, 1996) proposes a priority of risks to be examined: the highest priority e.g. high exposure; highest severity of outcome, the second highest priority, e.g. high exposure; medium outcome and high outcome; medium exposure and third highest priority e.g. low exposure; high outcome. This way of prioritizing is quite arbitrary and consequently Cox (et., al, 1996) warns it should always be remembered that all such devices and schemes for easily estimating risk are weak. They offer no accurate assessment in absolute terms, and they may be unreliable in their detail. They are, however, a useful focus for thinking systematically about the risks and also for subsequent decision-making. In fact, they are a starting point for risk assessment.

Although Cox and others (Cox, 1993, Cox, et. Al, 2000, Briner, et., al, 2001) warn us to seek good indices that make a strong link between hazards and harm possible, they do not question their methods for estimating the probability of exposure. Singleton’s (1987) remark is quite justified: much work in psychology seems to have assumed that the evaluation of risk is a purely cognitive process, largely...
concerned with estimating probabilities. But this kind of analysis tends to ignore the context in which decision making takes place, and invariably ignores the wider political issues involved. We should be careful with the judgments that members of the team give. Psychological research has shown that people are particularly bad at estimating probabilities, being influenced by memorable and recent events. Given the data that have already been collected by means of standardized questionnaires like the GHQ or the VBBA, which try to identify hazards and outcomes, we suggest not only using the risk assessment team to estimate likelihood to exposure, but also to use the data for the estimation of the degree of exposure to hazards. Modern statistical classification techniques can be used to propose data-driven ordered exposure rates of hazard that cannot be suspected of being arbitrary. And if risks are being measured it is equally possible to present a data-driven analysis about probabilities of possible consequences, which were measured. Such an analysis can feed the discussion among risk assessors when ‘hard’ indicators are absent.

**Categorizing exposure with questionnaires**

In applied research, the aim is to help company assessments of the weak and strong points regarding psychosocial hazards and the psychological health of employees. As in many research projects, this is done by means of analysis of variance. Negative deviations from the mean are categorized as ‘weak’ and positive deviation from the mean is considered as ‘strong’. The result is a brief picture of how well or bad a company is doing regarding psychosocial hazards and psychological health compared to other companies in the same branch. Combined with an analysis at company level (seniority, shift work, type of contract), at departmental level (departments, occupational position) and at individual level (gender, age, education), this method offers the risk assessment team a way of identifying groups at risk.

A well known technique to identify exposure groups departs from a z-transformation. With a threshold like ‘$z <= -1.65$’ the extremes from the mean are being categorized as highly exposed to the psychosocial hazard. The main advantage of such a threshold is that it has well known properties and is thus easy to communicate. This results in a listing of groups (departments, occupational level) having a higher probability of being exposed to psychosocial and physical hazards and psychological and physical health risks (read: to belong to the most extreme 10%).

Another way to identify groups starts from more complicated statistical techniques that deal with categorical data (Hagenaars, 1994). With latent class analysis (Vermunt, 1994) it is possible to model clusters according to the prevalence / exposure of the latent treat. This means that according to the exposure rate to a psychosocial hazard, one can model homogeneous groups that differ distinguishably from one another (Notelaers, Vermunt & van Veldhoven, 2002).

In the next part, the example of recovery, which is measuring whether people feel exhausted at the end of the working day, demonstrates that a statistical measurement model can be used to calculate exposure rates. The accuracy of this model will be confronted with the thresholds derived from a z-transformation of the original Mokken-scale.

**Data**

These issues will be addressed with the data used in earlier research investigating the cross-cultural equivalence of the measurements of the psychosocial hazards (Notelaers, Vermunt, De Witte, 2003). The data were collected in Belgium between 1999 and 2002 in companies or organizations that used the VBBA (van Veldhoven, 1996) as a diagnostic tool (a self administrated questionnaire) to make an inventory of stressors, organizational facets, strains and facets of well-being. The 9278 observations from the benchmark, have the following composition (in %) : BRANCH : food and textile 12.6, industry 30.7, services 17.6, soc / non profit and government 35.6, health services 3.5; OCCUPATIONAL STATUS : apprentice 0.4, blue collar 20, white collar 49, paramedic / social functions 2.5, lower managerial 12.1, managerial, 11, others 2.1; GENDER : female 46.6, male 53.4; EDUCATION : Primary 3.5, secondary 15.4, high school 27.7, bachelor 26, masters + phd 27.4, SENIORITY : less than 5 years 24.1, between 5 and 10 years 19.6, between 10 and 15 years 16.7, between 15 and 20 years 8.8, 20 years and more 20.7.

However, this is not a representative sample of the Belgian working population. Within the context of our study, i.e. to estimate exposure to psychosocial hazards, this is no problem.

**Identifying exposure rates in LCA : the application**
This article will try to demonstrate that the use of LCA enables researchers to construct more or less homogeneous groups according to their exposure to a psychosocial hazard or health risk. From this analysis we can easily derive how many people in a sample are being highly exposed to psychosocial hazards and health risks. To reach this goal, we will use the construction of latent classes and the meaning of these classes. Central to assigning the exposure levels are the probabilities answering ‘yes’ or ‘no’ to the questions measuring ‘recovery need’. These answers constitute an answering pattern that can be allocated to a cluster regarding the likelihood of that pattern. (Notelaers, van Veldhoven & Vermunt, 2002; Notelaers, Vermunt & De Witte, 2003) This means that the answer pattern determines the exposure rate to a psychosocial hazard / health risk.

Recovery need is a Mokken scale measured with 11 items. The respondents could answer with ‘yes’ or ‘no’. The items are listed below next to the profile plot (figure 3). The table of fit-statistics obtained from Latent Gold (Vermunt & Magidson, 2000) reveals which cluster model fits the data.

Table 1. Fit-measure for the latent trait recuperation needs

<table>
<thead>
<tr>
<th>Model</th>
<th>L² (or LL)</th>
<th>BIC</th>
<th>df (or Npar)</th>
<th>proportional reduction of error</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35383.73</td>
<td>-1702.47</td>
<td>4083</td>
<td>5.8e-4886</td>
<td></td>
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<tr>
<td>3</td>
<td>6839.554</td>
<td>-30010.5</td>
<td>4057</td>
<td>0.81 9.90E-147</td>
<td></td>
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<tr>
<td>4</td>
<td>5447.222</td>
<td>-31284.7</td>
<td>4044</td>
<td>0.85 1.90E-45</td>
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<tr>
<td>5</td>
<td>4957.037</td>
<td>-31656.8</td>
<td>4031</td>
<td>0.86 3.20E-22</td>
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<tr>
<td>10</td>
<td>4168.67</td>
<td>-32399.8</td>
<td>4026</td>
<td>0.88 0.057</td>
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<tr>
<td>11</td>
<td>4170.181</td>
<td>-32489.1</td>
<td>4036</td>
<td>0.88 0.069</td>
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<tr>
<td>12</td>
<td>4129.343</td>
<td>-32430</td>
<td>4025</td>
<td>0.88 0.12</td>
<td></td>
</tr>
</tbody>
</table>

Relying on a rule of thumb used in factor analysis, which states that one should ‘stop’ extracting a new factor when a considerate drop in eigenvalue with the extraction of the next factor no longer occurs (see true dimensionality derived from the scree plot: elbow), leads to the acceptance of the four cluster model (n°4). The difference in L² between the five (n°5) and the four cluster model (n°4) is rather small compared to the difference between the four (n°4) and the three (n°3) cluster model. However, at that point, the lowest BIC is assigned with the five cluster model (n°5). Refining the 4 cluster model by adding more direct relationships between indicators and / or adding more direct relationships between indicators and stratifier brings a model (n°11) that is easier to interpret and has a lower BIC than the five-cluster models (n° 5,10,12) presented in the above table. Entropy R², similar to the traditional r² measure, is 83%.

By looking at the profile table (not shown) it is possible to overlook the probabilities of the answers to items. However, with dichotomous items a profile plot (fig. 3) is more attractive. The meaning of the cluster can be derived from this profile plot. On the X axis the items are given. On the Y axis the conditional probability is given. This is the probability of answering ‘yes’ (or ‘no’) to an item given the membership of a certain cluster. From the plot it is obvious that two clusters are clearly separated. Cluster 1 where the conditional probabilities of agreeing with an item are the lowest and cluster 2 where the conditional probabilities are the highest compared to those of other clusters. Cluster 1, covering almost 40% of the sample, is called ‘no exposure to recovery need’. Cluster 2 covering 23% of the sample is called ‘high exposure to recovery need’. That the two other clusters are more difficult to label can be seen in the profile plot: except for the conditional probabilities of two items the two clusters follow the same pattern: the conditional probabilities of cluster 3 are higher or more or less equal to those of cluster 2. But the items ‘by the end of the working day, I feel worn out’ and ‘Because of my job, at the end of the working day I feel absolutely exhausted’ show an extreme opposite pattern. It seems to us that cluster 3 is the translation of a low need for recuperation. The cluster withholds 21% of the sample size. The recovering need of the respondents in cluster 4 is higher, further on towards tiredness. As already pointed out, they have a much higher conditional probability of answering ‘yes’ to items 2 and 3. Above that, the conditional probability of agreeing with “often, after a day’s work I feel so tired that I cannot get involved in other activities” is a little bit higher. That of agreeing with “During the last part of the working day, a feeling of tiredness prevents me from doing my work as well as I normally would do” is the same in cluster 3 ‘low exposure to recovery need’. Cluster 4 can be labeled as ‘(medium) exposure to recovery need’. This cluster accounts for 17% of the observations.
Confronting LCA and other ways to define exposure rates.

Comparing the use of z-values to identify individuals who are highly exposed to recovery need is quite common. Often a z-value of -1.65 serves as a cut-off to identify these individuals. Looking at the table below (table 2), this leads to the conclusion that 4.45% of the sample have high exposure rates regarding recovery need. However, when the z-values are compared to the latent clusters developed in the previous section, one can conclude that this measure is conservative. Accepting the measurement model constructed with latent class analysis, 24.5% of the respondents are highly exposed to recovery need. Confronting these two ways of classifying individuals reveals that 20% of those highly exposed to recovery need are not detected by the z-value. Targeting the 4.45% with policy measures could neglect 80% of the individuals who also suffer from a high exposure rate.

Table 14. Classification z-threshold / latent cluster analysis

<table>
<thead>
<tr>
<th>Traditional statistical framework</th>
<th>4 cluster of recovery need (in population %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>scale value</td>
<td>z-value</td>
</tr>
<tr>
<td>-----------------</td>
<td>---------</td>
</tr>
<tr>
<td>0</td>
<td>1.25</td>
</tr>
<tr>
<td>9.09</td>
<td>0.97</td>
</tr>
<tr>
<td>18.2</td>
<td>0.68</td>
</tr>
<tr>
<td>27.3</td>
<td>0.4</td>
</tr>
<tr>
<td>36.4</td>
<td>0.11</td>
</tr>
<tr>
<td>45.5</td>
<td>-0.17</td>
</tr>
<tr>
<td>54.5</td>
<td>-0.46</td>
</tr>
<tr>
<td>63.6</td>
<td>-0.74</td>
</tr>
<tr>
<td>72.7</td>
<td>-1.02</td>
</tr>
<tr>
<td>81.8</td>
<td>-1.31</td>
</tr>
<tr>
<td>90.9</td>
<td>-1.59</td>
</tr>
<tr>
<td>100</td>
<td>-1.88</td>
</tr>
</tbody>
</table>

It is interesting to see that the mean of recovery need (40) can be attributed to two clusters, i.e. the low exposure cluster and the moderate exposure cluster. Moreover, the mean does not lie in the no exposure cluster. Does this signify that the mean is ‘unhealthy’? Within the moderate exposure cluster people have a probability over .8 of agreeing with the items ‘By the end of the working day, I feel worn out’ and ‘Because of my job, at the end of the working day I feel absolutely exhausted’. This is more than two times higher than the low exposure cluster. The probability of agreeing with ‘generally, I need more than an hour before I feel completely recuperated after work’ and ‘When I get home from work, I need to be left in peace’ but disagreeing with ‘After the evening meal, I generally feel in good shape’ is over .6 for individuals situated in one of the two clusters. Given these probabilities we ought to consider that the mean itself could be ‘unhealthy’ for more than 40% of the individuals located around the mean (see grey numbers in table 2).

The mean corresponds to people who have a considerable probability of agreeing with the fact that they need time for themselves when they get home in order to recover from the working day. Given this interpretation 10% of the sample size (bold underlined numbers) should be added to the number that is neglected by a cut-off criterion of z-values beneath - 1.65. Thus, in total over 30% of the sample size is neglected. Relaxing the cut-off to a z-value <= -1 reduces that number to 10%.

But following our line of reasoning and given the fact that a z-transformation sets the mean equal to zero, one could conclude that the 6% (sum of underlined numbers) of respondents of the moderate exposure cluster that have a mean score beneath 40 are falsely assumed to be ‘healthy’ since interventions start as negative deviations from 0.
Conclusion
Risk analysis as a part of risk assessment for psychosocial hazards is a very tricky domain. What is essential is to conceptualize exposure to hazards in order to calculate the risk. Cox suggests leaving the estimation of exposure and severity of outcome to the risk assessment team. Others use cut-offs to differentiate between not exposed and exposed. These are arbitrary and inaccurate. This article tries to show that the collected data can be used to estimate exposure to the (psychosocial) hazards and health risks. From the answering pattern clusters are constructed which reveal the average probability of being exposed to psychosocial hazards. The results show that there are clearly more than two groups i.e. exposed / non exposed. In this sample the cluster model shows that 23% of the sample is highly exposed to recovery need, 17% is moderately exposed to recovery need, 21% has a low exposure rate of need to recover and 40% is not exposed at all.

The ordered latent class solution reveals even more. It shows that the mean itself, the central tendency measure in classical statistical analysis, can be problematic. The mean recovery need in this Belgian sample is related to an elevated exposure to recovery need and thus is not equal to absence of recovery need. This has severe implications. Traditional analysis of variance to find target groups, or z-thresholds to identify extremes, also turns out to be problematic. When compared to the use of a z-value, the ordered latent classes also show that the former are very conservative and inefficient estimates for identifying the troublesome areas. We are confident that the use of the full range of the distribution with ordered latent class analysis is worth further investigation. Such research should also measure health consequences to find out whether there is a truthful and useful link between exposure and harm with the use of latent class analysis.

References
Introduction

In the year 2000, the Norwegian Ministry of Labour and Government Administration expressed concern regarding the development of Health, Safety and Environment (HSE) on the Norwegian continental shelf. The concern was based on major changes in technology, organisation, and in society as a whole. Based on this general concern, the Research Council of Norway initiated a research program focusing on HSE in the petroleum industry, which this project is funded by. Moreover, the Norwegian Petroleum Directorate (NPD) initiated a project named ‘Risk Level on the Norwegian Continental Shelf’. Both programs among other things emphasize the importance of exploring the substance of safety culture and developing valid operational definitions of the concept. The development of valid measures is an important task considering that follow up studies will be initiated. One important aspect of developing a safety culture inventory is to monitor the development in risk level over time, but also to explore what safety culture influence (criterion validity), and are influenced by.

The literature concerning safety culture, risk perceptions and safety attitudes in the industry is comprehensive. There has been an increased focus on these themes over the last few years, and several review articles have been published (Mearns & Flin, 1999; Glendon & Stanton, 2000; Guldenmund, 2000). However, even though the literature is comprehensive there is no consensus on what is the content of a safety culture. Likewise, the consequences of a “good” or “bad” safety culture are seldom discussed (Guldenmund, 2000).

Cooper (2000:111) concludes that there is as yet no universally accepted model with which to formulate testable hypotheses that take into account antecedents, behaviour(s) and consequence(s). Based on Social Cognitive Theory (Bandura, 1986), Cooper (2000) furthermore suggests employing a reciprocal model of safety culture to provide both a theoretical and a practical framework with which to measure and analyse safety culture.

The purpose of this study was to use Social Cognitive Theory as suggested by Cooper (2000) to develop a self-administrated questionnaire to measure the safety culture in an offshore environment. The intention is to distribute a validated safety culture inventory every other year to monitor the development of the risk level in the North Sea. Follow up studies will be conducted as an important aspect in the development of the inventory.

Method

The design objective of the inventory is to include key concepts in Social Cognitive Theory in an offshore environment perspective. An expert group consisting of people with first-hand knowledge about the potential risks in the offshore environment was assigned. Their job was to develop a list of simple statements that focused on safety behaviour and perception of situational and personal characteristics regarding relevant safety aspects. One important criterion in this work was that the respondents would be able to easily understand the statements and giving the respondents an opportunity to express their degree of agreement. Finally, 49 questions measuring safety culture were developed by the expert group. Scoring on the safety culture items followed the Likert scale that is defined by 1 = completely disagree, 2 = slightly disagree, 3 = neither agree nor disagree, 4 = slightly agree and 5 = completely agree.

The measurement instrument used in this study also included background variables and topics like safety risk perceptions, subjective health complaints and working conditions.

A self-completion questionnaire was distributed to employees on offshore oil installations in the Norwegian part of the North Sea (N = 3310). The data collection was carried out during 11 days in December 2001 and the response rate was 55%.

The employees’ working environment is characterised by time pressure, shift work, periodic isolation from family and social networks, cost efficiency pressures and the risk involved in travel by helicopter. These characteristics reflect the research settings on the installations.
Results

The sample data was analysed using principal component analyses for factor extraction and VARIMAX (orthogonal rotation) for factor rotation using SPSS 11.0. The number of factors was not hypothesised or specified, therefore the factor analyses was exploratory. Factor analysis resulted in six factors consisting of 45 items. 4 items had then been excluded because they did not fit the factor solution.

Table 1 shows the factor loading patterns of the safety culture items. The factor loadings are relatively unambiguous. A total of 35 items load at 0.50 or above onto the six factor structure.

Factor I, which accounts for 20.1 per cent of the total variance, loads exclusively onto scale items relating to the quality of the risk communication in the work place, both among employees and management (e.g. I would rather not discuss HSE with my supervisor, The communication between me and my colleagues often fails in such a way that dangerous situations can occur). Factor I also loads onto scale items that reflect lack of awareness related to safety.

Factor II comprises 13 items in which 10 items load above 0.50. Factor 2 accounts for 15.6 per cent of the variance and the items reflect the organisation’s engagement through the way it handles feedback concerning HSE, and through its efforts for improvements (e.g. The safety deputies’ suggestions are taken seriously by the management, The company I work for takes HSE seriously).

Factor III consists of 6 items which reflect behaviour and attitudes, both among management and employees, which in time can lead to major accidents (e.g. Lack of maintenance has resulted in reduced safety, In practice the concern for production precedes the concern for HSE). In total Factor III accounts for 6.2 per cent of the total variance. 5 of the items loaded above 0.50.

Factor IV reflects how the concern for safety is protected by the employees in different working situations (e.g. I ask my colleagues to stop work that I think is being done in a risky manner, I report dangerous situations when I see them). In total factor IV consists of 5 items and accounts for 3.5 per cent of total variance.

Factor V comprises 2 items and accounts for 2.6 per cent of total variance. Factor V items measures the structure for HSE related to routines for information and management (e.g. I think it’s easy to find the right steering document (within requirements and procedures)). Factor V consists of two items, both of which load above 0.50.

Factor VI, which accounts for 2.4 per cent of the variance, loads exclusively onto scale items relating to employees’ safety competence and safety training (e.g. I have the necessary competence to perform my job in a safe manner). One of the two items in Factor VI loaded above 0.50.

Based on the factor loadings and the Varimax rotation the factors were named 1) Lack of Communication and Awareness 2) Focus and Involvement 3) Dangerous Tendencies 4) Safety-Promoting Behaviour 5) Information and 6) Competence. Together the six extracted factors explain 50.5 per cent of all of the variance in the data set.

More detailed analyses of this solution were undertaken to examine the internal consistency of the factors. Table 2 presents means, standard deviations, Cronbach’s alpha coefficients and intercorrelations for the six factors as composite scales on this sample of offshore workers. Alpha coefficients range between 0.50 and 0.93 indicating acceptable levels of internal homogeneity and reliability for all six factors. All scales are significantly intercorrelated (p > 0.01). Scale correlations range between – 0.06 and 0.58. Factor I and Factor III are positively correlated, but these two factors are negatively correlated with the rest of the factors. Factor II, IV, V and VI are positively intercorrelated. Factor II, IV, V and VI are positively intercorrelated. Some of the correlations are high enough to highlight the possibility that perceptions of safety culture may be prone to a halo effect.
<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI Competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would rather not discuss HSE with my supervisor</td>
<td>0.86</td>
<td>-0.05</td>
<td>-0.08</td>
<td>-0.03</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>The communication between me and my colleagues often fails in such a way that dangerous situations can occur</td>
<td>0.86</td>
<td>-0.01</td>
<td>-0.11</td>
<td>-0.02</td>
<td>-0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>I doubt that I would be able to carry out my preparedness duties in an emergency</td>
<td>0.83</td>
<td>0.01</td>
<td>-0.09</td>
<td>-0.01</td>
<td>-0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>I am not sure of my role in the emergency organization</td>
<td>0.81</td>
<td>0.02</td>
<td>-0.14</td>
<td>-0.02</td>
<td>-0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>Occasionally I am required to work in a manner that jeopardizes safety</td>
<td>0.78</td>
<td>-0.05</td>
<td>0.16</td>
<td>-0.02</td>
<td>-0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>When it comes to one’s career it is a disadvantage to be too concerned with HSE</td>
<td>0.74</td>
<td>-0.08</td>
<td>0.17</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>I sometimes violate safety rules to get the job done</td>
<td>0.69</td>
<td>-0.03</td>
<td>0.24</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.05</td>
</tr>
<tr>
<td>My lack of knowledge of new technology can sometimes lead to an increased risk of accidents</td>
<td>0.69</td>
<td>0.03</td>
<td>0.11</td>
<td>-0.01</td>
<td>-0.06</td>
<td>-0.10</td>
</tr>
<tr>
<td>I do not participate actively at safety meetings</td>
<td>0.67</td>
<td>-0.04</td>
<td>-0.06</td>
<td>-0.02</td>
<td>0.02</td>
<td>0.04</td>
</tr>
<tr>
<td>My work site is often untidy</td>
<td>0.64</td>
<td>-0.02</td>
<td>0.07</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>I find it uncomfortable to call attention to violations of safety rules</td>
<td>0.63</td>
<td>-0.08</td>
<td>0.24</td>
<td>-0.05</td>
<td>0.08</td>
<td>-0.04</td>
</tr>
<tr>
<td>I don’t work as safely as I used to due to reorganizations</td>
<td>0.58</td>
<td>-0.01</td>
<td>0.26</td>
<td>0.01</td>
<td>-0.12</td>
<td>-0.04</td>
</tr>
<tr>
<td>One can easily be perceived as an argumentative person when pointing out dangerous conditions</td>
<td>0.55</td>
<td>-0.11</td>
<td>0.46</td>
<td>0.00</td>
<td>0.06</td>
<td>-0.02</td>
</tr>
<tr>
<td>Lack of cooperation between operator and contractors often lead to risky situations</td>
<td>0.44</td>
<td>0.00</td>
<td>0.39</td>
<td>0.00</td>
<td>-0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>The safety deputies’ suggestions are</td>
<td>-0.04</td>
<td>0.72</td>
<td>-0.05</td>
<td>0.06</td>
<td>0.01</td>
<td>0.11</td>
</tr>
</tbody>
</table>
The company I work for takes HSE seriously

<table>
<thead>
<tr>
<th></th>
<th>Rating</th>
<th>Likelihood</th>
<th>Effectiveness</th>
<th>Efficiency</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>My supervisor is committed to working with HSE at the installation</td>
<td>-0.04</td>
<td>0.65</td>
<td>-0.04</td>
<td>0.32</td>
<td>0.21</td>
</tr>
<tr>
<td>My supervisor appreciates it if I call attention to conditions of significance to HSE</td>
<td>-0.03</td>
<td>0.64</td>
<td>-0.08</td>
<td>0.35</td>
<td>0.02</td>
</tr>
<tr>
<td>Risky work operations are always carefully examined before they are commenced</td>
<td>-0.02</td>
<td>0.59</td>
<td>-0.01</td>
<td>0.06</td>
<td>0.00</td>
</tr>
<tr>
<td>The manning is sufficient to attend to HSE</td>
<td>-0.02</td>
<td>0.56</td>
<td>-0.05</td>
<td>-0.09</td>
<td>0.11</td>
</tr>
<tr>
<td>I can influence the HSE-conditions at my work place</td>
<td>-0.05</td>
<td>0.56</td>
<td>0.03</td>
<td>0.18</td>
<td>-0.10</td>
</tr>
<tr>
<td>The emergency preparedness is good</td>
<td>-0.05</td>
<td>0.53</td>
<td>-0.02</td>
<td>0.08</td>
<td>0.30</td>
</tr>
<tr>
<td>Information about undesirable incidents are effectively used to prevent them from recurring</td>
<td>-0.03</td>
<td>0.52</td>
<td>-0.04</td>
<td>0.06</td>
<td>0.34</td>
</tr>
<tr>
<td>My colleagues are very preoccupied with HSE</td>
<td>-0.02</td>
<td>0.51</td>
<td>-0.06</td>
<td>0.42</td>
<td>0.22</td>
</tr>
<tr>
<td>The safety deputies are doing a good job</td>
<td>-0.02</td>
<td>0.44</td>
<td>0.01</td>
<td>0.22</td>
<td>0.31</td>
</tr>
<tr>
<td>It is easy to tell the nurse/company health service about worries and sickness related to the work situation</td>
<td>-0.03</td>
<td>0.42</td>
<td>-0.02</td>
<td>0.28</td>
<td>0.31</td>
</tr>
<tr>
<td>The HSE procedures are suitable for my work tasks</td>
<td>-0.01</td>
<td>0.40</td>
<td>-0.02</td>
<td>0.21</td>
<td>0.39</td>
</tr>
<tr>
<td>Lack of maintenance has resulted in reduced safety</td>
<td>-0.13</td>
<td>-0.03</td>
<td>0.72</td>
<td>0.03</td>
<td>-0.09</td>
</tr>
<tr>
<td>In practice the concern for production precedes the concern for HSE</td>
<td>0.20</td>
<td>-0.09</td>
<td>0.70</td>
<td>-0.04</td>
<td>0.00</td>
</tr>
<tr>
<td>Reports on accidents or dangerous situations are often “smartened up”</td>
<td>0.40</td>
<td>-0.10</td>
<td>0.60</td>
<td>-0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Different procedures and routines on different installations can be a threat to safety</td>
<td>-0.44</td>
<td>0.00</td>
<td>0.58</td>
<td>0.01</td>
<td>-0.06</td>
</tr>
<tr>
<td>There are often parallel work</td>
<td>0.40</td>
<td>-0.05</td>
<td>0.55</td>
<td>-0.01</td>
<td>-0.07</td>
</tr>
</tbody>
</table>
operations proceeding that leads to dangerous situations
Sometimes I work even though I am too tired
I ask my colleagues to stop work that I think is being done in a risky manner
I report dangerous situations when I see them
Safety has top priority when I do my job
I stop working if I think it may be dangerous for me or others to continue
My colleagues stop me if I work in an unsafe manner
I think it’s easy to find the right steering document (within requirements and procedures)
I always know which person within the organization to report to
I have the necessary competence to perform my job in a safe manner
I have received sufficient safety training

<table>
<thead>
<tr>
<th>Eigenvalue</th>
<th>8.42</th>
<th>6.57</th>
<th>2.62</th>
<th>1.48</th>
<th>1.09</th>
<th>1.03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of variance</td>
<td>7.59%</td>
<td>4.82</td>
<td>2.96</td>
<td>2.75</td>
<td>1.81</td>
<td>1.28</td>
</tr>
</tbody>
</table>

Total variance accounted for = 50.5 per cent.
Items loadings at or above 0.40 are shown in bold for clarity.
Items are translated from Norwegian and are not retranslated for reliability testing of this translation.

Table 2. Descriptive statistics, reliabilities and intercorrelation matrix for the six factor solution

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean score</th>
<th>S.D.</th>
<th>Coefficient alpha</th>
<th>Intercorrelation matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Lack of communication and awareness</td>
<td>2.79</td>
<td>1.06</td>
<td>0.93</td>
</tr>
<tr>
<td>II</td>
<td>Focus and involvement</td>
<td>4.01</td>
<td>0.59</td>
<td>0.85</td>
</tr>
<tr>
<td>III</td>
<td>Dangerous tendencies</td>
<td>3.02</td>
<td>0.84</td>
<td>0.70</td>
</tr>
<tr>
<td>IV</td>
<td>Safety enhancing behaviour</td>
<td>4.47</td>
<td>0.52</td>
<td>0.71</td>
</tr>
<tr>
<td>V</td>
<td>Information</td>
<td>3.51</td>
<td>0.99</td>
<td>0.53</td>
</tr>
<tr>
<td>VI</td>
<td>Competence</td>
<td>4.39</td>
<td>0.68</td>
<td>0.50</td>
</tr>
</tbody>
</table>
All correlations are significant at the 0.01 level.

Discussion

Based on factorial analyses six factors were extracted and named 1) Lack of Communication and Awareness 2) Focus and Involvement 3) Dangerous Tendencies 4) Safety-Promoting Behaviour 5) Information and 6) Competence. Overall the factor loadings for the six factor solution have an acceptable pattern. Also reliability analyses show an acceptable alpha score for the six factors. Factor V and Factor VI have lower alpha scores but this is partly due to the fact that these two factors only consist of two items each.

The factor solution in this study may give an important perspective of which dimensions safety culture concepts consist of in this particular context in the North Sea. These factors measure topics which relate to such diverse subjects as attitudes, behaviour, perceptions of others in different layers in the organisations on the platforms.

Prior research has characterised culture and climate as multi-dimensional (Guldenmund, 2000). In this study culture has been defined and inspired by Bandura’s (1986) Social Cognitive Theory as suggested by Cooper (2000). Items in the factor solution give a high focus on behaviour and perception of others, compared with many other self-administrated questionnaires measuring safety culture. The factor dimensions explored in this study give an interesting approach in understanding the diversity regarding safety aspects on offshore installations in the North Sea.

Further analyses are needed to ensure validity. Analyses also should be made to explore what safety culture dimensions influence, and are influenced by.

References


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Board of directors responsibility for safety and working environment: a study of the troll license

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Introduction

Corporate governance has received increased attention over recent years. Corporate governance can be explained as bridging the gap between the owners and the company. This definition implies that owners actively seek to take more responsibility of strategy and control. A similar pattern is observed in the oil and gas industry (Hovden et. al. 2000). The same report raised concern that while the owners of a license (concessionaries) were playing a more active role, it seemed that safety and working environment were overlooked. One example was that the license owners demanded benchmark studies between the different installations. However, measures on health, environment and safety (HES) were not included in these benchmarks. Concern was also raised by the Norwegian Petroleum Directorate and all oil and gas companies were addressed in a letter dated September 13, 2000 signed by the Director Gunnar Berge, reminding the license owners of their responsibility for HES. In a modern work system, each level from governmental level to the operator on the workfloor influence each other (see figure1). Often the effects on safety and the working environment are studied up to management level. But studies are also needed at the level of board of directors.

Modern work system

![Diagram](attachment:figure1.jpg)

Figure 1: Adaptive system under pressure, Jens Rasmussen 1997
There are few studies on license owners and we wanted to study level in the work system. This study examines how the license-group at the Troll field on the Norwegian continental shelf is handling their responsibility for safety and working environment. The Troll-license consists of six different companies. Two of these companies are operators. This paper looks at aspects such as correlation between the size of the company’s share and its commitment and priority of the particular license. This study focuses on three major aspects:

The legislative responsibility. How are they handling their duty to look after the operator?
Composition of owners and the co-operative climate
Influence power and significance

Method

A pilot project looked at the license owners and their involvement, and concluded that they were more involved in issues regarding safety and the working environment than before; this has been attributed to a stricter HES regulation (Ytrehus and Østerbø, 2002). The report concluded that more research was needed to look at the case in detail. The Troll license was identified as an interesting case to study. Contact was established through a letter to all the directors of the board. All responded positively. 6 informants, representing the different owners, were interviewed separately. An additional 5 interviews were conducted with informants suggested by the first six informants. The number of informants from each owner company varies, but they are representing different positions and thus representing different views. In addition to the eleven interviews, a group interview with six informants from The Norwegian Petroleum Directorate was conducted. A request was also made to the Norwegian Oil and Energy Department, but no one there wanted to be interviewed, based on principle reasons. A request to the Minister was considered, but later dropped because it was not critical information for the purpose of this study.

The group interview with the Norwegian Petroleum Directorate and three individual interviews were conducted face-to-face. Due to restricted funding and limited time, the rest of the interviews were conducted over the telephone. Some conventional cues might then have been lost due to lack of visible contact (Rubin and Rubin, 1995). All interviews were taped. Although the first analysis of the data is the starting point of the analysis (Kvale, 1996), we decided to transcribe all the interviews. The transcription process leads to a better overview of the data. In addition to the interviews, the thesis is based on government papers, laws and regulation, and additional literature.

Results and discussion

When the first oil was discovered in 1969, there was no oil and gas industry in Norway. Historically the idea was that the Norwegian industry needed to build up competence by getting access to knowledge and technology. This could be served by splitting ownership through introducing a license system. The license system was at the same time an important means to attract foreign oil and gas companies. Their money and competence was seen as important to build up Norwegian oil and gas companies. There are more owners than companies operating the fields on the Norwegian continental shelf. Petoro is the largest owner. Petoro is owned by the Norwegian state. The role of Petoro is to control the interest of the Norwegian state, but also to serve as an agent for knowledge transfer. Petoro is not an operating company itself, only an owner, but they have shares in all the 80 licenses on the Norwegian continental shelf. In Norway the risks and benefits are divided in the ownership of license. The board of directors within a license are responsible for the profitability of the license and make sure that regulation is followed, ensuring the interest of the companies that own a share of the license. The companies they represent have their own board of directors. There are few transparent examples of the Norwegian license system. They have their own characteristics, but to a large extent one can think of them as a traditional board of directors representing different stake owners. At least this is evident for this paper, dealing with board of directors’ responsibility for safety and working environment.

The Troll-licence is unlike other licences because there are two operating companies. Hydro is the operator for Troll-oil, consisting of the two platforms Troll B and C, and Statoil operating Troll-gas, consisting of Troll A and a land facility for gas at Kollsnes. Owners of the entire field are Petoro 56 %, Statoil 20,80 %,
There has been an increase in the commitment of the Troll-license regarding safety and working environment issues. This pattern is similar to that observed for the industry in general and attributed to the letter from the Norwegian Petroleum Directorate (Ytrehus and Østerbø, 2002). There seems to have been a change in the climate for dealing with HES questions at this level. The boards of directors are now being fed with data concerning HES and are following up actively. There has been a change from the more passive role reported in Hovden et. al. (2000), which is a result of the increased attention of legislation and the introduction of new regulation. In the license in question, the increased commitment comes into practice through the start up of specific HES-meetings and HES as the first part of every regular meeting. In addition, the different partners have initiated internal work to increase their HES competence for use in non-operated licenses, and introduction of a management system for the license. The focus on safety and working environment are deeply rooted in the belief that safety and working environment are good economy and the companies’ deep concern for their reputation. In Norway, Norsk Hydro received harsh criticism after a fatal accident on the Oseberg Øst installation on Christmas Eve 2000. This raises concern about whether the companies are able to keep up their good work in less productive and more economic demanding phases. To increase the partner’s knowledge and focus on different HES aspects the study suggests introducing a mandatory HES-course for all partners. This will improve the likelihood of making good decisions that capture the essence of good safety and working environments.

The study shows that the license’s influence on the operators are primarily indirect. The only opportunity for direct impact is through the budget. Here the framework for health and safety is settled. As a result, the license doesn’t have any particular influence on the daily safety of the installations on the Troll field. The partner’s main influence, up till now, has been in periods when the safety levels are going in the wrong direction. The most important tasks are to control and keep track of the operators actions, making sure the safety level is acceptable and moving in the right direction. This can be accomplished by continuing follow-up of the safety results, participating in audits, demanding particular action and making sure their demands are followed up.

In this study, a relationship was found between share of ownership and engagement regarding safety and the working environment. Several plausible explanations for this could be offered. It seems that the partners with no operating experience themselves are more negative towards investment in health and safety.; they might perceive the investments as unnecessary. Investments made at the board of directors’ level are subject to cost-benefit considerations. It can be harder to justify investments concerning safety and working environment benefits for a partner with no operating experience of the Norwegian shelf. The economic perspectives are influencing the focus on health and safety by the partners. There can also be a limited understanding of the day-to-day operation, but it is important to underline that our data should be very carefully generalized to other licenses. Therefore the Government should consider carefully the distribution of shares in a license.

Hovden et. al. (2000) observed that the boards of license owners were getting more active in exercising corporate governance. Benchmark studies were demanded in order to compare and contrast the cost figures between different installations and enable the board of directors to follow up the operating company. At the same time, there was a growing concern that HES issues were not taken into consideration. A regime focusing more on optimalisation and cost cutting could, for instance, lead to a decrease in the level of safety and working environment. This study concludes that safety and the working environment are placed on the agenda at the board of directors; the board of directors seems to have taken their responsibility more seriously. There has been a positive development in the engagement for health and safety, but still these factors are not fully integrated in all discussions or under all circumstances. There are positive trends, but it seems that the overall thinking with respect to safety and the working environment is still insufficient. The license owners need more competence regarding safety and working environment. A means to strengthen this competence could be that The Government demand a certain competence level. They could demand a compulsory course on safety and working environment. An increased competence level would strengthen the status, leading to a better understanding and assessing of the reports and data they are getting from the operator company.
The influence of the board of directors’ on health and safety occurs when things are bad and corrections need to be done. So far there have been no major conflicts regarding health and safety with the board of directors in the Troll license. But the companies with small shares are more reluctant to spend money on health and safety. Thus, regarding the future, one can only speculate. Few conflicts within the license are positive for the climate, but not a guarantee for smooth co-operation in the future. Regarding health and safety, a more conscious board could also challenge decisions regarding health and safety. There has been a change with regards to health and safety at the board of director’s level within the Troll license. They play an active role regarding control concerning health and safety, but one could argue that they also need to be more active regarding strategies concerning health and safety. Huse (2003) has constructed a model for categorization of the role of the board of directors. Huse argues that the ideal board needs to be active in both the control and the strategy dimension in order to work proactively. Regarding the Troll license, the board of directors are active in controlling and strategy on the overall business. Concerning concrete strategies on health and safety, they have established an active role in controlling the health and safety (control dimension in figure 2), yet with regards to strategies (strategy dimension in figure 2) on health and safety they are more passive. This suggests that using Huse’s taxonomy may create a risk of becoming a “barbarian board” on health and safety. It is also suggesting that they might have moved from being an “aunt board” with respect to HES issues.

Different dimensions on roles of a board of directors

The board of directors at the Troll license has taken a more active and conscious role. Health and safety seems to be a larger part and integrated in the overall strategy. This needs to be verified and also studied later to see if it is a permanent change or a temporary trend.

Conclusions

A new legislation, increased focus and government attention has strengthened the responsibility for health and safety at the board of directors level (Ytrehus and Østerbø, 2003). The same development is also seen in this study at the Troll license. This is a more positive finding than reported by Hovden et. al. 2000,
whereby the board of directors is playing a more active role in exercising corporate governance. The board of directors at the Troll license plays a more indirect role; influencing health and safety, and playing an increasingly controlling role.

This study concludes that companies in the Troll license with small shares tend to be less involved than companies with larger shares. This is related to the partner allocating of smaller resources to follow-up the license, less influence in decision-making processes and smaller risks associated with their involvement in health and safety. More equal shares than today could lead to more involvement from all partners. Too small shares should be stopped by the Government, since this study indicates that small shares seem to hinder involvement regarding safety and the working environment. All in all, the license partners on Troll seem to have good focus and a concern for safety and working environmental issues. There seems to be a good climate within the license; in general, no major conflicts were mentioned within the license and no major disputes were mentioned with regards to safety and the working environment. This is promising for the future of the Troll license. Still, it is not a guarantee for successful handling of risk in the future. The economy view is dominant for the partners focus on safety and the working environment. One important question is therefore how the partners will attend to these issues in phases where they are not considered profitable from a cost/benefit point of view.

Corporate governance has gained increasing attention over recent years. We conclude that it is important to study activities at board level in order to understand how safety and working environment are handled and what effect decisions have throughout the hierarchy. Studies that focus on all, or at least some of the levels, in the work system simultaneously, illustrated in figure 1 (Rasmussen, 1997), would be very welcome. In a dynamic society, we need to focus on decisions made both at the sharp end (the man on the work floor) and at the blunt end (board level and political level) and their effects on safety and the working environment.

Acknowledgements

We would like to thank all the informants from the Troll license and from the Norwegian Petroleum Directorate. We would also like to thank the Norwegian insurance company Vesta for giving the presenting author a travel grant.

References


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A review in a cross cultural perspective of the work-family interface model

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The purpose to study the work and family interface is to know how work is influencing family or family is influencing work (Gutek, Searle, and Klepa, 1991). Most of the research on the work and family interface area focuses on or is dominated by the role strain perspective (i.e., work – family conflict) (Burnett, 1996; Gutek, Searle and Klepa 1991). So by looking back on the past research in the field of work and family balance we find that in contrast to work and family conflict much less research has focused on the work and family balance. Cross-cultural studies in the work and family balance area are quite rare. The main aim of this paper is to suggest how work and family balance can be studied in a cross-cultural perspective. In order to develop our own cross-cultural model we reviewed the literature in general to get an overview of the most used concepts and then we tried to find cross-cultural studies, where the existing concepts and models had been tested or developed further. We will therefore start by presenting the two most popular models about the work - family interface in general.

General Models

**Figure – I** The conceptual model of work and family interface. (Pluses and minuses represent the direction of hypothesized relationships. Broken lines signify two nested models, one without (Model A) and one with (Model B) paths from work-family conflict to depression. The letter $d$ represents the disturbance term for each endogenous variable. To simplify presentation of the model, the core relations among the exogenous variables and the measurement model are not shown.

In this above model Frone Russell and Cooper (1992) have discussed about the bi-directional nature of WFC. They distinguished between work interfering with family (W-F conflict) and family interfering with work (F-W conflict). Secondly, they have summarized hypothesis regarding the predictors of domain specific distress (i.e., job distress and family distress) and overall psychological distress (i.e., depression).
Frone, Yardely and Markel (1997) developed an integrative model of work family interface. The model is an extension of the prior work by Frone et al (1992). This integrative model describes the bi-directional nature of work and family conflict, which means how the participation in one role interferes with one's ability to meet responsibility in another role. In the former Frone et al (1992) model they have only considered two direct predictors of work and family conflict (like role stressor and role involvement). But the present model draws a distinction between proximal (i.e., direct) and distal (i.e., indirect) predictors of work and family conflict. They have also discussed the predictors of domain specific distress and domain specific role performance.

**Figure – II** The conceptual model of work and family interface. Pluses and minuses represent the direction of hypothesized relationships. To simplify presentation of the model, disturbance terms and the correlations among the exogenous variables and five pairs of disturbance terms are not shown.

Grzywacz and Marks (2000) developed an ecological theory to expand the conceptualisation of work and family interface and identified multiple dimensions of work and family spillover. Spillover may be negative spillover from work to family, positive spillover from work to family, negative spillover from family to work and positive spillover from family to work. The analysis indicates that work and family factors that facilitate development (e.g., decision latitude, family support) were associated with less negative and more positive spillover between work and family. But the work and family barriers (e.g., job pressure and family disagreements) are associated with more negative spillover and less positive spillover between work and family. Burke and Greenglass (1987) demonstrated that work and family are closely interconnected domains of human life. Lambert (1990) reviewed that segmentation, compensation and spillover are the processes through which work and family are linked. Edward and Rothbord (2000) studied the causal
relationship between the work and family linking mechanism like spillover, compensation, segmentation, resource drain, congruence and work-family conflict.

**Models in a Cross-Cultural Perspective**

Aryee, Fields and Luk (1999) carried out a study with the intention to test the model of Frone et al (1992) in a cross-cultural perspective among married Hong Kong employees.

![Figure III](image.png)

**Figure – III** Structural Equation Model of the work-family interface analysed by Frone, Russell, and Cooper (1992) Using the American data and by this study using Hong Kong Data. Note: “d” denotes co-variation between the constructs.

In Frone et. al. (1992) model the major discussion is about work and family domains in term of job or family distress. But in the above model of Aryee, Fields and Luk, they have measured job and family satisfaction rather than distress, in each of these domains, as well as life satisfaction rather than depression.
I suggest a new model to study the work and family balance in a cross-cultural perspective; I first look at the existing work culture and family culture in different countries. In a given work culture I will analyse the working hours and flexibility in working hours, supervisor and co workers support, work related health problems and job satisfaction. In family culture we will analysis family time commitment, number of children and children’s responsibility, spouse and family members support. The above components of work culture and family culture are necessary to know because the work culture and family culture are supposed to differentiate between employees in different countries. But is it clear from the past research that the work-family research is confined to work-culture of employees and given less importance to the family culture. It is also given more stress to the work culture of developed countries’ employees. So the main intention of this above model is to know family culture of employees in the same time when analysing the work culture. The employees of all categories of countries (e.g. developed, developing, semi-developed, underdeveloped etc) will be included. Only after knowing the work culture and family culture of the employees of the different countries then it is possible to study its impact on life satisfaction of employees.

References


Team organizing and relations in organizations: The role of autonomy and task-interdependence

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Introduction
Team organized work has spread from traditional industrialized sectors to various public-, high tech-, and service sector-organizations (Marks, 2001; Mueller et al. 2000). The literature on team organizing within organizational psychology has mainly dealt with its effects on efficiency, productivity, and to some extent employee satisfaction and attitudes, but the results differ somewhat (Guzzo & Dickson, 1996; Freeman & Kleiner, 2000; Hackman et al. 2000). This has led researchers’ attention towards investigating the constituent dimensions of teams; team-autonomy and task-interdependence are identified as key-factors. The relation of these factors to efficiency and satisfaction is curvilinear and complex, which underscores the point that team organizing should be considered together with its context (Marchington, 2000; Hunter et al. 2002; Glassop, 2002; Sprigg et al. 2000; Tata, 2000). However, it is important to highlight that team organizing can be introduced for different reasons. Team organizing can be part of an economic strategy to cut administrative costs and reduce the number of frontline managers (Bacon & Blyton, 2000; Trist & Bamforth, 1992; Gulowsen, 1971). It can also be applied as a strategy to utilize employee resources by attempting to facilitate creativity, innovation, and coordination by giving employees more job-influence (Vroom & Jago, 1988; Cotton, 1996; DeSanctis & Poole, 1997). Finally, team organizing can be introduced as part of a participatory development in organizations (Dachler & Wilpert, 1978; Eberhard & Weber, 1996; Eberhard et al., 1996; Freeman et al., 2000; Heller, 1998).

It is often suggested that the effects of team organizing, in terms of efficiency, are reached through a transformation of relations in organizations, usually involving a strengthening of the relationship between employees and their organizations (Guest, 1992; Meyer & Allen, 1997; Rousseau, 2001; Shore & Coyle-Shapiro, 2003; Hodson, 2002; Marks, 2001), yet relatively few empirical studies of this exist. These show that team organizing can have an effect on relations in organizations, although the results vary (Wall et al. 1986; Hunter et al. 2002; Guest et al. 1993; Colquitt et al. 2002; Eby & Dobbins, 1997). Studies of the processes between team organizing and relations in organizations however, hardly exist (for an exception see Barker, 1993). Thus we do not know much about how team organizing effects the relations in organizations, even though we suppose that this mechanism is important. There is therefore a need for research into the processes between team organizing and relations in organizations.

The relations in organizations can be studied by using the psychological contract and commitment (Rousseau, 1995; Guest 1998; Robinson & Rousseau, 1994; Meyer et al. 1997). Both concepts have recently been theoretically targeted towards team organizing (Marks, 2001; Meyer et al. 1998) and are empirically shown to be interconnected (Millward & Hopkins, 1998; Robinson & Morrison, 2000; Morrison & Robinson, 1997; Robinson et al., 1994; Singh & Vinnicombe, 1998). While most research on the psychological contract is about violations, the content of the contract is more important to consider in relation to the present theme. Results from the literature on the psychological contract show that autonomy promotes relational contract dominance rather than transactional contract dominance, thus strengthening the relation between employee and organization, and that relational contract dominance is positively related to Organizational Citizenship Behaviour, employee trust, and affective organizational commitment (Cavanaugh & Noe, 1999; Turnley et al. 2003; Coyle-Shapiro, 2002; De Meuse et al. 2001). This study focuses on the dynamic processes between team organizing and organizational relations here limited to the psychological contract and commitment. This has led to the following research question:

*Which processes can be identified between (a) team organizing and (b) the psychological contract and commitment of employees?*
Method

This study is a subproject of a larger Danish project called The METEOR Project. The overall project employs a multiple case-study design with different organizations of different sizes and within different lines of business, all using teamorganizing. Both quantitative and qualitative methods as well as documentary material are used. The present research question was investigated through the use of qualitative methods and documentary material. The project is still ongoing and data from 3 organizations in Denmark with teamorganized work are included in the analyses. These are (a) one high-tech organization, (b) one dealing with sales, and (c) one organization working with therapy and rehabilitation (see table 1). A project-group consisting of representatives from management and representatives from the employees was established at each organisation. This group handled contact with the organisation during the completion of the study. The data were collected through semi-structured interviews with members from the project-groups, semi-structured interviews with team-members, and documentary material. 3 interviews with members from the project-group and 5 interviews with team-members were conducted in each organization, with a total of 24 interviews. The 5 team-members were selected by the project-groups while it was instructed by the research-group that the participants should encompass a spread in the criteria age, representative-/management function, gender, education/work function, and seniority.

Table 1:

<table>
<thead>
<tr>
<th>Organization A:</th>
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<tbody>
<tr>
<td>A division of a large multinational High-Tech company with 122 employees and 106 employees working in teams. Employees are engineers, mathematicians and other highly educated groups. They work in project-teams of variable duration and size and are usually members of 3-4 teams at the same time. Teamorganizing has existed for 11 years.</td>
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<th>Organization B:</th>
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<tr>
<td>A sales department in a large international company within the dairy industry. Employees work in teams centred around large clients and are usually members of 3 stable teams at the same time. The department has 14 employees and 13 working in teams of 3-4. Employees are salesmen, sales assistants, or working with shipping. Teamorganizing has existed for 3 years.</td>
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<th>Organization C:</th>
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<tr>
<td>A public organization working with treatment and rehabilitation of refugees. The organization has 24 employees and 20 working in teams. Employees are language teachers, interpreters, craftsman-teachers, social workers, physiotherapists and psychologists. They work in client-centred teams and are members of 10 teams at the same time for a duration of 3 months to 2 years. Teamorganizing has existed for 3 years.</td>
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Each interview lasted approximately 85 minutes. All interviews were recorded electronically and transcribed. The interviews with members from the project-groups focused on team-functioning, team-structure, employee participation in the organization, changes in the teamorganizing, organizational changes, the history of the organization, and other aspects of the organizational context. The interviews with team-members focused on two central themes: 1) Experiences of and attitudes towards autonomy and interdependence in connection to teamorganizing in their organization, 2) Employees’ psychological contracts (expectations, violations, and terms) and commitment (dimensions and foci). Qualitative data analyses were used in order to identify important variables and dynamics in the processes at individual and organizational level, and to clarify similarities and divergences between organizations. Analyses focused on the dynamics between the 2 central themes and the presented research question at both the specific and the general level.

Results

In the present sample, teamorganizing is accompanied by a division of the autonomy of jobs into two different spheres. The first sphere includes the individual autonomy of work-functions and the individual autonomy in planning and organizing the completion of tasks. The second sphere includes the autonomy of teams and is shared by the members of the team. This shared autonomy of teams can be formally distributed to members of teams in different ways (e.g. by having a team-leader or by having work-functions within teams with different degrees of assigned authority) but is autonomy at a group-level. Thus, both an individual and a group-level dimension of autonomy can be identified. This division of autonomy led to two different general dynamics. Team-members either (A) experienced the group-level autonomy as restricting and diminishing their own individual autonomy or (B) team-members experienced that the
group-level autonomy was an expansion of their own individual autonomy meaning that there is a difference in the way the two spheres of autonomy are interconnected. In the first case the two different spheres of autonomy are separated and even conflicting. In the second case the individual- and the group-level-autonomy are interconnected and one is an extension of the other while the level is transformed from the individual to a group-level. These dynamics are overall, and general for employees, meaning that all team-members experienced both dynamics (but in different areas), even though one generally dominated. This occurred with the exception of when team-autonomy was low, which resulted in only one sphere of autonomy being identified (the individual), while there was no sphere of autonomy at the group-level. In such a case, no dynamic could be identified.

These general dynamics were analyzed in combination with 2 different key-factors: 1) amount of individual and group-level autonomy and 2) task-interdependence. Differentiating between three levels of individual- and group-level-autonomy (high/median/low), 9 combinations can be put forward. In the present sample two of the organizations had teamorganizing with work-functions, which were delegated different degrees of autonomy within the team, thus varying the relationship between individual- and group-level autonomy while a combination of low individual-autonomy and low group-level autonomy did not exist. This leaves 8 different combinations which enhance the frequency and the strength of dynamic A or B, or leave no dynamic at all (see table 2).

Differentiating the level of task-interdependence in a similar way ((high/median/low) does not change the dominating processes in the present sample. This result should be interpreted with caution however, because the group-level-autonomy and level of task-interdependence merge in the present sample. At the same time it should be taken into account that the interdependence of the teams in the present sample is primarily tied to the coordination and planning of tasks which are part of a whole (e.g. projects), while interdependence tied to the actual completion of tasks is low.

Team-members showed differences in their psychological contracts both in terms of the contents, the agents of the contract, and violations, while differences in commitment followed the patterns of the psychological contracts as expected. Thus, the psychological contract and commitment are distinct but interconnected concepts. Team-members employing dynamic A had transactional contract dominance, reported few violations, and emphasized their local management as the agent of the contract. Team-members employing dynamic B had relational contract dominance, reported some violations, and emphasized local management, other team-members, and the team as such as agents of the contract. At the same time, they emphasized that the team also had a contract with local management. There were no differences in organizational commitment between those employing dynamic A and those employing dynamic B. Team-members who employ dynamic A have lower general commitment to their colleagues as a group while they emphasise commitment to individual colleagues and they also have lower commitment to their teams. The reverse applies for those employing dynamic B. They have strong commitment to their colleagues as a group and emphasise commitment to their team as an independent foci.

<table>
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<th>Individual (IA)</th>
<th>Autonomy</th>
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<td>High</td>
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<tr>
<td>No dynamic</td>
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<tr>
<td>Median</td>
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<td>Not in sample</td>
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<td>Low</td>
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<th>Group-level (GA)</th>
<th>Autonomy</th>
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<tr>
<td>Low</td>
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<td>Median</td>
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<td>High</td>
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Discussion
Individual-autonomy and group-level-autonomy are the constituting factors of teamorganizing and can be combined in many different ways. In the present sample group-level autonomy and interdependence appear interconnected while the individual-autonomy of employees also must be considered. The individual autonomy is singled out by all team-members as the single most important factor for job-satisfaction and their relation to the organization. Thus, what Clegg (1983; 1993) labels “task-centred participation”, referring to its tangibility, is valued to the extent that every employee across the organization responds in a way that suggests if their individual autonomy is reduced they will start looking for another job. Teamorganizing should therefore always be considered together with the individual-autonomy of employees in any given organization. At the same time, group-level autonomy was generally considered an extension of employees’ autonomy when group-level-autonomy was either median or high, whilst individual-autonomy was at the same time either median or high. Thus, any combination involving low individual autonomy or low group autonomy strengthens dynamic A or leaves no dynamic at all. Maybe the interplay between autonomy at different levels in organizations can be explained by working further with attempts to integrate organizational psychology (especially the literature on participation) and activity theory (Morf & Weber, 2000).

The interplay between teamorganizing and employees’ psychological contracts is not simple but can vary considerably and autonomy at the two different levels is a prerequisite for affecting employees’ psychological contracts and commitment, so that the relation between employee and organization is strengthened. In the instances where teams become an agent of the psychological contract and where commitment to the team is strong, the present use of the concept psychological contract is not sufficient because it individualises the relationship between employees and organizations and restricts the presence of other agents of the contract. It is suggested that employees sometimes do not only have contracts with teams but also have relations to other entities in the organization as a team. The definition of the psychological contract “Individual beliefs shaped by the organization regarding terms of exchange between the employee and the organization” (Rousseau, 1995) implies that teamorganizing plays a central role for relations in organizations. The results from the present study suggest that this is only the case when teamorganizing is accompanied with group-level autonomy over a certain minimum and when it is introduced in organizations where employees have individual-job-autonomy over a certain minimum. This is why it is important to consider the objectives of teamorganizing. Secondly, the beliefs contained in the psychological contract are not necessarily only individual but can be the expression of beliefs at a group-level. Thus, it is suggested that the relation between employees and organizations should not solely be framed as individual relations and contracts but also as consisting of collective relations and contracts formulated at a team-level, implicating that violations can also occur at a collective level.

Finally the restrictions of the present study should be emphasised. Like many studies a cross-sectional design is employed meaning that no conclusions about cause and effect or temporal development can be made. At the same time a limited number of organizations are included and they are all from the same national context and this means that no conclusions about the impact of other contextual factors surrounding organizations can be made. Thus, more organizations from different national contexts should be included in future research on the present topic while follow-up studies should be made. Since the main purpose of this study was to identify dynamics in the processes between teamorganizing and relations in organizations qualitative methods were used, while any generalizations of the results and conclusions require the use of quantitative methods on representative samples.

Conclusions

The increased use of teamorganizing connotes a change in the character of relations in organizations that implies a move towards close entities with group-level-autonomy. This means that relations in organizations are not only between individuals and their organization but also between groups of employees and different other foci. Thus the individualization of relations in organizations expressed in the use of the concept ‘the psychological contract’, with its emphasis on “individual beliefs”, may need to be altered, and the same applies to commitment. Only focusing on individual relations is not sufficient when relations are at a group-level. Thus, it is suggested that employees can have relations or contracts not only to teams and other foci but also as a team. The concepts used to understand relations in organizations within organizational psychology should be altered to reflect this. At the same time, it is quite clear that the relations of individual employees are interconnected and interacting.


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Employee wellbeing in relation to organizational climate and leadership style

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Introduction

Today, organizations are faced by a competitive and harsh reality. Many organizations go bankrupt because they cannot deal with the threats and demands faced by so many organizations. To keep up with the fast-paced world it is critical for organizations to change, and the change must be continuous and ongoing. In order to deal with turbulent and stressful environments and be able to adapt to the ongoing environment, many organizations consider a creative work climate as necessary (Amabile, 1996; Ekvall & Ryhammar, 1999).

Stress in organizations is a growing concern among management practitioners because of its dysfunctional effects on organizational effectiveness. Work stress is thought to affect individuals’ psychological and physical health, as well as organizations’ effectiveness. There is evidence that the workplace environment strongly influences work life quality, work performance and safety, and general health. Aspects of the work environment such as the psychosocial and organizational strongly influence worker health (Cox & Ferguson, 1994). Cox (1985) defines stress as a cognitive state, which is part of a wider process reflecting how the person perceives and deals with demands of the work environment. Thus, stress has been defined as a stimulus, a response, and an environmental condition and as resulting from the interaction or misfit between the individual and environmental demands (Cox, 1978). Stress is seen as an interaction between people and their (work) environment and arises as the consequence of making the judgement of not being able to cope with the demands of the specific environment. When this judgement arises, a negative emotional response will be the result. This approach focuses on the person’s cognitive appraisal, the way the person perceives and reacts to stress within a problem-solving context (Cox, 1987).

The link between creative organizational climate and wellbeing

As mentioned above there is an increasing interest in creative climates at the workplace among managers. Research has suggested that organizational climate plays a large part in the innovation and creativity of the organisation (Amabile, 1996; Ekvall, 1989).

Organizational Climate is the atmosphere of the organization, it reflects the internal environment of an organization, which is experienced by its members and influences their behaviours. The organisation's climate refers to a combination of shared history, expectations, unwritten rules and social mores that affects the behaviour of everyone in an organization. The climate is important because it affects organisational and psychological processes such as communication, problem solving, decision making, conflict handling, learning, and motivation. Thus, the climate exerts an influence on the efficiency and productivity of the organisation, on its ability to innovate, and on the job satisfaction and wellbeing that its members can enjoy (Ekvall, 1989).

One purpose of the present study was to examine the relationship between creative organizational climate using a model developed by Ekvall (1988) and a two-dimensional model of general wellbeing developed by Cox et al. (1995). Creative organizations have been shown to differ from stagnated organizations in terms of high levels of challenge/motivation, freedom, trust, idea time, humour, idea support, debates, risk-taking and low levels of conflicts. Innovative and creative organizations perceive more of each dimension – except for conflicts. Since it is negative one would expect to find less conflict in creative organizations (Ekvall, 1989). Organizations characterized by a stagnated climate have low levels of trust, motivation, job satisfaction and high levels of conflicts. Therefore one can also assume that individuals in an organization with a creative climate are in better psychological health leading to our first hypothesis:

Hypothesis 1: there is a positive association between creative organizational climate and wellbeing. The more creative the organizational climate is perceived to be by the members of the organization, the higher is the general well-being proposed to be.
Leadership and stress
Connections between leadership style and employee wellbeing have also been found (Arvonen, 1995; Bass, 1996, 1985). When people perceive threats to their wellbeing they experience stress, and many times the leadership makes the difference in how the employees cope with their stress. Leadership that is transformational and employee oriented have been shown to reduce feelings of burnout and symptoms of stress in employees. Transformational leaders are more likely than transactional leaders to help their employees to cope with the situation (Bass, 1996). Transformational leadership is participatory and encourages shared responsibility in decision-making. The transactional leadership seeks to motivate followers by appealing to their own self-interest.

The employee/relation-oriented leadership is one dimension in Ekvall and Arvonen’s (1991) model of leadership, the other two dimensions are task-oriented, and a change-centred leadership. Employee/relation oriented leadership shows concern and respect for the individual, and to establish positive relations with his/her employees is very important (Ekvall and Arvonen, 1994). The transformational leadership might be in accordance with a combination of change and employee-oriented leadership. This leadership is associated with a low degree of stress and a low burnout factor, a relatively good level of satisfaction among co-workers and also with less absenteeism, less workforce turnover and fewer workplace conflicts, far more than a leadership that focuses on task and procedures (Arvonen, 1995; Seltzer et al. 1989).

Thus, in the current study a second purpose was to examine the relationship between the three dimensional model of leadership developed by Ekvall and Arvonen (1991), and the two dimensional model of general well-being developed by Cox et al. (1995). It was proposed that an employee/relation-oriented leader would have higher levels of wellbeing among his/her staff since this kind of leadership is thought to deal with her employees in a considerate and respectful way. This leads to our second hypothesis:

Hypothesis 2: The dimension employee/relation oriented is positively related to a higher level of employee general wellbeing.

Method

Participants
The current study took place at a global company in high tech field of industry in southern Sweden. The unit the study was conducted in had about 166 employees. The unit was divided into six subunits. The subunits varied in size between 3 and 114 members. 57.4% were females and 42.6% were males. The questionnaires were administered separately to each department during work time. A short presentation of the study and the purpose was carried out when the questionnaires were administrated. The participants (total 166) were given one week to fill out the questionnaires. Data were collected from 101 employees, which means a response rate of 61%.

Measures
Organizational climate was measured using Ekvall's Creative Climate Questionnaire (CCQ) (1996, 1988). CCQ was developed to measure important features of organisational climate and consists of 10 dimensions with 5 statements each, which makes a total of 50 statements. The ranking is from 0 to 3, where 0 is when you totally disagree and 3 when you totally agree with the statement. The ten dimensions are following: commitment (α = .90), freedom (α = .83), idea-support (α = .92), trust (α = .86), conflicts (α = .85), dynamism (α = .84), playfulness (α = .87), debate (α = .80), risk-taking (α = .81), and idea-time (α = .82).

Leadership was assessed using a short version of an instrument developed by Ekvall and Arvonen (1994). The questionnaire measures three dimensions of leader behaviour, employee oriented leadership scale (α = .73), change oriented leadership scale (α = .86), and production/task/structure oriented leadership scale (α = .78). Employee/relation scale includes items such as “allows his subordinates to decide”. The change/development scale includes items like “encourages thinking along new lines”. Product/task/structure scale consists of items such as “sets clear goals.” All together there are 15 items, which are rated on a four point scale. The response scales were ranged from 0 to 3, where 0 = seldom or never, 1 = sometimes, 2 = quite often, and 3 = often/most of the time.

To measure wellbeing Cox’s General Well-Being questionnaire was used (Cox and Griffiths, 1995). The questionnaire contains 24 items which can be divided into two groups or factors; worn-out and uptight/anxious. The worn-out scale (α = .80) includes items such as “have you been forgetful?” An example of items included in the uptight scale (α = .83) is “have you been tense and jittery?” The response scale was
ranged from 0 to 4 (0 = never, 1 = seldom, 2 = sometimes, 3 = often, and 4 = all the time). Low points indicate better wellbeing while high points indicate less wellbeing.

Some questions measuring the participants’ work conditions and background were also used. This background material contained questions about sex, age, which department they were working in and how long they had been working there.

Results

Descriptive data for organizational climate, leadership style and well-being are shown in Table 1. The means for the separate dimensions of organizational climate were: challenge $M = 1.97$; freedom $M = 1.94$; idea-support $M = 1.86$; trust $M = 1.78$; playfulness $M = 1.96$; dynamism $M = 1.78$; debate $M = 1.71$; conflict $M = 1.87$; risk-taking $M = 1.5$; and idea-time $M = 1.36$. These results point to a creative climate in the organization. With the highest values characterizing a creative climate in the debate, idea-support, trust and conflict dimensions while the mean for risk-taking is low compared to other innovative and creative organizations (Ekvall, 1996).

The most occurring leadership was the employee-oriented leadership with a mean of 2.29, and the least occurring was production oriented leadership in this organization with a mean of 1.68. This points to the organization having a leadership that is mostly concerned with establishing positive relationships with its subordinates.

For the two dimensions in Cox’s Wellbeing the participants reported lower scores on the uptight scale then on the worn-out scale. This indicates that people experience more symptoms related to the worn-out scale in this organization.

Table 1
Descriptive data over organizational climate, leadership styles, and wellbeing (n = 101)

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational climate</td>
<td>1.77</td>
<td>.53</td>
</tr>
<tr>
<td>Employee-oriented</td>
<td>2.29</td>
<td>.69</td>
</tr>
<tr>
<td>Change-oriented</td>
<td>1.95</td>
<td>.69</td>
</tr>
<tr>
<td>Production-oriented</td>
<td>1.68</td>
<td>.62</td>
</tr>
<tr>
<td>Worn-out</td>
<td>1.31</td>
<td>.60</td>
</tr>
<tr>
<td>Uptight</td>
<td>.61</td>
<td>.52</td>
</tr>
</tbody>
</table>

A correlation matrix (table 2) between the variables shows significant relationships between organizational climate and employee wellbeing as well as between leadership and employee wellbeing. The strongest correlations were found between leadership and wellbeing, and especially between employee oriented leadership and wellbeing on both scales of worn-out and uptight. It appears as if people who have an employee oriented leadership also show higher levels of wellbeing in general. Significant correlations were also found between change oriented leadership and wellbeing. When the leadership is change oriented, people also experience better wellbeing.

Table 2
Pearson product moment correlations between organizational climate, leadership styles, and wellbeing (n = 101)

<table>
<thead>
<tr>
<th></th>
<th>Org. climate</th>
<th>Employee</th>
<th>Change</th>
<th>Product</th>
<th>Worn-out</th>
<th>Uptight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Org. climate</td>
<td>1.00</td>
<td>0.57**</td>
<td>0.51**</td>
<td>0.12</td>
<td>-0.27*</td>
<td>-0.25*</td>
</tr>
<tr>
<td>Employee-oriented</td>
<td>0.57**</td>
<td>1.00</td>
<td>0.47**</td>
<td>0.26**</td>
<td>-0.33**</td>
<td>-0.33**</td>
</tr>
<tr>
<td>Change-oriented</td>
<td>0.51**</td>
<td>0.47**</td>
<td>1.00</td>
<td>0.47**</td>
<td>-0.20*</td>
<td>-0.21*</td>
</tr>
<tr>
<td>Product-oriented</td>
<td>0.12</td>
<td>0.26**</td>
<td>0.47**</td>
<td>1.00</td>
<td>-0.10</td>
<td>0.01</td>
</tr>
<tr>
<td>Worn-out</td>
<td>-0.27*</td>
<td>-0.33**</td>
<td>-0.20*</td>
<td>-0.10</td>
<td>1.00</td>
<td>0.73**</td>
</tr>
<tr>
<td>Uptight</td>
<td>-0.25*</td>
<td>-0.33**</td>
<td>-0.21*</td>
<td>0.01</td>
<td>0.73**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p < 0.05. ** p < 0.01.
No significant differences were found between men and women when it comes to their perceptions of the
organizational climate or the leadership style. However, significant differences were found between men
and women in the two dimensions of wellbeing. In general, women report less wellbeing. The mean for
men and women in Cox’s two dimensions of wellbeing were as follows. In the first dimension worn-out the
mean for men was 1.11 (SD = .55) and for women the mean was 1.45 (SD = .60), (F = 8.777, df = 100, p < 0.01).
In the second dimension uptight mean for men was .49 (SD = .41) and for women M was .71 (SD = .57),
(F = 4.723, df = 100, p < 0.05).

Correlational estimates were also done separately for women and men and these estimates showed different
patterns for men and women (see table 3 below). As the table shows, women’s wellbeing is significantly
related to the leadership style but not organizational climate. Employee and change oriented leadership
style are associated with higher levels on the scales of wellbeing among the women. However, employee
oriented leadership style is more associated with better wellbeing among women. A different pattern was
found for men. Their well-being on both the scales was related to organizational climate and only to one
leadership style, employee-oriented, on one of the dimensions of wellbeing, worn-out.

Table 3
Correlations for organizational climate, leadership styles, and wellbeing between men/women

<table>
<thead>
<tr>
<th></th>
<th>Worn-out</th>
<th>Uptight</th>
<th>Worn-out</th>
<th>Uptight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Org. climate</td>
<td>-.12</td>
<td>-.19</td>
<td>-.41**</td>
<td>-.32*</td>
</tr>
<tr>
<td>Employee oriented</td>
<td>-.28*</td>
<td>-.34**</td>
<td>-.36*</td>
<td>-.25</td>
</tr>
<tr>
<td>Change oriented</td>
<td>-.23</td>
<td>-.28*</td>
<td>-.16</td>
<td>-.07</td>
</tr>
<tr>
<td>Product oriented</td>
<td>-.15</td>
<td>-.01</td>
<td>-.05</td>
<td>.09</td>
</tr>
<tr>
<td><strong>Men</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* P < 0.05. ** P < 0.01.

**Discussion**

The results of this study showed significant relationships between wellbeing and organizational climate,
and between leadership and wellbeing. The first hypothesis in this study was confirmed and showed a
positive link between creative climate and wellbeing. The more creative the climate was perceived to be,
the higher the levels of wellbeing were that were found among the people working in that climate. This
result is consistent with the findings of Ekvall (1996, 1996), Arvonen (1995), and Amabile (1996) among
others. The means for the 10 dimensions characterized an innovative and creative climate compared to
other innovative companies, and especially compared to other organizations in the same business (Ekvall,
1989). While dimensions like challenge, dynamism, playfulness, and risk-taking had relatively lower
(moderate) values compared to other innovative organizations, the dimensions of debate and trust were
high in values. This means that the participants in this study perceived their climate to have moderate levels
of challenge/motivation, freedom, and humour, high levels of trust and debate but low levels of risk-taking.
The dimension conflict is compared to innovative organizations very low, which means that the climate is
low in conflicts. These results are in accordance with what other studies have found in other innovative

The second hypothesis was also confirmed as an employee-oriented leadership was found to be associated
with higher levels of wellbeing. This result is congruent with what Arvonen (1995) found in his study. This
result indicates that the more the manager focuses on relations and change, the higher wellbeing is
experienced by his/her staff.

Significant differences were found between males and females concerning their perceptions of their general
wellbeing in symptoms associated with worn-out as well as anxiety. It appears as if women experience less
wellbeing in general. Further, the relationship between general wellbeing and leadership and
organizational climate showed different patterns for females and males. For women leadership seems to
have a relationship to their wellbeing and organizational climate appeared to have no significant relation at
all. Employee-oriented leadership was found to be strongest associated with women’s health. Change-
oriented leadership was also associated with higher reported wellbeing among women. While leadership was significantly related to wellbeing among women, it appears as if organizational climate is more related to men’s wellbeing. But the difference is weak. Men’s wellbeing on the scale of worn-out tends also to be higher with an employee-oriented leader. But men’s wellbeing was not associated with a change oriented leadership.

The conclusions point to there being relationships between general wellbeing and organizational climate and leadership style. The wellbeing of women is more associated with leadership then what the wellbeing of men seems to be. Beside the consideration that women are more relation-oriented as a result of their socialization, the differences found in this study could also be due to the need among women of greater understanding from the management when it comes to preserving the balance between work life and private life. The lower level of wellbeing reported by women in the result could also be a consequence of women’s tendency to report more symptoms of stress and ill health to a greater extent than men. However, other factors outside the work place such as the women’s main responsibility for home work and children may in addition affect the perceived wellbeing.

References
Army Research Institute for the Behavioural and Social Sciences.
Motivation, flexibility, and competence of the workers play an important role in modern production and administration processes. Sub-optimal designed job tasks are one of the main sources of stress factors with increasing influence on work-related diseases (e.g. hypertension, musculo-skeletal disorders). Extensive studies have shown that 70-80% of implemented information technologies did not result in the expected increase of productivity (Clegg et al., 1997). The main reasons were thought to be strong orientation towards technology, coupled with underestimation of human-centred design goals (Parker et al. 2001). The development of objective methods of tasks analysis (documentation analysis, observer interviews) opens design fields for preventive work in early stages of conceptual and prospective work design (Fig. 1).

<table>
<thead>
<tr>
<th>Levels</th>
<th>System approach</th>
<th>Therapeutic approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health promotion</td>
<td>Conceptual design</td>
<td>Empowerment</td>
</tr>
<tr>
<td>Primary prevention</td>
<td>Projective design</td>
<td>Stress management</td>
</tr>
<tr>
<td>Secondary prevention</td>
<td>Corrective design</td>
<td>Risk group therapy</td>
</tr>
<tr>
<td>Tertiary prevention</td>
<td>Rehabilitative design</td>
<td>Supporting socio-and psychotherapy</td>
</tr>
</tbody>
</table>

Figure 1: Levels of health promotion and risk prevention and their relationship to measures of job design

The specific German development of action regulation theory (ART)(Hacker, 2003, Oesterreich & Geißler, 2002) opened practical possibilities to implement psychological design rules in the early stages of the development process. The goals of enhancement of efficiency, optimisation of mental strain, and enhancement of health (including personality development and skill utilisation) can be translated in a design tool.

During the last twenty years the Task Diagnosis Survey (German: Tätigkeitsbewertungssystem- TBS, Hacker et al. 1995) as an semi-standardizised system for task analysis has been developed. This objective instrument operationalized the theoretical construct of cyclical-sequential and hierarchical completeness of actions and activities. One of the group of this instruments is the computer-aided tool REBA 6.0 (rechnergestützte Bewertung von Arbeitstätigkeiten). The tool predicts risks of mental overload (fatigue, stress) and mental underload (monotony, satiation) in accordance to the standard ISO EN DIN 10 075 “Mental Workload” by application of multiple linear regression models based on data of 22 ordinal scaled task characteristics. This software tool is an aid to orientational evaluation and design of jobs, but can do not replace the carefully planned design and implementation process of new jobs and organisations.

The data basis include 368 task groups with more than 2000 Ss at present. The validity of the prediction of mental strain consequences is satisfying for recommendations of job design and re-design (Fig. 2)
<table>
<thead>
<tr>
<th>Models</th>
<th>Fatigue</th>
<th>Monotony</th>
<th>Satiation</th>
<th>Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>REBA 5.0</td>
<td>.59**</td>
<td>.73**</td>
<td>.63**</td>
<td>.50**</td>
</tr>
<tr>
<td>N= 234 jobs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REBA 6.0</td>
<td>.48**</td>
<td>.69**</td>
<td>.68**</td>
<td>.47**</td>
</tr>
<tr>
<td>N= 368 jobs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: Multiple correlation coefficients of the original (Pohlandt et al., 2003) and an extended data set (Debitz, 2003) between characteristics of job design and interval-scaled perceived short-term strain consequences (BMS- scales, Plath & Richter, 1984)

The software tool REBA will be used for training of work psychologists, safety engineers, occupational medical doctors to improve the sensitivity for key components for design of healthy work. Experiences are available for redesign processes in paid work (e.g. semi-conductor assembling, call centre jobs, paper industry) and also unpaid volunteering work.

Further developments are directed to integrate this action-oriented tool with the socio-technical system approach. This extended tool should be implemented in management control instruments (balanced scorecard, EFQM) as integrated method for design of efficient and salutogenetic organisations.

References:


Epidemiological analysis of the German National Health Interview and Examination Survey: Differences between employed and unemployed adults aged 20-64 (first results).

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Federal Institute for Occupational Safe and Health (FIOSH), Germany

Introduction
The first German National Health Interview and Examination Survey began in 1997 with a sample of 7124 subjects. The survey encompassed a comprehensive interview of health relevant topics and a medical assessment. Information about health is not only restricted to self reports within the core survey but also includes medical appraisals, a standardized psychiatric classification and laboratory tests. The current analysis is designed to provide health relevant differences associated with the status of (un-)employment. Associations between social status, (un-) employment and health status can lead to a bias in statistical analysis. Therefore social status has to be regarded as a potential confounder in this overview. The core survey was supplemented by extensive psychiatric assessment of a subset of subjects. Results of the different survey parts provide a unique basis for a study of unemployment in light of both physical and mental health. Counting cases with a medical illness or a mental disorder however, can give only an incomplete picture of the main problems and does not necessarily imply that there is a need for intervention. The latter will be illustrated with prevalence rates of mental disorders and the use of health services.

Method
The analysis covered a selection of 5586 subjects, aged 20-64, who were divided into a group of full- and/or part-time employed (n=3340), unemployed (n=425) or economically inactive (n=1821), which included housewives, students, the retired, and those permanently unable to work because of disability. The employed subjects were compared with the unemployed and economically inactive subjects, according to their morbidity status, by means of an unweighted logistic regression stratified by gender and adjusted for age. This was followed by a confounder analysis using the Winkler-Index as an indicator of social status. The index is an unweighted sum aggregated by means of indicators for education, income, and occupational status.

Results
Concerning the group of males, unemployment was associated with asthma, bronchitis, anxiety disorders, depression/dysthmic disorders, somatoform disorders and alcohol dependence. After inclusion of the Winkler-Index the association with bronchitis disappeared. Female unemployment was associated with bronchitis, allergic rhinitis (negative association), anxiety disorders and depression. Inclusion of the Winkler-Index changed the results for bronchitis and anxiety disorders to be nonsignificant. In contrast to the high (unweighted) prevalence rates of depression (21.2%) and anxiety disorders (24.8%) amongst the group of unemployed, there are only 4.6% who consult psychotherapy. Only 9.2% of employees fulfill criteria for depression/dysthymia and 14.6% for an anxiety disorder. The consultation rate in this group dropped to 2.8%.
Table 1: Comparing the employed men with a) nonemployed and b) economically inactive men

<table>
<thead>
<tr>
<th>Variable</th>
<th>with con-</th>
<th>OR with nonemployed (a)</th>
<th>95%-CI (OR)</th>
<th>OR compared with economically inactive (b)</th>
<th>95%-CI (OR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported physician diagnosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asthma no</td>
<td>no</td>
<td>2.789</td>
<td>1.478-5.265</td>
<td>1.303</td>
<td>.727-2.337</td>
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<tr>
<td></td>
<td>yes</td>
<td>2.418</td>
<td>1.254-4.663</td>
<td>1.186</td>
<td>.653-2.156</td>
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<tr>
<td></td>
<td>yes</td>
<td>1.959</td>
<td>1.026-3.742</td>
<td>1.872</td>
<td>1.182-2.964</td>
</tr>
<tr>
<td>bronchitis no</td>
<td></td>
<td>1.959</td>
<td>1.026-3.742</td>
<td>1.872</td>
<td>1.182-2.964</td>
</tr>
<tr>
<td></td>
<td>yes</td>
<td>1.525</td>
<td>.787-2.956</td>
<td>1.548</td>
<td>.966-2.482</td>
</tr>
<tr>
<td></td>
<td>yes</td>
<td>1.352</td>
<td>.782-2.339</td>
<td>1.196</td>
<td>.808-1.768</td>
</tr>
<tr>
<td>gastritis, ulcer no</td>
<td></td>
<td>1.352</td>
<td>.782-2.339</td>
<td>1.196</td>
<td>.808-1.768</td>
</tr>
<tr>
<td></td>
<td>yes</td>
<td>1.167</td>
<td>.667-2.043</td>
<td>1.077</td>
<td>.722-1.607</td>
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<tr>
<td>Diabetes mellitus no</td>
<td></td>
<td>2.035</td>
<td>.987-4.916</td>
<td>3.478</td>
<td>2.222-5.443</td>
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<tr>
<td></td>
<td>yes</td>
<td>1.661</td>
<td>.796-3.466</td>
<td>2.951</td>
<td>1.864-4.671</td>
</tr>
<tr>
<td>osteoarthrosis no</td>
<td></td>
<td>1.156</td>
<td>.822-1.624</td>
<td>1.501</td>
<td>1.203-1.874</td>
</tr>
<tr>
<td></td>
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</table>

*a All Ors are adjusted for age*
### Table 2: Comparing the employed women with a) nonemployed and b) economically inactive women

<table>
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<th>Variable</th>
<th>with con-founder?</th>
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<th>95%-CI (OR)</th>
<th>OR(^a)</th>
<th>95%-CI (OR)</th>
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<td><strong>1.247</strong></td>
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</table>

*All ORs are adjusted for age

### Table 3: Comparing the employed men with a) nonemployed and b) economically inactive men

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<th>95%-CI (OR)</th>
<th>OR(^a)</th>
<th>95%-CI (OR)</th>
</tr>
</thead>
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<td></td>
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<td></td>
</tr>
<tr>
<td>anxiety disorders; OCD</td>
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<td><strong>1.640-4.155</strong></td>
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<td><strong>1.821-4.959</strong></td>
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<td>dysthymic disorder</td>
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<td><strong>1.529-4.297</strong></td>
<td>1.174</td>
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<tr>
<td>somatoform disorders and/or</td>
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<td><strong>1.282-3.603</strong></td>
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<tr>
<td>SSI4/6</td>
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<td><strong>1.081-3.127</strong></td>
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*All ORs are adjusted for age
Table 4: Comparing the employed women with a) nonemployed and b) economically inactive women

<table>
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<tr>
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<th>ORa</th>
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*a All ORs are adjusted for age

Discussion

The results underline the importance of mental disorders in the context of morbidity associated with unemployment. Even if social status is taken into account, depression and anxiety disorders are strongly associated with unemployment. The discrepancy between prevalence rates and service use however, points to a new definition of the need for intervention. This discrepancy will be an important issue if interventions are to be designed in order to improve employability.

References


Contact address: Rose.Uwe@baua.bund.de
Flexible work and health: who are the winners and who are the losers?

J. SIEGRIST
University of Duesseldorf, Germany

1. Introduction

Work is important for health and well-being, whether flexible or stable. Beneficial effects on health and well-being can be attributed to a high quality of work that meets basic human needs. On the other hand, lack of need fulfillment induced by poor quality of work may trigger ill health and disease. Need fulfillment is not restricted to the protection against chemical and physical hazards or risk of accident and injury, but includes psychological and social motivations of the working person, such as experiencing self-efficacy, self-esteem, skill utilization and personal growth, or experiencing security and satisfaction as well as receiving financial rewards, social approval and social support.

Over the past hundred years or so, a majority of employed people in industrialized modern societies were exposed to relatively stable work arrangements. These arrangements were characterized by fulltime jobs with considerable individual continuity and security, by commonly shared places (the companies), fixed working hours and collectively negotiated contracts of employment. Moreover, the nature and division of work was highly standardized and routinized, at least in industrial mass production. An improved quality of work was not only the result of technological progress, but was enhanced by the trade union’s negotiations and by interventions from the state. Overall, a secular gain in life expectancy and quality of life was experienced during this period, but at the same time a considerable burden of disease and mortality was attributed to occupational life and contributed to widening social inequalities in health within modern societies (Marmot & Wilkinson, 1999).

With the advent of flexible work, the quality of occupational life has changed rather remarkably, and its effects on health and well-being are far-reaching. In order to understand this change and its polarizing effects on the workforce, we need to disentangle the different components of what is termed ‘flexible work’ (Purcell, Hogarth & Simm, 1999). At least the following four aspects of flexibility at work can be distinguished. First, as a result of progress in information technology and automation, the production process itself has become more flexible, compared to prevailing standardized production processes. New ways of organizing and dividing work tasks were developed, requiring skilled workers who are able to adapt to these changes. Often, economic forces trigger flexible work, e.g. in terms of ‘just in time’ production. Increased market competition may also promote product variability and shortened cycles of available products in response to more individualized demands from customers.

Closely linked to this process is a second type of flexibility, ‘flexitime’. Working hours are becoming less standardized, more suitable to individual time preferences. Part-time employment, flexitime account or variable shifts are expanding arrangements of work time both in industrial production and in service professions. Clearly, the amount of individual choice is crucial in this process (see below). While some parts of the workforce profit from these advances, such as women with children, others may be forced to accept irregular work hours and constraints of temporal availability.

Third, the workplace has become flexible in several ways. One way concerns home working or teleworking resulting from revolutionary progress in computer technology. This change affects an increasing proportion of employees whose job task profile is defined by information processing. Again, increased flexibility of place is experienced as a desirable achievement by many of those concerned, but may have adverse effects on others (e.g. risk of self exploitation in freelancers). A different type of workplace flexibility relates to mobile workplaces. In a globalized economy many companies establish branches or develop mergers which necessitate an increased mobility of their employees. Variable travelling and commuting arrangements are more and more common, absorbing an increasing amount of time and energy. Flexible workplaces in terms of mobility are frequent in some types of person-related service professions (e.g. home care).

A fourth type of flexibility concerns core elements of the employment contract: type and duration of employment, earnings and compensations. Most importantly, less contracts offer permanent employment. Instead, fixed-term contracts or contracts with flexible termination and related job insecurity or instability are becoming highly prevalent. As a result, the risk of unemployment is increasing, as is the pressure
towards re-skilling, training on the job and forced job change. Collective wage agreements are less common whereas individualized compensations are increasingly used as incentives. Social security benefits, safety and health regulations and additional protective measures imposed by the state are less frequently realized or observed in a globalized economy with transnational modes of operation. These latter developments produce adverse effects on major parts of the workforce. Conversely, specific professional groups may profit from this increased flexibility, mobility and individual freedom.

The description of these different types of flexibility illustrates the range of variation in quality of work that is attributable to this process. For each type of work flexibility, winners and losers can be identified. The winners are the ones who profit from flexibility in terms of their quality of working life, their need satisfaction and well-being. Most likely, the majority of them are well trained, skilled and well paid professionals at younger ages. Conversely, the losers are the ones who suffer from a reduced quality of working life and whose needs are less well met. Adverse effects on health and well-being are more common under these conditions. Losers are likely to belong to the less qualified and less well paid parts of the workforce, to be older and less mobile in their life circumstances. Their options of choice and personal control of employment conditions are restricted. In general, a social gradient of the quality of work as influenced by flexibility is observed, leaving lower socioeconomic status groups at elevated risk of precarious work.

Precarious work is characterized by a low level of job security, low control of working conditions including health and safety standards, and poor earnings (Rodgers & Rodgers, 1989). Thus, people who are forced into precarious jobs have little decision latitude over their work tasks, their working hours and the localization of their workplace. Even more important, flexible employment contracts leave them at high risk of job instability and unemployment. The number of losers of the flexibility process in terms of precarious work is rapidly growing in a globalized economy. This is due to the transnational activities of companies that undermine or weaken national regulations of occupational life as well as to an increasingly competitive international labour market (de Beyer et al., 2000, Pappas et al., 2003).

2. Theory and evidence

Given the threats of flexible work to need satisfaction and well-being among the losers of an increasingly globalized labour market it is important to analyze its impact on health in a more precise way. To this end a theoretical model is needed that reduces the complex reality of the working life to those few ‘toxic’ components that have a direct impact on human health. Theoretical models provide explanations of the relationship between working conditions and health, and these explanations are generalized beyond specific occupations or sociodemographic groups of the workforce. However, in order to be valid, a theoretical model needs to be empirically tested in rigorous ways. In this regard, two theoretical models received particular attention in recent past as they were tested in a number of epidemiological and experimental studies: the demand-control model (Karasek & Theorell, 1990) and the effort-reward imbalance model (Siegrist, 1996).

The demand-control model puts its emphasis on distinct characteristics of the workplace: job task profiles defined by high quantitative demands and a low degree of decision latitude or task control impair the health of workers by eliciting sustained stress reactions. In the long run, these stress reactions contribute to the development of several physical and mental diseases, including cardiovascular diseases and affective disorders. This model found substantial empirical confirmation although conflicting evidence remains (for review see Schnall et al., 2000, Marmot et al., 2002). Elevated health risks among the losers of the flexible work process can be estimated with the help of this model although it has been claimed that the broader socioeconomic context of stressful and precarious work is not adequately captured by this model. This latter critique is met to some extent by a complementary theoretical model, effort-reward imbalance at work.

This model is concerned with core elements of the employment contract, a contract that is based on the norm that effort at work is reciprocated by adequate rewards. Three types of rewards are distinguished in the model: money, esteem, and status control in terms of promotion prospects and job security. In structural terms, lack of reciprocity between the costs and gains (i.e. high cost/low gain conditions) is likely to occur as a result of non-symmetric exchange between employers and employees. Effort-reward imbalance at work is frequent among employees who have little choice of alternative workplaces (e.g. due to low level of skill, restricted mobility or a critical business cycle). Thus, violated reciprocity is a feature of precarious work. However, imbalance is also prevalent among employees who accept it for strategic reasons (i.e. to improve their future chances on the labour market by anticipatory investments). In summary, high cost/low
gain conditions are rather frequent in a globalized economy with increasing competition and flexible employment contracts.

As a further distinction from the demand-control concept, the model of effort-reward imbalance incorporates psychological information in terms of coping patterns of the working person. In this regard, overcommitment has been introduced as a particular way of coping with work demands. People exhibiting excessive work-related commitment may suffer from inappropriate perceptions of demands and of their own coping resources, and these perceptions contribute to the experience of high cost/low gain conditions at work. Overcommitment can be both a result of primary socialization (e.g. need for approval in people with low self reliance) and a consequence of work pressures that aggravate over one’s occupational career (Siegrist, 2002).

The predictions derived from the model are as follows:

- The imbalance between perceived demands (‘effort’) and expected or experienced rewards at work produces adverse effects on health and well-being over and above the effects of either component (‘effort’ or ‘reward’). It is the mismatch due to failed reciprocity that matters most.
- A high level of personal commitment (‘overcommitment’) acts as an intrinsic trigger of non-reciprocal exchange and related adverse health effects.
- If structural and personal components of effort-reward imbalance act in concert the strongest effects on health are expected to occur.

These predictions (in particular the first one) are relevant in explaining the link between flexible work among the less privileged parts of the workforce and their increased burden of disease. In fact, several prospective observational studies of large employment cohorts support these predictions. Effort-reward imbalance at work was shown to predict fatal and non-fatal cardiovascular disease (Kivimäki et al., 2002), and especially coronary heart disease (for review Siegrist, 2002), psychiatric disorder (Stansfeld et al., 1999), alcohol dependence (Head et al., 2003), poor subjective health (Niedhammer et al., 2003) and reports of chronic illness (Ostry et al., 2003). Overall, high cost/low gain conditions at work double the risk of incident disease, after adjustment for relevant confounders. Additional evidence on health adverse effects is obtained from cross-sectional and case-control studies as well as from experimental investigations summarized elsewhere (Siegrist, 2002).

In conclusion, those employees who suffer from flexible work, especially from insecure and unfair employment contracts that go along with globalization, are clearly at elevated risk of ill-health and stress-related physical and mental disorders. At least part of the social gradient of premature morbidity and mortality in adult life is explained by these new findings that are based on an explicit theoretical model.

3. Concluding remarks

Two types of concluding remarks deserve special attention. First, concerning policy implications of reported findings the question arises what can be done to reduce the burden of disease that is attributable to the undesirable consequences of flexible work. Clearly, each one of the theoretical models mentioned can guide preventive measures in occupational health. For instance, propositions derived from the demand-control model concern measures of job redesign, job enlargement and enrichment, skill training and enhanced participation in decision making. These measures increase the degree of personal control at work and contribute to successful coping with the challenges of work flexibility (Karasek & Theorell, 1990). Propositions derived from the effort-reward imbalance model are directed towards developing models of gain sharing, strengthening non-monetary gratifications, improving promotional opportunities and job security. Additional measures are skill development in leadership behavior and in coping with high workload (Siegrist, 2002). These approaches reduce the risk of failed reciprocity at work and increase the workers’ need satisfaction in terms of security, fairness and esteem. It goes unsaid that severe limitations of these types of health-promoting policy measures do exist even in economically most advanced countries.

Yet, work-related policies to reduce social inequalities in health deserve high priority on national and international policy agendas.

The second concluding remark concerns the stress-theoretical basis of reported models of psychosocial stress at work. How many theoretical models are needed in this field of scientific inquiry? Is it justified to consider both the demand-control and the effort-reward imbalance model, or should we aim at constructing a unifying concept? My answer to these questions is as follows. It is noteworthy that the two models measure different aspects of a health-adverse psychosocial work environment and that each model contributes separately to the estimation of disease risk. This fact may suggest that two different, though closely interrelated stress mechanisms in the brain are triggered by the respective ‘toxic’ components of the
two models. In the demand-control model, the core stress-theoretical component can be delineated as 'threat to personal control'. Threat to control is experienced primarily through cognitive appraisal, and it induces a sustained activation of the stress axes within the organism, especially the hypothalamic-pituitary-adrenocortical axis (McEwen, 1998). In the effort-reward imbalance model, the core stress-theoretical component is defined as 'threat to social reward'. This threat is experienced primarily through affective information processing associated with evolutionary old social emotions, and it activates the 'extended amygdala' of the human brain (Koob, 1999). In addition to reinforcing the action of the stress axes mentioned, this activation of the brain reward system increases the susceptibility to addictive behaviors in exposed people. Therefore, it may well be that the two models complement each other not only at the conceptual and empirical level, but also at the level of basic brain mechanisms involved in the processing of stressful experience at work. While it is premature to draw any firm conclusion from these considerations they nevertheless provide promising options of further research in this important field of transdisciplinary scientific inquiry.

References

A comparative study of safety culture: ABB offshore systems compared with other companies on the Norwegian Continental Shelf

J. THARALDSEN, E OLSEN and T. EIKELAND
Rogaland Research, Norway

Introduction

The company and the project

This project is funded by the Norwegian Research Council (HSE offshore), ABB Offshore Systems (OS) and the union of technology companies (TBL) in Norway. ABB OS is part of the ABB Group, a global technology and engineering company employing about 160 000 people in more than 100 countries. ABB OS employs 5000 people – 3500 of them in Norway.

The project is anchored in the division of Maintenance and Modifications (M&M), which has its main activity towards the oil and gas industry. The international objective for the firm is to be a global player within operation, modification and maintenance, and to capture global experience for Norwegian Challenges. M&M has its main base in Haugesund on the west-coast of Norway. The international competence on this kind of work has its foundation in experiences made in Norway and the Norwegian oil industry. The M&M division has contracts on 43 of 64 installations on the Norwegian Continental Shelf. In other words, they have a lot to do, but the scope of work is squeezed in many projects. This constitutes a challenge in keeping a safe level on HSE.

In the everyday work the company face big challenges in keeping or building a sound HSE-culture: The employees work under extremely demanding safety conditions, the company use a lot of subcontractors in different projects, they hire people with different languages and from different national cultures, the employees have to work both on- and offshore, they work for different customers and they have to learn new disciplines when these are needed. The work is completed in extremely complex project organisations and in environments that have a strong focus on safety. These organisations are in the scientific literature called high-reliability-organisations (HRO). This means that the need to coordinate people and to ensure that they have the right competence as well as the right attitudes towards safety is a major concern for the company.

The risk level on the Norwegian Continental Shelf

There has been a claim in the industry that the safety level in the petroleum area has stagnated or declined during the last few years. Some improvements have been seen, but in many areas the risk level has been increasing during the nineties. This development must be understood in relation to extensive processes of change in the industry. There have been major technological, operational and organisational changes, without a sufficient or corresponding focus on the consequences for health, safety and environment.

In order to meet this development there has been made a new legal framework for the petroleum sector and a white paper has been made to sort out these conditions (St.meld. nr. 7 – 2001 – 2002). The new legal framework was effectuated this year and demands that the responsible part shall promote a good HSE-culture in the enterprise. In the white paper the role of the leaders is given much attention. The work with and the quality of the HSE-culture are closely connected to the responsibility of the leader and his or her behaviour. It is also said that: “Health, environment and safety shall be integrated in the common values, established attitudes, competence and behaviour in the organisation”.

In addition to this the Norwegian government wants the petroleum sector to be the initiating and leading industry with a strong focus on HSE, continuous improvement and a proactive approach. The petroleum sector is meant to be our mirror outwards to the rest of the world.

This project represents a unique cooperation between the industry and researchers at Rogaland Research. The project started at the end of 2002 and will be finished at the end of 2005. We have four main objectives: 1. Identify the attitudes, values and norms related to the HSE culture in the company, 2.
Develop methods to change HSE-culture, 3. Develop, implement and evaluate attempts to improve the HSE-culture and 4. Develop new ways to measure results on HSE-culture.

The project involves an interdisciplinary team of researchers at Rogaland Research: A sociologist, an ethnologist, an engineer, a social anthropologist and an organisational psychologist.

**Theoretical Framework**

The research field is characterized by theoretical controversies or attempts to define the meaning of the concept of safety culture. The concept is often closely connected to the meaning of organisational culture and to various attempts to develop instruments that are capable of measuring and hopefully navigating or engineering the safety culture. Some serious attempts have been made to define the concept, to sort out the difference between safety culture and safety climate, to decide what dimensions it is possible to measure, or to discuss what kind of theoretical framework that gives the best understanding of culture. Is it the hermeneutic or interpretative perspectives that are the most useful ones, or should we rather go to the functionalistic ones (Cooper 2000, Cox & Cheyne 2000, Cox & Flin 1998, Flin et.al. 2000, Glendon & Stanton 2000, Guldenmund 2000, Haukelid 2001, Hofmann & Setzer 1998, Mearns & Flin 1999, Rundmo 2000, Turner 1991)?

In this project we connect the concept of culture to the construction of meaning, symbols and the formation of working communities and collective identity (Geertz 1973, Alvesson 2002). This perspective is well elaborated in Frost et als’ (1985) definition on organisational culture: “Talking about organizational culture seems to mean talking about the importance for people of symbolism – of rituals, myths, stories and legends – and about the interpretation of events, ideas, and experiences that are influenced and shaped by the groups within which they live” (Frost et al 1985:17, from Alvesson 2002:3).

Culture is understood as a system of common symbols and common meaning connected to these symbols. This does not mean that we always agree upon what is right, wrong, smart or stupid to do (Freilich 1973). The work, the problem solving and the coordinating of people and contractors will be of special concern for us. Building culture also means negotiation, use of power and the capability of someone more than others to convince people in some direction and make their own opinions sound (Bourdieu 1991). People are different and they have different status and positions. We can imagine that disagreement can contribute to the formation of subcultures or cultural conflicts in a company. Such conflicts can arise on different levels. On the individual level people have different intentions, interests and opinions, which has consequences for the way we interact, and we can find similar patterns on group or division level in the organisation.

We also want to emphasize that culture is not only about attitudes and behaviour of the individual person. It also has to do with technology, economy, laws, rules and regulations in a community or other conditions that influence our lives. On the other hand we bring different experiences with us when meeting other people; we have different views of reality, and we use our unique experience to create meaningful lives. With such an understanding of culture, and in this context organisational culture related to HSE, we can conclude that a good HSE-culture can be observed in enterprises that emphasise continuous, critical and thorough work to improve the health, safety and environment level. And the best way to understand culture is to observe what people do and listen to what they say. It is exactly in the relationship between what people say they do and what they actually do, that culture is created and can be fully understood. An important question is: do words and action correspond?

**Method**

To get a good picture of the HSE culture in the company, we have collected data from a variety of sources, and we have used both qualitative and quantitative methodology.

**Qualitative data**

We have collected qualitative data from various sources in the company, such as informal conversations, documents, the company’s annual HSE report, in-depth interviews, observation, videotapes, camera/photos, work shops and seminars and finally short fieldwork. We have interviewed 18 employees onshore and 12 offshore working with the hook up of a new platform (The White Bear - May 2002). 8 of the interviews onshore involved personnel working with the construction and completion of the platform the White Bear. For the interviews we developed an interview-guide with specific themes we wanted to focus on.

**The fieldwork – hook up of the White Bear**
The hook up of the White Bear was selected early as an interesting project and phase to follow. A hook up is about installing a platform, to complete, put together, and hand over the platform to the customer – which in this case was Statoil. This phase is dominated by a complex intertwist of different actors and companies with different tasks and responsibilities. The hook phase was two months delayed and the firm mobilised quickly to catch up with this. In a very short time the hook up gathered approximately 500-600 people from 15 – 20 different countries. The environment is characterised by an international atmosphere, big challenges connected to coordinate a lot of people and to handle large cultural differences in a satisfying manner.

The name White Bear comes form the Norwegian folk tale by Asbjørnsen og Moe. The name shall describe a field with a well pressure on 780 bar. In the tale either man or weapon could stand against the White Bear, but we must suppose that the Norwegian offshore technology manage to master the deep and to collect the treasure that lies in the reservoir.

The hook up itself was performed by one of the (two) biggest crane ships of the world – Saipem. Saipem has a 9000 square metre upper deck with a storage capacity of 15,000 ton. The lift of the platform was on 11000 ton.

**Quantitative data**

The statistical data are collected from a large survey funded by the Norwegian Petroleum Directorate. The survey involved offshore personnel and was carried out during a two-week period in December 2001. The questionnaire has been answered by 3310 respondents, which gives a response rate at 55%. The measurement instrument used in this study included background variables, subjective health complaints, working conditions and topics concerning safety culture. We have made a study of the scores of the employees in ABB OS compared with other companies operating on the Norwegian Continental Shelf.

Factor analysis was used to explore the structure of the statements and to develop concept validity. Statistics with factor analysis resulted in six factors consisting of 45 questions: 1) Lack of communication and awareness 2) Focus and engagement 3) Dangerous tendencies 4) Safety promoting behaviour 5) Information and 6) Competence. The factor solution in this study may give an important perspective of which dimensions a concept of safety culture consists of. The six factors measure topics related to such diverse subjects as attitudes, behaviour, perceptions of other and different layers in the organisations.

**Results**

Here we first refer the main statistical scores for ABB OS compared with other actors on the Norwegian Continental Shelf. Afterwards we summarize and discuss the main features we mean the HSE-culture in ABB OS consist of in a culture-description. In the culture-description we have made use of both quantitative and qualitative data. Most of the qualitative data has its foundation in the White Bear project.

**Statistical results**

The statistical results show that the company does not differ much from the rest of the respondents. None of the factors differ significantly from the other. In an index consisting of all the factors together, ABB OS have a lower score than the rest, but the difference is neither here significant. We therefore conclude that ABB OS seems to struggle with much of the same problems as other employees offshore. The most challenging results are referred beneath.

**Factor 1. Lack of communication and awareness** reflects the quality of the communication about risk at the workplace – both among employees and leaders. It also gives a picture of the awareness of risk and consists of 15 questions. A big share reports that they “Occasionally have to work in manners that jeopardizes safety” (42% agree/strongly agree), and that they “sometimes violate safety rules to get the job done” (37%). Many find it uncomfortable to call attention to violations of safety rules (37%), one third of the employees state that in their opinion “one can easily be perceived as an argumentative person when pointing out dangerous conditions”, and a similar share would rather not discuss HSE with their leader. And finally 31% state that in their view “the communication between me and my colleagues often fail in such a way that dangerous situations can occur”.

**3. Dangerous tendencies**

The factor focuses on behaviour and attitudes that in the long term can lead to accidents, and is composed of 6 questions. The statements are all negative. A lot of the respondents report that they “Sometimes work even though they are too tired” (45%), and more than every second respondent finds that “Lack of maintenance has resulted in reduced safety” (60%). They also seem to have little trust in the reporting
system related to incidents: More than one third of the employees believe that “Reports on accidents or dangerous situations are often ‘smartened up’” (34%).

5. Information
The fifth factor deals with the processing of information and the perception of the procedures and systems in the HSE-culture. The factor contains four statements. The results here are quite alarming generally, but especially for the employees in ABB OS. Only 70% report that they “always know which person within the organization to report to”. This can mean that the employees in ABB OS find their project-organizations more difficult to understand than other people do. This pattern becomes strengthened with the statement “I think it’s easy to find the right steering document (within requirements and procedures)”. 45% of the respondents disagree/strongly disagree with this. We also find that 44% of the respondents find that “Different procedures and routines on different installations can be a threat to safety”. The last statement corresponds with the general results from the rest of the Shelf.

One explanation to this might be related to the fact that the employees in ABB working offshore tend to move from installation to installation and work for different customers. Their nomadic life can contribute both to a better risk perception, but also make their (working) world more complex and difficult to follow.

Cultural description
The description of culture is divided into green and red areas. The green ones deal with the positive and constructive cultural features. The red ones represent challenging areas. But also the positive features have their disadvantages.

Flexibility
The employees seem to have a strong sense of belonging to the job and to the community of co-workers. Flexibility in job tasks, shift work and working on- or offshore are highly valuated by many of the employees. Most of them also experience the profile of the company as extremely flexible. Outwards the company appears as strong and adjustable, and they expect their employees to show a similar attitude internally. The problems occur when flexibility stands in the way of the individual needs of the employees, either these needs are related to the job or to private life.

That roles change in the course of a project is not considered a problem. But in some situations an employee might get involved in a conflict of loyalty. In some periods the employee is representing the customer, working as a contract worker in his/her own company. In such a position one might have to choose a “side”.

Flexibility is understood as an important cause of the success of the company and the great amount of projects they have going. However, the flexible attitude can lead to self-effacement and be a destructive force for the individual: sometimes employees push themselves too hard, or when time organising becomes an individual responsibility. People are concerned with adjusting to the company’s challenges and their demands to survive in the corporate market.

Energy – make all out efforts
In everyday life at work people are concerned with getting the job done. They don’t care much about health, environment and safety as important aspects in themselves, but HSE is made relevant in situations where it is needed. Energy, decisiveness and the ability to act and get things done are considered positive and strong aspects of the organisation, and the employees also see themselves as holding these features at the individual level. However, there is a risk that the ability and will to act become too strong, and jeopardize safety. The all-out efforts demonstrate this. There is also a risk that employees keep going till they drop. The ability and will to act lead to and contain complex conditions that also relate to expectations and structures outside the company, from ABB’s customers.

Integral
Many of the employees emphasized that the work environment and the community of co-workers were really good! This was coupled with an experience of being integrated in the working community. This integral force was also reported from their co-workers from other companies – both from customers and contractors.

Equality and justice
Equality is a value that is rated highly. This was a regard both internally in the company and was extended to include other companies – customers and contractors. (Different) people should be treated fairly and equally. The rules should be regarded as the same for everyone – also for leaders on all levels. Many stressed the importance of this – especially for the leaders. The leaders ought to stand out as good examples
and show – not just with words, but also in action - that they took HSE seriously. And here ABB OS and other companies on the Shelf are faced with a challenge. The statistical results show that only 75% of the employees think that their “supervisor is committed to working with HSE on the installation”.

**The company is concerned with HSE matters**

On the other side the statistical results and our impressions from interviews show that the employees think that the company takes HSE seriously. They also appreciate that the company has a vision of “zero accidents” – even if this can have some paradoxical consequences on the hiding and underreporting of incidents or accidents. The employees are personally concerned about how the company is understood outwardly. They want the company to keep a credible and serious reputation on HSE towards customers and the rest of the society. 89% of the respondents report that “The company I work for take HSE seriously”.

**The opportunity to influence the HSE-conditions at the work-place**

83% of the employees in ABB OS agree/strongly agree with the statement “I can influence the HSE-conditions at my work place”. This indicates a relatively strong positive experience of the employees’ opportunity to influence their working environment in this area.

**CHALLENGING AREAS**

**An operative grapevine telegraph**

One side of the culture that is disliked was connected to a sometimes too busy grapevine telegraph. Rumours are spread very fast through the organisation and it can be difficult to get rid of a personal stigma as inefficient or incompetent or vice versa.

**The nomadic existence**

The switching between work on- and offshore, working on different projects and with different customers are experienced as challenging in different ways: The handling of a huge amount of information and the lack of ability and time to perceive different internal systems, procedures, routines and rules. They also seem to find it more difficult to find whom to report to in the organisation.

**The relationship between basis- and the project-organisation - “the sidecar effect”**

The company has an HSE department that is separated from the parts of the organisation where the projects are accomplished. They therefore seem to work hard to make good and operative connection to the projects. The HSE work can sometimes get the function of a sidecar and be experienced as an appendage to the rest of the work. To make a tighter connection between these parts of the organisation could be of great use for the company. The main challenge is to integrate the HSE-thinking with the ongoing everyday working processes and projects.

**Dilemma**

The employees experience dilemmas in situation which is both characterized by risk and profits. For example when they have to choose between a concern towards production OR HSE. This same pattern we find for other actors on the Shelf.

**Decredible reporting systems**

The statistical results and the interviews both confirm our impression that a great number of the employees find that the reporting of accidents or injuries are not realistic or false. It should be understood as a quite alarming trend when 34% of the respondents believe that “reports on accidents or dangerous situations are often “smartened up”.

**I am safer than my colleague**

A general trend from the statistical results is that the respondents judge their own behaviour as safer than that of their colleague. This may be a human feature; you have a better understanding and insight of your own judgements and behaviour. The objective must be to build up trust in the organisation.
References