The psychology of bullying at work: Explaining the detrimental effects on victims

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Introduction
Exposure to bullying at work has been classified as a significant source of social stress at work (Zapf, 1999) and as a more crippling and devastating problem for employees than all other work-related stress put together (Wilson, 1991). Others have claimed work harassment to be a major cause of suicide (Leymann, 1992). Clinical observations have shown effects of exposure to workplace bullying such as social isolation and maladjustment, psychosomatic illnesses, depressions, compulsions, helplessness, anger, anxiety and despair (Leymann, 1990). Although single acts of aggression and harassment occur fairly often in everyday interaction at work, they seem to be associated with severe health problems in the target when occurring on a regular basis (Einarsen & Raknes, 1997). To be a victim of intentional and systematic psychological harm by another person, be it real or perceived, seems to produce severe emotional reactions such as fear, anxiety, helplessness, depression and shock (Janoff-Bulman, 1992). Victimisation due to workplace bullying appears to change employees’ perceptions of their work environment and life in general into one involving threat, danger, insecurity and self-questioning (Mikkelsen & Einarsen, 2002a). According to a number of studies (see Einarsen 2000; Einarsen & Mikkelsen 2003 for a review), this may lead to pervasive emotional, psychosomatic and psychiatric problems in victims. The aim of this paper is to present research conducted by the Bergen Bullying Group on the health effects of bullying, and secondly to propose two theoretical models that might help explain the observed relationships between exposure to bullying and victims’ health problems.

Consequences of workplace bullying
Several studies based on interviews with victims have stressed the serious negative impact bullying may have on both health and well being. Although negative effects of bullying and harassment at work may also be observed on an organisational level, most of our research on effects has been on the individual victims of workplace bullying, as will be summarised below. However, in our study among Norwegian union members, 27% claimed that harassment had influenced negatively on the productivity of their organisation (Einarsen, et al., 1994). In the study among 500 male industrial workers, a significant negative association was found between exposure to bullying and psychological health and well being (Einarsen & Raknes, 1997). Exposure to harassment explained 23% of the variance in self-reported psychological health and well being. The strongest relationship existed between experiences of personal derogation and psychological well being. In our study among Union members (Einarsen et al., 1996), significant relationships were found between experienced bullying and both psychological, psychosomatic and muscle-skeletal health complaints. The strongest correlation was found between bullying and psychological complaints where experienced bullying predicted 13% of the variation. A total of 6% of the variation in muscle-skeletal problems could be statistically predicted by the different measurements of exposure to bullying. These findings are very much in line with those of Zapf, Knorz & Kulla (1996) who found that mental health variables showed highly significant differences between harassed and non-harassed respondents. Zapf and associates (1995) also found that victimization in the form of personal attacks had especially strong correlation with mental health variables.

In view of the particular health symptom constellation found in many studies, it has been argued that many victims of long term bullying at work may in fact suffer from post-traumatic stress disorder (Björkqvist, et al., 1994). The diagnosis PTSD refers to a constellation of stress symptoms following a traumatic event, where the trauma first of all is relived through returning, insistent and painful memories of the event, recurring nightmares, or by intense psychological discomfort to reminders. Secondly, the patient avoids situations associated with the trauma, which may include memory problems of the actual event. Thirdly, the patient may lack the ability to react emotionally adequate, for instance by having reduced interests in activities that used to bring joy, by showing limited affect or by the feeling of having no future. Patients with PTSD are also hypersensitive, be it with sleeping problems, difficulties in concentration, by being highly tense and irritable and with bursts of fury, by having exaggerated reactions to unexpected stimuli or by reacting with physical symptoms to reminders of the actual traumatic situations. In a study among 102 victims of long term bullying at work recruited among members of two Norwegian national associations against bullying, Einarsen, Matthiesen & Mikkelsen (1999) discovered that 75% of victims portrayed stress symptoms indicating a post-traumatic stress disorder. Even 5 years after the bullying has ceased, as many as 65% reported symptoms indicating PTSD. A total of 76,5 percent scored above a level on the Hopkins Symptoms CheckList indicating psychiatric pathology as opposed to 21,4 percent for females and 12,4% for males in a control group. The level of post-traumatic symptoms were highly related to the intensity of the reported aggressive behaviors, and were especially salient if the aggressive behavior where perceived as being of a personally degrad-
The role of personality

A new study of personality and personality disorders among Norwegian victims of bullying at work using a comprehensive measure of personality called the MMPI-2 revealed some interesting insights into the issue of victim personality in relation to exposure to bullying and its traumatizing effects (Matthiesen & Einarsen, 2001). A total of 85 individuals who had been exposed to bullying at work, recruited among members of two Norwegian associations of bullying victims, participated in the study. The study demonstrated that victims of bullying at work portrayed a personality profile indicating a tendency to emotional and psychological disturbance on a wide range of personality factors. A so-called 3-2-1 profile on the MMPI-2 was found, indicating a personality with serious psychosomatic problems resulting from stress and anxiety and a tendency to convert psychological stress into physical symptoms. Persons with this configuration employ defense reactions such as displacement and denial on a large scale, and may have problems with more finely graded psychological explanatory mechanisms to their problems (see Matthiesen & Einarsen, 2001 for more information).

However, the study showed that victims of bullying were not a homogeneous group. One group of victims portrayed a profile indicating an extreme range of severe psychological problems and personality disturbances. This group, called the “seriously affected” reported a range of emotional and psychological problems although they reported a relatively low exposure to specific bullying behaviors, a result indicating that personality is of importance in determining how bullying is experienced and how it is reacted to. These victims appeared to be depressive, anxious, suspicious, uncertain of themselves, and troubled by confused thoughts.

The second group, called the “disappointed and depressed” portrayed a tendency towards becoming depressed and being suspicious of the outside world. It is not surprising that a person may become extremely skeptical and suspicious of other people after having been subjected to sustained bullying. The third group, called the “common group”, portrayed a quite normal personality, in spite of having experienced the largest number of specific bullying behaviors. Such results may indicate that a specific vulnerability/hardiness factor may exist among some both not all victims of bullying at work. Persons who are already suffer from psychological problems are probably more likely to suffer long-term psychological and physical problems in the wake of bullying and serious personal conflicts. Persons with psychological problems, low self-confidence and a high degree of anxiety in social situations may also be more likely than others to feel bullied and harassed, and they may find it more difficult to defend themselves if they are exposed to the aggression of other people. However, a caution must be put forward. There is every reason to believe that it is the “seriously affected” group that is most likely to contact health personnel such as psychologists and psychiatrists, as well as adopt judicial means of obtaining restitution. Hence, based on these results we must warn both psychologist and psychiatrist and other professionals to generalize observations of the personality of victims of bullying purely on the basis of clinical experience.

Explaining a PTSD reaction: a cognitive framework

Intuitively, it may seem strange that people develop symptoms of PTSD when exposed to interpersonal aggression that is typically indirect, rather subtle and often verbal in nature. However, it may not be the external event itself that causes the trauma, but rather the potential effect this event may have on the inner world of the target. According to Janoff-Bulman (1989; 1992) events are traumatic to the extent that they threaten to shatter our most basic cognitive schemas. These core schemas involve fundamental beliefs that the world is benevolent and meaningful, and that we, as individuals, are worthy, decent and capable human beings deserving other people's affection and support (Janoff-Bulman, 1989). Providing us with expectations concerning ourselves, other people and the world in which we live, these basic schemas or assumptions enable us to operate effectively in our daily lives. Moreover, being fundamentally positive, the assumptions endow us with a sense of invulnerability central to human existence.

When exposed to highly distressing events, suddenly and painfully victims become conscious of the fragility of those basic assumptions on which their lives are founded (Janoff-Bulman & Friese, 1983). In so far as we need stability in our conceptual system (Epstein, 1985), such abrupt changes in core schemas are deeply threatening and may result in an intense psychological crisis (Janoff-Bulman, 1992). The conceptual incongruity between the trauma-related information and prior schemas leads to cognitive disintegration (Epstein, 1985; Janoff-Bulman, 1989), which in turn gives rise to stress responses requiring reappraisal and revision of the basic schemas. Hence, victims must rebuild new and more viable core schemas, which account for the experience of being victimised (Janoff-Bulman & Schwartzberg, 1990). However, some victims have difficulty doing so. Instead of resolving the cognitive-emotional crisis forced upon them by the traumatic event they remain in a chronic state of cognitive confusion and anxiety that is characteristic of PTSD.

This hypothesis was tested empirically by Mikkelsen and Einarsen (2002a) in a group of 118 Danish victims of bullying and a matched non-bullied control group. The results yielded significant group differences on six out of eight basic assumptions. Victims of bullying considered themselves to be less worthy, less capable and unluckier than did the control group. In addition, they perceived the world as less benevolent, other people as less supportive and caring, and the world as less controllable and just. The difference between victims and non-victims were particularly noticeable on the latter assumption.
At least one possible explanation may be forwarded as to why the victims portray these assumptions about the world: Many victims consider themselves as competent and resourceful employees (Zapf, 1999a). If victims have had a successful professional career prior to exposure to bullying, then they may with good reason fail to comprehend why they of all people have become targets of repeated allegations of being stupid, useless or ineffective. However, it may also be the case that the victims who participated in our study (Mikkelsen & Einarsen, 2002a) tended to have negative views of themselves and the world prior to their victimisation. Indeed, such negative views characterise individuals high in negative affectivity (Watson & Clark, 1984). Although individuals high in negative affectivity are prone to experiencing and reporting high levels of stress (Watson & Clark, 1984) the question remains as to whether this personality taint alone can account for the severity of victims' symptoms. If victims' schemas were negative in the first place, exposure to bullying would come as no shock but rather confirm the validity of their schemas. Based on our own personal experience of working with victims of bullying, we have come to believe that some victims may have had unrealistically positive, in some cases even naive assumptions prior to their victimisation. In a similar manner, Brodsky (1976) claims that some victims appear to have an unrealistic view of their own abilities and resources and of the demands of their work situation and their tasks. Hence, for these victims exposure to bullying may be extremely traumatic. In case they are unable to rebuild or adjust the assumptions that have previously provided them with a basic feeling of invulnerability, victims of bullying may remain in a constant state of anxiety. In the long run this may then lead to a breakdown in a range of basic physiological processes.

A socio-biological perspective

Although the term bullying appears to connote open and direct aggressive behaviours, many victims of bullying are also subjected to covert behaviours. For instance, many victims report that they are "treated like air" or that they suffer the "silent treatment". Indeed, the systematic exclusion and rejection from social groups, i.e. social ostracism (Williams, 1997), appears to be a common feature of bullying. Exposure to social ostracism signals that the target is in danger of being excluded from an important group, in this case the work group. From an evolutionary perspective there is probably a very basic fear in all human beings of being excluded from and receiving the attention of important significant others. Indeed, as a social and tribal primate, the survival of human beings depends on them being integrated in a well-functioning social group. Accordingly, from an existential point of view, social exclusion may be perceived as life threatening. At the very least, it symbolises to the target what death is. Indeed, many victims describe exposure to bullying as "psychological drowning" (Einarsen, Matthiesen & Mikkelsen, 1999).

Therefore, it is no wonder that exposure to social ostracism is associated with extreme anxiety and a breakdown in basic physiological process. According to biologists and physiologists, exposure to ostracism leads to a general physiological deregulation by interfering with the immune system and brain functions relating to aggression and depression (Williams, 1997). The ambiguous nature of ostracism combined with its potential extreme consequence results in a situation where even vague perceptions of being ostracised may have strong effects on the targets. According to Williams (1997), perceptions of being excluded or rejected from a relationships threaten four basic social needs:

1) It deprives people of a sense of belonging to others.
2) It threaten victims' self esteem by indicating that they are unworthy of love and affection
3) It deprives the target's need to control interactions with others and its desired outcomes
4) Consequently, exposure to ostracism threatens peoples' need for a meaning; reminding them about their fragile and temporary existence.

Thus, social ostracism may be experienced as a kind of social death (Williams, 1997). In a short term perspective, and depending on which need threatened as well as individual differences in the salience of different needs, a breach in the fulfilling of these four basic needs causes pain, anxiety and worry. In the long run, the frustration of these needs may lead to extreme anxiety, depression and even psychotic reactions. Hence, this theoretical framework might account for the desperate, erratic and sometimes highly aggressive behaviours displayed by victims of indirect and subtle forms of bullying (Einarsen et al., 1994). Interviews with victims typically show how social ostracism gradually reduces the victim's ability to cope with the demands of daily living. This may again lead to a situation where the victim displays more and more atypical and abnormal behaviours. Such behaviours may in turn reinforce other people's negative attitude towards the victim leading to further victimisation. Consequently, the victim's self-esteem and self-confidence may suffer considerably. Combined with the anxiety caused by the ostracism, this might result in him or her developing severe psychological and psychosomatic problems.

Conclusion

Previous research clearly indicates that there is a relationship between exposure to bullying and symptoms of lowered well-being and psychological and somatic health problems on the other. Furthermore, victims themselves are generally convinced that their health problems are linked to their exposure to bullying. Hence, a causal link between exposure to bullying and strain reactions appears plausible, this despite a scarcity of methodological sound
bullying can be. Victimisation at work may not only ruin employees' mental health, but also their career, social status and thus their way of living. In order to advance our knowledge in this important field of inquiry, future research should generally be more theory driven than has been the case until now. In this chapter we have suggested that two such perspectives to account for the observed effects of bullying on health and well-being. The findings and theoretical explanations presented in this paper clearly have important consequences for the treatment and rehabilitation of victims of bullying. In our experience psychologists and medical doctors incorrectly diagnose many victims, providing diagnosis such as paranoia, manic depression, or character disturbance and hence treat them accordingly. Victims tend to perceive such treatment as maltreatment and secondary victimisation, which further contributes to their suffering.

References


The Workplace as a Setting for Health Promotion in EU Public Health Policy

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Health Strategy

The new health strategy of the Community starts with the legitimate needs and expectations of our citizens. I quote "People attach great priority to their health. They expect to be protected against illness and disease. They demand that their food is safe and wholesome, and that the products and services on the market meet high safety standards. They want to bring up their children in a healthy environment and they expect their workplace to be safe and hygienic."

This is our common starting point, from which we all work to achieve a coherent and effective approach to health issues, across all the different Community policy areas. At the centre of the new health strategy is a new framework for public health, which includes a large number of clear objectives and various policy instruments.

The key initiative is the Community Action Programme on Public Health. On this programme a compromise of the European Parliament and the Council has been reached during the conciliation procedure three weeks ago. The total budget for the six years programme amounts to 312 million EURO. The implementation of the new public health programme will commence on the first of January next year. As you may know this programme focusses on three priorities:

1. A comprehensive health information system will be set up which will provide us with the key health data;
2. In order to improve our capability to respond to new threats to public health respective structures and systems will be established;
3. The EU will continue with the development, dissemination and implementation of effective health promotion and disease prevention measures.

The policy development in public health will be supplemented by a new mechanism, the European Health Forum, which will be developed as a platform for dialogue for the public health community at large. Finally, the Commission is working on mainstreaming health in other Community policies.

This so far has been a brief summary of the key elements of the new health strategy of the Union.

Work

What role does the world of work play in this context, and how can the promotion of workplace health contribute to reaching the strategic public health targets?

Work is a fundamental part of our life and has a significant impact on health and the quality of life. The health of our populations, our communities and families, is based on both the quality of working and non working life. The relationships between work and private life are very complex. However, we are well aware of, for example, the health-damaging impacts of unemployment or long working hours on health and social life in our communities.

The Lisbon European Council has noted that Europe is going through a transition to a "knowledge-based economy" which is accompanied by deep changes affecting our economies and societies.

The health of our populations is determined by a host of factors, including everybody’s genetic make up, social and economic conditions and personal behaviour. Public health focuses on the underlying causes of ill health. Therefore, the world of work should be seen as a key arena for public health which is deeply connected with all other arenas of human life.

The new health strategy intends to develop responses to current health trends and challenges for public health. A number of serious public health problems have to be addressed. These include among others:

1. high levels of premature death from diseases related to lifestyle (cardio-vascular diseases and cancer);
2. substantial levels of morbidity and disability from mental illness, musculo-skeletal disorders;
3. new risks to health;
4. the resurgence of major infectious diseases (like tuberculosis);
5. wide variations and inequalities in health status.

With regard to these health problems, work "hosts" a wide range of factors that either damage or promote health. Scientific evidence strongly confirms what we all experience in daily life: the way how work is organised, and the level of mutual social support between colleagues influence our personal health practices, and thus determine our own health.
The world of work also bears enormous challenges for our health systems. As you all know, the costs of health systems are a major charge on national budgets, and increasing health care costs are an important problem for public budgets and public policies.

A recent study in Germany revealed national data on the costs of work-related diseases. According to these data presented by the Federal Institute of Occupational Safety and Health, work-related diseases accounted for 28.4 Bil. EUR in 1998. Among the three most important factors, the study identified heavy loads, span of control and the level of psychological demands. This confirms the growing importance of mental health and stress, which rightly have been identified as key issues in the new health strategy.

**Stress and Work Life Balance**

Research has shown the complex interactions between work organisation, job design, stress and a number of health consequences, particularly impacts on cardio-vascular diseases and musculo-skeletal disorders.

The phenomenon of stress today shows how strongly stress at work and stress at home are related to each other. Too long working hours, for example, negatively affect family life, with unhealthy consequences for our children and their lifestyles, which in turn contributes to bigger health problems at a later stage within the life cycle.

Today we speak about work life balance, which includes several issues, the conciliation of working and non-working life, the career perspectives of women, the opportunities for individual engagement in voluntary activities, and working without limits. Work life balance has become a metaphor for changing values in our society: social values are becoming more important to the younger generation, life has to be meaningful and work is only one element. Business and human resources have to respond to the changing values and expectations of a new generation of managers.

From a public health perspective, a healthy balance between working and non-working life is of crucial importance for health and well-being of the European citizens.

**Workplace Health Promotion**

How can public health make use of the workplace arena, in order to improve the health of the general population?

Generally speaking, there are a number of public health means, preventive measures such as vaccination and screening, health education and information campaigns and finally health promotion, which involves empowering people and communities to make healthy choices to improve their health.

Health promotion principles have been applied to the workplace setting with considerable success. Public and private enterprises can be seen as small communities which can significantly contribute to empowering their employees, and thus help to create a healthy work life balance, which in turn is a fundamental base for healthy families, cities and communities.

Please let me briefly describe the approach the European Commission has taken in order to improve workplace health from a European perspective.

In the context of the previous Public Health Action Programme a number of health promotion networks have been supported. One is the European Network for Workplace Health Promotion, which was established in 1995 and subsequently supported by the Commission. The mission of this network is to develop and promote good workplace health practice in Europe. The vision is defined as “healthy employees in healthy organisations”.

The European network for workplace health promotion comprises organisations such as national occupational health and safety institutes, public health institutions and Ministries of Health and Labour from all Member States of the European Community, the countries in the European Economic Area and a number of candidate countries.

The network has organized 3 Europe-wide initiatives, focussing on larger enterprises, SMEs and now public administrations. For all these 3 economic sectors models of good practice have been identified all over Europe and disseminated. In addition, workplace health policies and strategies for implementation have been developed.

The first step was the development of the Luxembourg Declaration in 1997 which for the first time ever defined workplace health promotion from a European perspective and created a common understanding between the different European regions and across different disciplines. The main definition by the way was introduced by the representative of the Danish Institute for Occupational Safety and Health.

The key issues as you see here are

- the stakeholder approach (combined efforts of all stakeholders)
- comprehensiveness (lifestyle + work organisation + participation).

SMEs, which make up to more than 90% of companies in the EU, need a different approach. This was laid down in the Lisbon Statement on Workplace Health in SMEs. This conference now concludes the current initiative focussing on public administrations.

The fourth initiative of this network, which will also be supported by the Commission, will now concentrate on improving the interface between the European and the national level, by developing informal infrastructures for workplace health promotion. These infrastructures may be established as open national fora for workplace health, with a view to initiating a national dialogue on how workplace health can be used as an arena for public health.
In addition, the network will develop a European WHP tool box, which is very much needed especially in countries which do not have a longer tradition in WHP. Another priority will be to analyse the economic impacts of investments in workplace health. This issue is now being discussed under the heading of the "business case".

The new public health programme will, as I already mentioned, commence at the beginning of next year and it will continue with those strategies which have demonstrated success under the previous programme. However, a more coherent approach is needed, which is able to respond to the new challenges, some of which I mentioned above.

The new programme will address health determinants. The main priority health problems include cancer, cardio-vascular diseases and mental illness, which can only be successfully addressed by combining lifestyle approaches with action regarding major socio-economic and environmental factors. The mechanisms to help improve the effectiveness of health interventions include the provision of information, the support of innovative projects, the development of guidelines of good practice and the comparison and analysis of policies.

Mainstreaming Health

Mainstreaming health in other policies has been established as a priority field for DG Sanco. In this context the new Community strategy on health and safety at work "Adapting to change in work and society" developed by DG Employment can be seen as a major step forward. This new strategy adopts a global approach to well-being at work and seeks to develop a culture of risk prevention and to build partnerships between all the health and safety players.

We are all well aware of the political difficulties and obstacles to establishing dialogue and even partnership between different policy sectors, which in many cases sometimes seem to have forgotten to talk to each other. In this sense, both strategies have complementary qualities, and may open up a platform for inter-disciplinary approaches both at European and national level. Public health, as well as health and safety at work, can only win in co-operation.

An excellent example for this belief is the sector of small and medium sized enterprises, which covers the majority of workers all over the world and in the European Union too. It is quite obvious that the traditional inspection policies of health and safety were not able, due to simple logistic constraints, to transport the health message into this highly fragmented economic sector.

The solution is networking and building partnerships with so-called intermediary organisations, who are part of the milieu of smaller businesses. Public health institutions are often well placed to be part of these intermediary networks. On the other hand, improvements in public health depend on successfully integrating health into the business agenda of SMEs given the size of this sector.

Investing in Promoting Workplace Health

In my presentation I tried to identify the reasons why public health should invest in promoting workplace health.

In the private sector, one speaks about "a good business case" if an investment can demonstrate to contribute to the bottom line, contributes to improving productivity, sales figures, return on investment and so on. In general terms, a business case refers to the relationship between investment and its contribution to realizing the core targets of a specific setting. This is independent of the nature of the investment and of the type of target and setting. Therefore we can speak about various business cases.

My argument here is that there is a good business case for public health to invest in workplace health. The core target of public health, from a European Union perspective, is a high level of health protection for our populations. This can be achieved by investing in a range of measures which help to influence the underlying factors of ill health, the health determinants.

Workplace health promotion is one avenue, among several others, which should be used to reach those determinants which can be influenced in the setting of work which as such encompasses a wide range of specific settings. Each setting varying according to size and economic sector has again a specific business case for investing in workplace health. Public administrations are governed by public defined targets which are different from economic targets of a private sector enterprise.

Among the core targets of public health is the cost issue which I touched on earlier. If work-related diseases are among the critical factors for health costs, as shown by a national study in Germany then public health should have good arguments to try to influence this part of the cost development. According to the results of this study we know where measures should start in order to generate a substantial impact: ergonomics, work organisation and job design. Workplace health promotion which focuses on integrating health into the agenda of engineers, plant managers, change specialists, human resource managers has the best chance of reducing costs for public health.

In another sense this is a concrete example of mainstreaming health in other policies or disciplines. Individual health practices (diet, stress, alcohol, exercise etc.) can only be influenced by creating environments which provide incentives for healthy changes and the right decisions.

Innovation and Health

Finally, I would like to draw your attention to a new and very important business case argument for promoting workplace health from a European Union economy perspective. The Union has defined a new strategic goal for the next decade: to become the most competitive and dynamic knowledge-based economy in the world. Innovation is the key for economic development in the European Union.
Innovation is the renewal and enlargement of the range of products and services and the associated markets; the establishment of new methods of production, supply and distribution; the introduction of changes in management, work organizations, and the working conditions and skills of the workforce.

The recent results of the first EU innovation scoreboard showed a clear innovation deficit of the economies of the Member States relative to our main competitors Japan and the US. Especially, the SME sector plays a crucial role with regards to the innovation performance of national economies. Workplace health impacts on the quality of human resources and significantly contributes to developing an environment for innovation. We need more and better jobs based on strong social cohesion.

Promoting workplace health, in the broad sense which I have outlined in my presentation, is one of the hidden success factors for modernisation and economic development.

Conclusions

Finally, I would like to come to some conclusions:

1. The available evidence is sufficient to guide our action. We know that lifestyle factors can be influenced, and we have striking evidence base for interventions in the area of participatory work organisation and job design.
2. Our European values and traditions clearly indicate that health is not only an individual issue. We are embedded into social contexts, our well-being is shaped by working and living conditions. Therefore: promoting workplace health is about more than advice to quit smoking.
3. Workplace health practices can only be effective if they are based on good practice criteria (see the good practice criteria of the ENWHP).
4. Our economies and European competitiveness will be entirely dependent on our ability and capacity to initiate innovation in all areas and sectors of our society. And we clearly know: there is no innovation without health.
Preventing Work-related Psychosocial Risks: European Perspectives

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Introduction
Almost a third of the entire working population in the European Union is affected by work-related psychosocial risks, statistically often expressed as “work-related stress”. This is a staggering statistic.
In general stress is anything but beneficial – it is an insidious, disruptive and detrimental phenomenon, the cause of growing concern among the scientific and working community. Work is not the only cause of stress in our lives. But research shows that there are clear linkages and, as we are spending an increasing amount of our waking lives at work, it indicates that work plays a key part in our total stress.

The prevalence of work-related stress within the EU - Europe's second biggest occupational health problem
Available European figures show the scale of the problem:

- In the EU work-related stress is the second most common occupational health problem, after back pain, affecting 28% of employees in 2000 [1] or 41.2 million people - more than the entire population of Spain or the combined populations of Portugal, the Netherlands and Belgium.
- Anyone can be affected. Stress can occur in all organisations and sectors and at all levels.
- On average, higher proportions of women reported experiencing stress than men, according to a Eurostat analysis of 10 EU countries. [2]

Studies have shown that work-related stress is due to a mismatch between employees and their working conditions, job content and how the organisation is structured. Although it can be triggered by a wide range of factors, common causes include:

Lack of control [3]: This has repeatedly been associated with stress and with anxiety, depression, apathy and increased incidence of cardiovascular symptoms. More crucially, lack of control remains a major issue for many workers.

35% say they have no control over the order of their tasks
29% have no influence over working methods
30% have no control over speed
39% cannot determine when they have a break
55% have no say on their working hours.

Monotony: 40% of staff, on average, complain of monotonous work, with elementary workers and machine operators reporting the highest levels (57% each). In addition, 57% have to make repetitive hand and arm movements and 32% perform repetitive tasks for up to 10 minutes each time.

Tight deadlines: Almost two-thirds of workers (60%) contend with tight deadlines 25% of the time, while 29% face 'the wire' either all the time or most of it. Overall, 40% said deadlines led to unhealthy levels of stress most of the time.

Working at high speed: 56% of staff claim to work at high speed for at least a quarter of their time and 24% said this was a regular occurrence. In 40% of cases this led to problematic levels of stress.

Exposure to violence, bullying and other forms of harrassment: This is a growing concern in Europe. According to one study, 3 million employees in the EU (2% of the workforce) claim to have been subjected to sexual harassment, 6 million (4%) to physical violence and 12 million (9%) to intimidation or bullying. Violence - and the threat of violence - is becoming a major issue for employees in the frontline of public service, such as medical and transport staff.

Hazardous physical working conditions: Noise is one of the commonest stress-inducing complaints although there are many others, especially in the manufacturing sector. Biological, radioactive and chemical risks are just a few.
We have experienced and proved by research that some groups are more at risk and more vulnerable than others: younger workers, for example, older workers, women workers and those coming from an ethnic minority, immigrant group or who have a disability. Work-related stress is not confined to these groups, but certainly occurs with greater frequency.

We now know that different types of intervention can have a real effect, that the European Agency for Safety and Health at Work decided to dedicate its European Week 2002 to the whole area of work-related stress and psychosocial risk. In short, prevention is possible. In addition, we know a lot more about the consequences of work-related stress both for the people concerned, the companies, and the European economy – and these research findings are enough to set the alarm bells ringing.

Work-related stress is now the second biggest occupational health problem, after back pain, affecting nearly one in three employees in the EU and contributing to over half of all staff absenteeism. It has been linked to cardiovascular diseases, musculo-skeletal disorders, gastro-intestinal diseases, not to mention a plethora of mental health disorders ranging from low self-esteem and anxiety to full-blown depressive disorders and suicide. And if that is not enough, the crutches increasingly used when the situation gets intolerable – such as tobacco, alcohol and fatty foods – have all been associated with cancer.

But it is not just the employees who are paying the costs through ill-health. Studies estimate that work-related stress is costing business and governments in the EU an estimated €20 billion in absenteeism and related health costs. Add in the price of lower productivity, higher staff turnover and a reduced ability to innovate – just three of the unwanted commercial spinoffs – and the real figure is probably significantly higher. Studies suggest that 50%-60% of all lost working days in the EU are related to stress [4] In the UK alone it has been calculated that 5 million days are wasted through stress (1998, Jones et al). Research has revealed equally high levels in other parts of the world. In the USA, for example, it is estimated that 54% of absenteeism is stress-related and that 11 million employees suffer from health-threatening degrees of stress. Uncorroborated reports suggest that an organisation or department with over 40% of staff suffering from stress is commercially unhealthy.

Stress at Work – A European Challenge

At the present time, there is no legislation aimed specifically at work-related stress, either at an EU or national level. Nevertheless, both EU directives and national regulations clearly do apply to this problem.

Relevant EU legislation includes:

*Framework Directive (89/391/EEC): employers have a “duty to ensure the safety and health of workers in every aspect related to the work”.*

*Framework Directives 90/270/EEC and 92/85/EEC: Both of these, which apply to the minimum safety and health requirements for screen workers and pregnant employees respectively, make specific references to the need to consider mental stress.*

In addition, the European Commission’s *Guidance on Risk Assessment at Work* states the need to review “psychological, social and physical factors which might contribute to stress at work, how they interact together and with other factors in the work organisation and environment”.

The European Agency for Health and Safety at Work was set up by the European Union to help meet the information needs in the field of occupational safety and health.

The Agency-run European Week, which this year has as its slogan ‘Working on Stress’, has been taken place during October 2002. It has been primarily an information campaign designed to raise awareness and promote activities around the topic of stress.

The activities are run in the Member States and the Agency coordinates these activities, provides research findings and promotional material, ensures the dissemination of information and good practice via its website and networks and nudges Member States to action through the provision of some funding. To encourage involvement, the Agency runs a Good Practice Award competition and the winners have been announced at a major European Week Closing Event in Bilbao in November.

The activities during European Week are quite weird and wonderful in their diversity: all sorts of organisations can take part and it is this diversity that is the strong point of the European Week.

The Week is aimed at the workplace and all safety and health institutions and organisations, trade unions, companies, managers, employees and safety representatives are invited to take part and organise their own activities. In particular,
we hope it will attract the interest of small and medium enterprises. This decentralised European campaign allows for greater visibility at national level – it lets us get our message across to the grassroots, so to speak, and we push for a partnership approach in the organisation of these activities so that the greatest possible involvement of all parties is achieved.

For the European Agency the first important step in the fight against stress must be to enable companies to detect a problem if it exists and we cannot emphasise enough the importance of risk assessment.

To this end, we are delighted to announce that many of the European Week activities this year involved special audits and risk assessment activities in the workplace, organised training to help people recognise the signs, distributed information material and encouraged participation of employees and their representatives in this crucial phase.

Other activities during the week have helped us to recognise the nature and gravity of particular situations, and taught us how, for example, simple organisational changes can have a significant impact on workers’ stress levels. For example, providing workers with clear job descriptions, allowing them adequate time to perform the job, rewarding workers and providing complaint channels, to name but a few. European Week can really stimulate debate and exchange on possible interventions by providing a raft of expert knowledge to those who really need it, whether through the literature, the seminars, the websites or the press conferences.

One thing is for certain: preventive measures work, interventions work, support measures work. We can categorically show that this is true from case studies, examples and experiences shared during European Week.

Take for example the case of the health care workers in a Dutch nursing home who came under mounting pressure stemming from an increasing number of patients needing intensive care, coupled with financial cut-bucks. An assessment was carried out – with the full involvement of the nurses – which included making a full inventory of their tasks, identifying the standards required, pinpointing the obstacles preventing the staff from achieving those standards, suggesting solutions and measuring the efficacy of those solutions.

Essentially, key operational changes were introduced with better-defined roles: primary nurses were given direct responsibility for a certain number of patients each, and middle management was rerouted from the care process to refocus on staff training.

It is interesting that the nurses’ workloads and the associated pressures did not really alter – but staff felt in control of these pressures. Overall, there were reports of higher job satisfaction and there was evidence to show that the nurses were pro-actively analysing and solving work problems themselves.

European Week has been also used as a launching pad by some countries for “Good Neighbour” schemes. This is where larger organisations are encouraged to share their expertise in managing safety and health with their contractors, suppliers, neighbouring organisations and the wider community. The development of these networks can be facilitated and supported by the national administrations and of course, like many European Week events, their existence and effects far out-last the short duration of the Week itself.

Other activities during this year’s European Week to show you the myriad of possibilities:

Finland: TV advertising campaign to highlight the dangers of stress;

UK: trade unions organising a National Inspection Day encouraging debate and involvement on the shop floor;

Spain: development of a guide for stress evaluation and over a period of two months, specific days have been dedicated to particular themes such as burnout, stress or psychosocial risk.

Belgium: there is an interesting attempt to “put their own house in order”, by organising a series of training sessions for the staff in the Ministry of Labour and Employment itself. There is nothing like the power of good example!

Ideas for the Week have been pouring in: the installation of Stress Hotlines, for example, where interested or vulnerable people can phone confidentially and receive expert advice. Some companies have organised Open Days promoting health and safety themes. All over Europe, magazines and publications have been running features on stress. Trade Unions have organised seminars with their members on the topic. Exhibitions have been mounted to highlight the hazards of stress.

Speaking of competitions, it is important to mention the Agency-sponsored Good Practice Awards. The winners have been announced at the special Closing Event of European Week in November.
The Agency evaluation criteria are quite exacting – entrants must show evidence of real improvements, sustainability across time, good consultation between management and the workforce, compliance with relevant legislation preferably going beyond minimum requirements and the possibility of transferring the project to other workplaces and even other Member States.

This is quite a challenge and we are really astonished at the number of entries we have received – it is very encouraging indeed to see the number of innovative activities that can be stimulated by the European Week and its Good Practice Awards scheme. The entrants came from a very broad spectrum of sectors, involving workers and management of all types and levels imaginable.

We can learn a lot from all these activities and the European Agency for Health and Safety at Work is there to ensure that all that valuable information on European Week activities and good practice is disseminated to as wide an audience as possible across Europe.

The European Agency has produced an entire set of promotional material in all Community languages (posters, leaflets, postcards, factsheets) and a press pack rich in useful information for the practitioner and newcomer alike. We have set up a multilingual website providing easy access to this and other background information about the Week, with regular updates on what is going on at European level and also describing the activities on a country-by-country basis (http://osha.eu.int/ew2002).

The website is also an impressive resource on all types of information and research on stress and psychosocial risk, with easy-to-access factsheets on workplace bullying and violence at work, for example. You can download research reports, access valuable links and examine details of good practice all free of charge. All the information centralised here will continue to be available to the public long after European Week is over, serving as an invaluable source of reference material for everyone.

The Closing Event of European Week also has served as an awareness-raising publicity event run jointly by the Agency and the Danish Presidency of the EU. It brought together the major OSH experts in stress in 3 workshops, a colloquium and round table, with political decision-makers, employers and workers all contributing to the debate. The day was rounded off with the prize-giving ceremony to the deserving winners of the Good Practice Awards. The conclusions on how to improve the impact of psychosocial risks at work in the future, commonly agreed by the Danish Presidency, the Commission and the European Agency, have been presented during this Event. They will be available and made public via the Agency’s publications and Website end of 2003.

This year, as well as national, EU and EFTA representatives, the Agency was very pleased to welcome participants from the candidate countries to the Closing Event. This is one of the first steps in an exciting programme of collaboration to include the candidate countries in the future activities of the European Week in particular, and the Agency in general.

Conclusions

The experiences in all Member States and at European level have shown that there is an urgent need to transfer research into good practice at enterprise level. That is why we are so insistent on fostering a partnership approach at national, European and international level including researchers, policy makers, enterprises, social partners, practitioners etc. The European campaign, “Working on Stress”, and all European Week activities has not only enabled us to achieve economies of scale but it has allowed us to draw on and disseminate examples of good practice for combating work-related stress across the EU and beyond.

References

[3] All figures in this article are based on data from the European Foundation's Third European Survey on Working Conditions (2001), unless otherwise stated.
An empirical test of the impact of a relational approach to the psychosocial work environment on the degree of organisational commitment among blue-collar workers

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Introduction
Our view of a healthy psychosocial work environment is most simply described by referring to what we believe to be its core, namely social relations. These are constantly prone to dilution by the many structural and substantial changes that working life continuously undergoes and it is likely that a wide range of work-related attitudes and behaviours are affected. Organisational commitment is an important work attitude and it is possible that with lower quality social relations at work, much of the basis for the development of organisational commitment no longer exists.

The psychosocial work environment
'Psychosocial' is believed to consist of both exogenous factors, which are organisational norms guiding workers’ behaviour, leadership and worker solidarity, and endogenous factors, such as organisational identification, mediated by social cognition. A satisfactory psychosocial work environment is assumed to have a positive effect on workers’ health and their degree of commitment to work, either directly through its exogenous factors or indirectly through identification and self-categorization. This relational view may be seen in contrast to more “psychological” definitions of the psychosocial work environment, such as Karasek’s (1990) model of demand, control and social support

Organisational commitment
Organisational commitment can be defined as belief in the organisation’s goals and values, willingness to exert effort on behalf of the organisation and a desire to maintain membership of the organisation (Mowday, Porter & Steers, 1982). Evidence has suggested that there are at least two valid types of organisational commitment, affective commitment and continuance commitment, which embrace the definition proposed above (Cohen 1996; Allen & Meyer, 1993). Organisational commitment as a basic work attitude (e.g. Morrow, 1993), however, has been discussed and measured mainly as an independent feature within the individual worker and not as a product of social factors.

This study has two main objectives: to construct and test the validity of a relational definition of the psychosocial work environment, and to measure the connection between the psychosocial work environment, including norms, leadership and worker solidarity, and workers’ degree of organisational commitment.

Figure 1. Empirical model of the relationship between the psychosocial work environment and organisational commitment. PSWE = psychosocial work environment.

Method
Data, sampling procedure and organisations
The study is based on a survey undertaken in the food and beverage industry in Norway, initiated by the Norwegian Labour Inspection (NLI) in order to map the different kinds of work environment in this industry. A questionnaire was developed by researchers stationed at SINTEF Technological Management, the Norwegian University of Science and Technology, and Cornell University, and distributed during August/September 2000 by local representatives of the NLI. The inspectors went through a two-day course in schema handling and methods of sampling. The construction of the questionnaire was based upon already existing validated questionnaires and models, as well as the development of new items. The assessment of the psychosocial dimension was expanded beyond standard demand-control-support items. 110 small and large organisations were selected from the Norwegian Labour Inspection's register of organisations and occupations; the goal was to obtain a sample of 50 to 60 organisations. Three categories were chosen: under 10
employees, 10 to 50 employees and over 50 employees. The local NLI was asked to interview half of the organisations in each category. If some of these did not meet one or more of the requirements, the representatives were free to compensate with other organisations in the same district and of the same size. All organisations received an informational letter about the project in order to motivate participation. 56 organisations completed the questionnaire, with a few larger and a few smaller organisations than planned. The participating organisations were selected to be representative of the food and beverage industry in Norway. The mean number of employees responding in each organisation was 28, with a range of 1 to 250.

Participants
Participants in the study were workers who responded to the questionnaire in the 56 organisations. Participation was voluntary and anonymous. The total number of respondents was 1343, representing a 58% response rate overall. Response rates in individual organisations varied between 12-100%. The meat industry is dominant among respondents, representing 46% of the sample. There were 578 (43%) female and 765 (57%) male respondents. Most workers were between 30 and 49 years old. The majority of the sample had completed further education; approximately 30% had completed secondary school, 60% further education, while around 10% had a university degree. The average length of employment was 10.7 years, ranging from 1-49 years. 30% of respondents had been employed for 2-8 years.

Measures
The variables included in this study are assumed to cover the social dimension of the psychosocial work environment and were chosen on the basis of already validated scales as well as factor analysis. In addition to social norms (α = .75, N = 1189) (Saksvik, Hammer, Nytrø & Torvatn, 2001), perceived quality of leadership (α = .90, N = 1218) (Saksvik et al., 2001) and worker solidarity (α = .84, N = 1269) (Saksvik et al., 2001) are included. Two items representative of Karasek’s (1990) definition of social relations in the workplace, labelled social support, were included for the purpose of comparison. Organisational commitment is based on items from Allen & Meyer’s (1990) Affective, Continuance and Normative Commitment Scales (α = .75, N = 1272). Demographic variables included are gender, age, level of education and length of employment in years.

Data analysis
The items in the respective scales, besides being grounded in theory, underwent factor analysis and reliability checks. Bivariate correlations were used to reveal potential relationships between all dependent and independent variables. Correlations between social norms, leadership and worker solidarity are expected as all three indices are theoretically assumed to be dimensions of the psychosocial work environment. A linear block regression analysis was carried out to find the amount of explained variance in organisational commitment accounted for by the three psychosocial variables. Standard statistical tests in the SPSS program (version 10.0) were used for all analyses.

Results

Correlations
Considerable significant positive correlations were found between all five independent variables: social norms and leadership showed a correlation of r = .54, social norms and worker solidarity correlated r = .50 and the correlation between leadership and worker solidarity was r = .45. The two items representing social support correlated r = .32, and also correlated considerably with social norms, leadership and worker solidarity, as they are likely to be engendered by these three independent variables. This suggests that there may be a problem with multicollinearity (Hamilton, 1992). The lowest tolerance was .55 however, indicating no problem with multicollinearity; the variables could therefore be used independently in the regression analysis. The standard error will be slightly higher (15%) than if the independent variables had not been correlated but the consequences of this are modest; the estimates and t-tests are still consistent and with the correct sign (Skog, 1998). Organisational commitment correlated positively with the independent variables as expected and also with age (r = .27) and length of employment (r = .22). There was a significant correlation of r = .61 between age and length of employment, and modest negative correlations between age and education level (r = -.21) and education level and length of employment (r = -.18).

Regression
The regression was based upon the three separate psychosocial variables (norms, leadership and worker solidarity) and the two social support items of Karasek (1990), together with the demographic variables. As presumed on the basis of existing literature, all three psychosocial variables independently contributed significantly at the 0.001 level to the explanation of organisational commitment. The two social support items, when introduced in block 2, added 6 % to the total explained variance in organisational commitment. However, they were not found to be significant in the final regression model, implying that they do not provide any additional information to the explanation of the variance in the dependent variable. Curiously, despite the relatively high correlation (r = .32) between social support and help from co-workers and worker solidarity, the β-coefficient of social support is negative while the coefficient for worker solidarity is positive. A regression model where the two social support items were removed showed that the explained variance in organisational commitment remained the same; R² = .30. The demographic variables accounted for 8 % of the variation in organisational commitment with R² adj. = .08. Norms (β = .25) had the highest explanatory value and contributed to a change in R² adj. equivalent to 13 %. Leadership (β = .17) added 2 % to the explanation of organisational commitment
with a change in R² adj. = .02. Finally, worker solidarity (β = .14) increases the model's explanatory value by 1%; R² adj. = .01. All changes in R² adj. were significant at the 0.001 level, and thus support the objectives discussed above. The model as a whole receives modest support (R² adj. = .30, p > 0.001, N = 1229).

Among the demographic variables, only educational level does not influence workers' degree of organisational commitment. All relations between organisational commitment and the independent variables are positive, which means that the greater the degree of satisfactory social norms, leadership and worker solidarity, as well as increased age and longer length of employment, the greater is the degree of organisational commitment experienced by the workers. When it comes to gender (a dummy coded demographic variable, male having the value 0), the significantly negative β-coefficient indicates that females (value = 1) generally feel a lower degree of organisational commitment than do men.

Table 1. Regression model of the demographic variables and the independent variables norms, leadership and worker solidarity according to organisational commitment (N = 1014). (Method: blockwise enter)

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Organisational commitment</th>
<th>Collinearity</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>b-coefficient</td>
<td>β</td>
</tr>
<tr>
<td>Constant</td>
<td>3.16</td>
<td>.24</td>
</tr>
<tr>
<td>Age</td>
<td>.08</td>
<td>.16</td>
</tr>
<tr>
<td>Gender</td>
<td>-.69</td>
<td>-.06</td>
</tr>
<tr>
<td>Education</td>
<td>-.32</td>
<td>-.04</td>
</tr>
<tr>
<td>Len. of emp.</td>
<td>.09</td>
<td>.13</td>
</tr>
<tr>
<td>Block 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Support - C</td>
<td>-.46</td>
<td>-.04</td>
</tr>
<tr>
<td>Support - L</td>
<td>.50</td>
<td>.04</td>
</tr>
<tr>
<td>Block 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norms</td>
<td>.20</td>
<td>.25</td>
</tr>
<tr>
<td>Block 3</td>
<td></td>
<td></td>
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<tr>
<td>Leadership</td>
<td>.13</td>
<td>.17</td>
</tr>
<tr>
<td>Block 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W. solidarity</td>
<td>.15</td>
<td>.14</td>
</tr>
<tr>
<td>Block 5</td>
<td></td>
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<tr>
<td>Sum R² adj. block 1-5</td>
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</tbody>
</table>

Support-C = social support from co-workers, Support-L = social support from leaders, W. Solidarity = worker solidarity, Len. of emp. = Length of employment.

F = 57.32, p < 0.001
*p < 0.05. ** p < 0.001.

Discussion

A satisfying psychosocial work environment may function as a buffer against a range of potential work-related risks by providing social norms as attitudinal and behavioural guidelines, a leadership represented by communication and support, and worker solidarity. Through socialization, newcomers will eventually adapt and identify themselves with organisational goals and values and potentially develop organisational commitment.

Figure 1. Model of the relationship between a relational perspective on the psychosocial work environment and the indirect and direct generation of organisational commitment through socialization into the organisation. OID = organisational identification, OC = organisational commitment.

An issue is whether it is still realistic to use the concept of organisational commitment; the individualization trend adds pressure to the disruption of social relations and contributes to the impression that egoism and selfishness are crucial
factors for workers' continued survival in the organisation. Self-esteem is no longer drawn from membership of an organisation and the adaptation to organisational goals and values but rather from personal success.

Being part of a work group automatically triggers the construction of an intersubjective working reality however. Social identity theory (Tajfel, 1978) postulates that merely by being part of a defined group, individuals will draw a shared identity from this group membership. It is therefore sensible to propose, in line with Becker (1992) and Reichers (1985), that social identification will take the form of work group identification and further develop to group commitment as a perhaps healthier alternative to organisational commitment. This is also supported by other researchers (e.g. Van Knippenberg & Van Schie, 2000; Oyserman & Packer, 1996; Moreland & Levine, 1991). People have a need both for belonging and affiliation, which will be satisfied through motivated social cognition and will be reciprocated not in the perception of an abstract organisation but among other members of the work group. Through socialization into the work group it will become the primary focus of commitment.

Conclusion

The psychosocial work environment when postulated as social relations is estimated to be a plausible definition of the psychosocial work environment and is shown to explain 30% of the variance in organisational commitment.

References


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Basic Factors of Life Satisfaction: Health, Family Life and Money

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Abstract
Life satisfaction is an often researched topic in psychological literature. The investigation of life satisfaction shares three common characteristics. First, it is viewed as a result of an overall evaluation of one’s own life. Second, the measurement does not shed light into the basic factors underlying life satisfaction. Third, the measures of life satisfaction are self-reported scales and the obtained correlations between predictors and life satisfaction are often low.

The present study aimed at examining the basic factors of life satisfaction using a quasi-projective method. The study proposed that health, family life and money, in this order of importance, were the basic factors underlying life satisfaction. It was hypothesized that, given choices, the respondents would choose health first, family life second and money third, on the premise that health was the most important factor in a person’s life and work. To circumvent the self-evaluation and self-report method, the study used a third-party evaluation in a quasi-projective procedure. A brief personal history of an organizational employee was developed. There were eight versions of the story; each version described one of the $2 \times 2 \times 2$ life situations. Each version described the person as either enjoying good health or suffering from viral hepatitis, earning a low or high salary, and his/her secondary school-age children being well-behaved or addicted to drugs. Each of the eight life-situation versions was distributed to 100 respondents (50 male and 50 female) who were then asked to indicate if they would be satisfied, neutral to or not satisfied with the life as depicted in their particular version. Thus, a total of 800 respondents took part in the study. It was hypothesized that they would be most satisfied with the life with all three positive situations and least satisfied with the life with all three negative situations. For choices in between, it was hypothesized that they would be satisfied with life with good health first and then with a good family life second.

Chi-square was used to analyze the data. The results showed that the eight sub-groups of 100 respondents each were homogeneous in terms of gender, age, marital status and monthly income, but different in their indication of life satisfaction. The three highest and one lowest life satisfaction scores of the sub-groups were then examined. The proposed hypotheses were supported: 76 respondents in the high salary, good health, and good family life version indicated that they would be satisfied with life while only 7 respondents in the low income, poor health, and troubled family life version did so. For the choices in between, it was interesting to note that 33 respondents in the high salary, suffering from viral hepatitis and good family version indicated that they would be satisfied with life, indicating their preference for money over good health. Also, 16 respondents indicated that they would be satisfied with low salary, good health and good family life. The overall results demonstrated the importance of money; the respondents seemed to regard money as a tradeoff for poor health, and to view good health and good family life as a consolation for low salary.

Life satisfaction scores were then subjected to log-linear modeling. The selected model indicated that life satisfaction was a result of an interaction between family life and health, and family life and salary.

References
Mental health care in the workplace – the need for an integrated approach

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Introduction
Mental health care in the workplace is provided by occupational health, clinical, and counselling psychologists from different theoretical models; systemic, cognitive behavioural, and psychodynamic - each attempting to understand and treat employee’s problems from their own particular perspective. It will be argued that there is a need for a more integrated approach for effective mental health care in the workplace. An integrated approach also needs collaboration between those who take individual, group, organisational and socio-economic perspectives, since “stressors” that cause mental health problems can occur in any one, but often in a combination of these areas.

The term mental health care is used interchangeably with stress in this discussion because there is evidence to suggest that when employees report symptoms of stress, and attend stress management services for help (e.g. Employee Assistance Programmes (EAPs)) a significant proportion (up to 86%) are found to be experiencing serious mental health problems (Arthur, 2001b, 2002). Providing individual clinical type services or stress management programmes in isolation individualises the problem and, unless feedback mechanisms are in place, which they rarely are, often misses important information about stress inducing work practices. Additionally there is some suggestion that operating on their own and in isolation, stress management techniques do not produce the organisational benefits so often claimed (Arthur, 2000) because they are superficial, and fail to recognise that particular kinds of environments react with particular character traits to produce stress (Lazarus, 1995). Carroll (1996) points out that there is a continuum of views explaining workplace problems from those who advocate “taking more responsibility for changing social systems rather than work solely with individuals” to others who “give little credence to the impact of the organisation on counselling and consider the counselling relationship as an insulated alliance where people are empowered to work with and within the systems to which they belong” (p.65).

Likewise a strictly organisational or group approach may only locate stressors that are external to the individual, and miss recognising, understanding, and treating their mental health needs. For example, in the UK the focus of the National Health Service is now on patients with severe and enduring mentally illness, and people with mild to moderate psychological problems (anxiety and depression) are turning to their employers for assistance through EAPs (Arthur, 2001a; Carroll, 1996, p.3). For these individuals it is unlikely that the main causes of their problems is the workplace, but stress at work may have triggered them. A recent survey of employees attending EAP counsellors found only 30% thought their problem was work related (Arthur, 2002).

What is needed, therefore, is an integrated psychological approach that assesses the individual, their immediate work group, and the organisation in a holistic way to identify, manage and treat the causes of stress/mental health problems. There are few examples showing professionals working from this integrated approach. This is probably because psychologists have a tendency to see stress problems as either arising from the individual, the group or the organisation, depending on their particular orientation, and organisations often invite solutions to employees’ mental health problems from the individual care model. There are many accounts of effective individual interventions through workplace counselling to relieve stress (Berridge, Cooper, & Highley-Marchington, 1997), but much less with groups (Obholzer & Roberts, 1999) and organisations (Cooper, Dewe, & O'Driscoll, 2001). Indeed a recent review of organisational interventions for stress management concludes that only a small number of studies have been published and “Overall, it would appear that there has been little systematic use of organizational interventions (especially at the primary level) that might bring about significant reductions in psychological strain among employees” (Cooper et al., 2001, p.196-197). The authors suggest the reason for this is that stress management training and EAPs are viewed as less costly but more importantly “serve to keep management from accepting greater responsibility for excessive strain experienced by their employees” (p.197). This should not be confused with the many examples of organisational strategies that prevent stress and improve workplace productivity by changing the workplace through primary prevention “aimed at eliminating, reducing, or altering stressors in the working situation” (Kompier & Cooper, 1999a, p.1). There is an important distinction to be made between these types of interventions; usually provided by occupational/organisational psychologists which aim to reduce the presence of stressors at work before they have occurred (Kompier & Cooper, 1999b), and those that aim to reduce the effects of stress after it has happened and are usually provided by occupational health, clinical, and counselling psychologists. This split has resulted in considerable and disproportionate activity to reduce the effects of stress through so-called stress management training programmes (Ibid).

The Integrative Approach
An integrative approach to mental health problems and stress in the workplace would first attempt to reduce workplace stressors by working with the organisation and its work groups, before providing clinical treatment for
individuals. It would achieve this by resisting organisational demands to produce only individually focussed solutions to stress, and work across the organisation with clinical as well as occupational psychologists to design interventions that could achieve a more holistic response. There are well known strategies for reducing stress through improved work organisation and design (Netterstom, 1999; Theorell & Wahlstedt, 1999), measures which detect potential hot spots at work (Occupational Stress Indicator) (Cooper, Sloan, & Williams, 1988), and the use of feedback from clinical counselling services to identify stressful areas within organisations. The latter can be difficult to access and utilise because of employee confidentiality and, it must be noted, most counselling services only see between 4% and 8% of employees and this can drop to 1% to 2% (Berridge et al., 1997). These individuals experience personal mental health problems as previously discussed, and may not be a representative sample. Nevertheless, as problematic as any one of these three sources is on its own, it is more likely an accurate picture of stress in an organisation will emerge if all three sources of data are employed together. But how would this work in practice? It requires cooperation between clinical and occupational professionals to forgo their own favoured approach and collaborate on a multi-modal, multi-theoretical approach across three levels (organisation, work group, individual), in a coordinated manner, with good systems of communication and feedback to the organisation. This is no easy achievement and highlights one of the main obstacles to an integrated approach – it’s not necessarily the attitudes of organisations but the clinical/occupational professionals who provide the services.

Furthermore, an integrated approach means developing a better understanding of how unconscious factors affect organisations and work groups (Obholzer & Roberts, 1999), and cause them to work defensively to avoid anxiety and distress (Lyth, 1988). Hitherto occupational and organisational consultants have been reluctant to employ psychodynamic models because in the past these approaches have, on their own, not necessarily impacted at the organisational level. Nowadays an important distinction is made between working only to increase people’s awareness of unconscious group processes and providing the necessary conditions for this to be translated into structural change. Not taking account of the organisation’s unconscious needs can lead to depression, frustration and character assassination, likewise simply working at structural organisational change can lead to failure and a “two dimensional blueprint” (Mosse, 1999). It is recognised that consultants working with the unconscious level of organisations must give due regard to the conscious real world tasks of the organisation as well, and not pathologise “the behaviour and functioning of the institution and its individual members” (p7). Although a team better performs this it is possible to employ these principles as an individual consultant, as this author has demonstrated in working with organisations that provide support to individuals with intellectual disabilities (Arthur, 1999).

It more likely that an integrated approach will produce effective interventions to help individuals experiencing mental health and stress problems in the workplace because most potential psychological stress factors can be identified and, especially important, the unconscious factors that are often ignored and responsible for the failure of interventions can be dealt with. Piecemeal interventions that only treat one or some aspect of the problem will not be as effective.

The social economic framework

There is another crucial element for a truly integrated response to stress – the social economic framework that individuals and organisations exist in. Even though it may be difficult to see how to deal with issues at this level, nevertheless, there is a professional responsibility to feedback to organisations, society and government the results of findings about stress in the workplace. Not just to suggest ways to improve it but to help fashion the debate about the very nature of work. Indeed the point is made that psychological researchers in this area share a responsibility to communicate findings into action “Even more important to the community of researchers working in the area of work stress is whether the moral responsibility we have to those whose working lives we research is being fulfilled if we fail in what is our primary responsibility, to understand and explore the differences that exist between our research findings and not just how they inform practice but how that practice can be disseminated” (Dewe, 2002).

It is important to point out, for example, the possible psychological consequences of major changes in the workplace; short term contracts, virtual organisations, the home work life balance and families, loss of job security, downsizing, delaying, outsourcing etc. It must be pointed out that the world of work has changed and that society has to ask itself “Can human beings cope with permanent job insecurity, without the safety of organizational structures, which in the past provided training development and career?” (Cooper et al., 2001, p.xiii). More research is needed to determine the extent of “psychological strain” caused by these developments (p.240), and whether there are very real human psychological limits to what can be expected of people in the workplace. In other words instead of occupational psychologists, and others, just attempting to develop humans according to the new requirements of the workplace, making a more useful contribution by highlighting the emotional costs to workers, their families, and society.

These emotional costs are important. A major UK survey of 2,466 employees’ attitudes (including the self-employed) originally conducted in 1992 and repeated again in 2000 finds overall a significant reduction in work satisfaction in every facet of their jobs, especially because of longer hours, but despite the rhetoric about having a more flexible workforce – a good deal more stability in the workplace is reported (Taylor, 2002). This important report challenges many of the myths about the modern day UK workplace. For example, evidence from the survey “does not sustain the view that we are witnessing the emergence of a ‘new’ kind of employment relations” or “find evidence of any
widespread ‘psychological’ contract’, and “challenges the widely held view that Britain has a truly flexible workforce” (p.7). The report recommends that if employees are going to cooperate in a positive and flexible way with the new demands made on them, they are going to need greater control over their work and develop partnerships between capital, labour, workforce and management. A report describing the future of Britain in 2010 from social science research predicts employees will feel more insecure, experience greater uncertainties, and perceive society as high risk and often threatening (Scase, 1999). If this develops as predicted then those involved in occupational health psychology and who wish to develop a more integrated view of the causes of stress and mental health problems in the workplace should be commenting on the psychological consequences for individuals, groups, and organisations of these threats.

The final step toward integration is seldom discussed amongst occupational health psychologists; the spiritual dimension of people’s working lives. Some psychologists may question whether this is a legitimate area for their involvement but it was psychologist Abraham Maslow who identified a pyramid shaped hierarchy of needs with self-actualisation and its spiritual aspect at the pinnacle (Maslow, 1968). The Henley Centre prepared a report for the Salvation Army in the UK to analyse current social trends, anticipate future concerns, predict important changes likely to occur in the future and examine the spiritual consequences of changing work patterns (Henley, 1999). In addition to examining the major and deleterious effects on people’s working lives of stress and future work practices it reported that “people are beginning to question whether economic growth engenders equivalent progress in terms of morality and values” (p.39) and “in spite of increasing levels of stress and pressures on their time, people continue to be aware of a spiritual vacuum and seek to fill it” (p.52). Maslow’s hierarchy suggests that the fulfillment of more basic needs can lead to the capacity for a greater spiritual awareness but, as the report suggests, “those living under the auspices of the UK economy should reflect its bright, positive, secure outlook. As we will see in the next three sections [of the report] the evidence indicates otherwise” (p.9). The report suggests occupational health psychologists (and others) in their search for better ways to tackle stress and mental health problems in the workplace need to be aware and communicate publicly the effect of unrealistic organisational and economic demands on human coping and psychological functions, instead of being primarily concerned with the treatment or management of its distressing effects. These complex relationships with Maslow’s hierarchy of needs at the centre are diagrammed below in figure one.

![Figure 1. Diagram of the complex stress relationship with Maslow’s hierarchy of needs](image_url)
Single case study

The consulting room provides many examples of how individuals are affected by the complex issues discussed here. Mrs Adams came to her employer’s EAP counselling service with symptoms of anxiety and depression of unknown origin. She was not sleeping or concentrating well, worried constantly, appetite was gone, and her relationships with others had suffered. Assessment revealed that distressing events in her childhood had left her vulnerable and insecure. Despite this she had coped well until recently when organisational pressures on her senior manager caused him to bully her and her colleagues. Instead of dealing with the problem properly the work group retreated into dysfunctional behaviour. They became irritable, uncooperative and had rivalries with each other, reduced real communication to a minimum, and indulged in harmful gossip and paranoid type discussion. For Mrs Adams this resembled the unconscious dynamics of her own dysfunctional childhood family. She further identified that social and economic pressures to achieve a higher standard of living than really necessary were affecting her; as a result her and her husband had little time with each other and their children. Even though materially well off the ‘paradox of prosperity’ was pressure and distress. Mrs Adams felt no purpose to her life or work any more, felt life was devoid of meaning or value, and experienced suicidal thoughts. It was possible to help her understand the factors leading to this distress, and she was able to change her work and re-evaluate her needs. However, the work group became increasingly dysfunctional as the manager continued to pass down his frustration at not being able to meet unrealistic organisational goals. The work group could not cope and people left. The organisation attempted to deal with its poor morale through frequent and unnecessary reorganisations, and changes of senior staff. Mrs Adams eventually left to find less lucrative but more satisfying work. The case illustrates how the failure to address work group, organisational, and, to some extent, social value issues impacted on a vulnerable employee who regressed to feeling like the frightened child in the dysfunctional family she once was.

Conclusion

Stress and mental health problems became more evident with the changing developments in work, employment, and society during the 1980s, suggesting a causative relationship. Occupational health professionals can only provide a useful response to the distress these changes may have caused with an integrated response. Strategies that operate piecemeal will, at best, provide a limited and short-term effect. There is a need to inform society, organisations and governments about the psychological effects of the ‘paradox of prosperity’, and a need to help them move away from individual solutions to stress and mental health problems in the workplace.

References


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Organisational Climate in Air Traffic Control

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Introduction

The Swedish Air Navigation Services (ANS) are going through major changes. The increasing number of aircraft in the sky calls for more effective ways of handling air traffic. The changing conditions create new demands, not only on technology and methods used but also on organisational structures and individual employees. The challenge is to meet these new conditions in ways that do not affect safety standards. The Swedish air traffic control centres (ATCCs) in Malmö and Stockholm are adapting to the situation in two major ways. A new team-based organisation has recently been introduced and a new air traffic control (ATC) system will soon be installed.

The new conditions will affect each member of the organisation in some way. The changes will be noticed in different ways in different parts of the organisation. It might have consequences for organisational climate as well as for team climate and leadership. These aspects will in turn most certainly affect safety culture and the psychosocial working environment.

To study these aspects, a joint project has been started between the Swedish Civil Aviation Administration and Lund University. The aim of the project is to find out how the new team-based organisation and the introduction of the new ATC system will affect safety culture (Ek et al, 2002) and the psychosocial working environment by changes in organisational climate, team climate and leadership. Safety culture is studied by a questionnaire developed by the research team (Ek & Akselsson, 2002), the psychosocial working environment by the Copenhagen Psychosocial Questionnaire (COPSOQ; Kristensen & Borg), the organisational climate by GEFA (Ekvall, 1986), the team climate by the Team Climate Inventory (TCI; Anderson & West, 1994) and the leadership by the Leadership Effectiveness and Adaptability Description (LEAD), an instrument based upon situational leadership theory (Hersey & Blanchard, 1988) and designed to measure primary leadership style and the range of behaviours participants tend to act upon.

Three studies will be conducted in total, involving the two air traffic control centres (ATCCs) in Malmö and Stockholm as well as the ANS headquarters in Norrköping. The first study will be completed about a year before the introduction of the new ATC system. The second study will be conducted directly after the introduction of the new system at around the same time of year as the first study, and the third study approximately six months later. This design gives the opportunity to compare situations before and after the introduction of the system. All five instruments will be used in all three studies.

Data collection from the first study has recently been completed. Some preliminary findings from this study concerning the organisational climate will be presented in this paper. The focus will be directed towards the two ATCCs in Malmö and Stockholm and all results presented here are collected with the GEFA questionnaire.

The question at issue is if and how the organisational climate differs between the two air traffic control centres with respect to the different prevailing operating conditions. 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 kilometres (28 miles) from the main Danish airport, Kastrup in Copenhagen. It has the characteristics of an en route centre. About 20% of the ATC work is connected to air traffic arriving and leaving the two largest airports in the area, Malmö-Sturup and Göteborg-Landvetter. The remaining 80% of the flights are mainly 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 75% of the work is connected to air traffic arriving and departing from the main Scandinavian airport Arlanda and from the Bromma airport. Giving a simplified picture of the work at ATCC Stockholm, it can be characterised as an arrival and departure centre. This means that the air traffic controllers have to be rather active, working within fairly small sectors and with aircraft flying at low altitude. The two ATCCs also differ in the work progress concerning the introduction of the new team-based organisation. The ATCC Stockholm has progressed a little further in this process because of an earlier start. Besides studying differences between the two ATCCs, the study also aims at investigating if there are any differences in the organisational climate between the operative and the administrative personnel and if co-workers and their managers differ in their assessment of the organisational climate.

Ekvall et al. (1983) define the organisational climate as a conglomerate of the attitudes, feelings and behaviours which characterise life in an organisation. This definition of organisational climate is just one of many definitions in the literature. Even if there are some disagreements of the exact meaning of the term, most authors seem
to assume that organisational climate is rather stable over time with respect to attitudes and that it affects people’s behaviour. Organisational climate is important because it seems to affect different organisational and psychological processes. Communication, problem solving, decision-making, learning and motivation can all be affected by the organisational climate. This in turn might affect the effectiveness and productivity of the organisation as well as the working environment and well-being in the work place (Ekvall, 1985). It may also affect safety standards.

**Method**

**Participants**

The study was conducted at two Swedish air traffic control centers; ATCC Malmö and ATCC Stockholm. The GEFA questionnaire was distributed to all 446 employees at the two workplaces. 271 completed questionnaires were returned. Of these 141 were filled out by employees at ATCC Malmö and 130 by employees at ATCC Stockholm. Altogether, 35 respondents dropped out for reasons such as maternity/paternity leave, annual leave etc. This resulted in a final response rate of 69% for ATCC Malmö and 63% for ATCC Stockholm. At ATCC Malmö, 74 respondents were male and 67 female, while at ATCC Stockholm, 63 were male and 67 female. Further population data are presented in table 1.

**Table 1. Age, length of service and position of the respondents at ATCC Malmö and ATCC Stockholm.**

<table>
<thead>
<tr>
<th>Age</th>
<th>21-30 years</th>
<th>31-40 years</th>
<th>41-50 years</th>
<th>&gt; 50 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malmö/Stockholm</td>
<td>29/41</td>
<td>54/48</td>
<td>29/25</td>
<td>29/16</td>
</tr>
<tr>
<td>Length of service</td>
<td>0-24 months</td>
<td>2-5 years</td>
<td>6-10 years</td>
<td>&gt; 10 years</td>
</tr>
<tr>
<td>Malmö/Stockholm</td>
<td>3/2</td>
<td>29/29</td>
<td>17/23</td>
<td>92/76</td>
</tr>
<tr>
<td>Position</td>
<td>Manager</td>
<td>Non-manager</td>
<td>Operative</td>
<td>Administrative</td>
</tr>
<tr>
<td>Malmö/Stockholm</td>
<td>38/23</td>
<td>103/107</td>
<td>125/118</td>
<td>16/12</td>
</tr>
</tbody>
</table>

**Measures**

The GEFA questionnaire was used to study the organisational climate (Ekvall, 1986). It consists of 50 statements with a four-point response scale: do not agree at all (0), agree to some extent (1), agree to a greater extent (2) or fully agree (3). Based on factor analysis the 50 statements are grouped in ten different climate dimensions with five statements in each dimension. Brief descriptions of these dimensions are as follows (Ekvall, 1986):

- **Challenge:** Employees’ involvement in and commitment to the organisation.
- **Freedom:** Extent to which employees are allowed to act independently in the organisation.
- **Support for ideas:** Overall attitude towards new ideas.
- **Trust:** Emotional security and trust in the relations within the organisation.
- **Liveliness:** Dynamics within the organisation.
- **Playfulness/Humour:** Easiness that exists in the organisation.
- **Debate:** Extent to which different views, ideas and experiences exist in the organisation.
- **Conflicts:** Presence of personal and emotional tensions.
- **Risk taking:** Willingness to tolerate insecurity in the organisation.
- **Idea-time:** Time devoted to development of new ideas.

The GEFA questionnaire serves as a measurement of the organisational climate as a whole, not only as a measurement of individual perceptions of it. The smaller the variance in the distribution of answers, the better the measurement is. In order to get reliable measurements a representative sample and a high response rate is required (Ekvall, 1986).

**Procedure**

The questionnaires were delivered to ATCC Malmö in person and to ATCC Stockholm by mail. Each questionnaire was then distributed to the staff by the internal post system. Before the questionnaires were delivered several meetings were conducted, mainly with managers and team leaders but also with union representatives. Employees were informed about the study by posters and circulars at the two ATCCs. The questionnaire was filled out anonymously and participants were asked to answer and return the questionnaires within three weeks. After that reminders were sent out by e-mail to employees until an acceptable response rate was achieved.

The questionnaire data were analyzed by 2x2x2 factorial ANOVA.
Results
For two of the ten GEFA dimensions, “Challenge” and “Liveliness”, no statistically significant effects were noted. For the other eight dimensions simple main effects will be presented if interaction effects were significant. Otherwise significant main effects will be reported.

ATCC Stockholm vs ATCC Malmö

Main effects:
Significant main effects were found between the two ATCCs in four of the GEFA dimensions. At ATCC Stockholm, characterised by a large number of landings and take offs, “Trust”, “Playfulness/Humour” and “Conflicts” were rated more positively than at the en route ATCC Malmö, independent of the air traffic controllers' work and position. However, “Idea time” was evaluated more positively at the en route centre compared to the arrival and departure centre.

Interaction effects:
The only significant interaction effect noted was for the GEFA dimension “Risk taking”. On this dimension, the non-management administrative personnel at the arrival and departure centre scored significantly higher compared with the en route centre. The non-management operative personnel at the en route centre, on the other hand, scored significantly higher than their counterparts at the arrival and departure centre on this dimension.

Administrative vs operative staff

Main effects:
A significant main effect was found for the GEFA dimension “Debate”, indicating that the administrative personnel experience the organisational climate as characterised by more different views, ideas and experiences than the operative personnel, independent of work and position.

Interaction effects:
The administrative personnel at the arrival and departure centre scored significantly higher than the operative personnel in the two GEFA dimensions “Freedom” and “Support for Ideas”. Also the non-management administrative personnel at the arrival and departure centre scored significantly higher on the GEFA dimension “Risk taking” compared with the non-management operative personnel at the same ATCC.

Management vs non-management

Main effects:
No main effects were found for the management variable.

Interaction effects:
On the GEFA dimension “Support for Ideas”, the management personnel at the en route centre differed significantly from the non-management personnel. At the arrival and departure centre, the administrative non-management personnel scored significantly higher on the GEFA dimension “Risk taking” than the administrative management personnel at the same ATCC.

The overall mean scores for each dimension at the two ATCCs were also compared with available reference data from ten innovative and five stagnating organisations. These comparisons indicate the overall climate to be somewhat average for the two ATCCs. With the exception of a somewhat more extreme score in the dimension of “Debate”; all scores at the en route centre are placed somewhere in between the reference scores. At the arrival and departure centre, only the two dimensions of “Trust” and “Conflicts” show somewhat more extreme scores than the reference material.

Discussion
The aim of this study was to investigate if and how two ATCCs, working under different conditions, differed with respect to organisational climate. Differences in organisational climate between operative and administrative personnel were also examined, as were differences between non-managers and managers. In summary, the results showed that the arrival and departure centre differed from the en route centre on four of the ten GEFA dimensions in terms of significant main effects and showed significant interaction effects on one dimension. Concerning the task variable (administrative versus operative personnel) a significant main effect was found on one GEFA dimension and significant interaction effects on three GEFA dimensions, whereas only significant interaction effects were noted for the position variable (non-managers versus managers) on two GEFA dimensions.

Two patterns can be seen in the findings. The first pattern refers to differences between the two ATCCs. On three out of four organisational climate dimensions with statistically significant main effects, the arrival and departure centre scored higher than the en route centre. One of these dimensions is “Trust” indicating that the emotional security
and trust in the relations within the organisation are more favourably rated at the arrival and departure centre than at the en route centre. The second dimension more favourably rated at the arrival and departure centre is “Playfulness/Humour” indicating a more joking and playful organisational climate than at the en route centre. Different scores in the “Conflict” dimension also indicate that personal and emotional tensions are less common at the arrival and departure centre. The significant interaction effects on the dimension “Risk taking” also suggest a favourable organisational culture connected to air traffic control of planes arriving and departing, as high scores on this GEFA dimension are more related to risk taking concerning new ideas and initiative rather than the conventional meaning of hazardous risk taking. However, the significant main effect on the dimension “idea time” in favour of the en route centre indicates that the character of the ATCC might positively affect the ATC work in different ways.

It is hard to identify the causes explaining the differences between the two ATCCs. Even if the most noticeable difference between the two ATCCs is the work situation, other reasons for the differences in organisational climate can be found. The new team-based organisation has evolved a little further at the arrival and departure centre than at the en route centre. It seems likely that this might have affected the organisational climate. If we assume that the implementation of a team-based organisation has been successful, it seems reasonable to assume that this has had a positive effect on such things as trust, humour and conflicts.

The second pattern concerns the administrative personnel. One significant main effect was found in the dimension “Debate” in favour of this group. The administrative personnel experienced the organisational climate to be more characterised by different views, ideas and experiences than the operative personnel, independent of work and position. Significant interaction effects in favour of administrative personnel were also found on the three dimensions “Freedom”, “Support for ideas” and “Risk taking”. It should be noted that all these interaction effects occurred at the arrival and departure centre. For the operative group, on the other hand, no statistically significant main or interaction effects were found on any dimension.

Differences between these two groups can be expected as the work tasks are different. However, it is interesting to note that the differences are found mainly at the arrival and departure centre. Once again it should be emphasized that this could be due to organisational issues, but other causes cannot be excluded.

The results indicate that differences in the experience of organisational climate between managers and non-managers are fairly small as no statistically significant main effects were found, but some interaction effects were noted. On the GEFA dimension “Support for ideas”, the managers at the en route centre scored significantly higher than the non-managers. The second interaction effect, found on the dimension “Risk taking”, is in a way the opposite. Here the non-managers scored higher than the managers in the administrative group at the arrival and departure centre. These results may indicate that the two ATCCs have succeeded in creating less hierarchical organisations. One of the reasons behind the introduction of the team-based organisation was to increase well-being and to give employees greater influence by flattening the organisation. It cannot be clearly established that this is the case, as the present study does not indicate what the situation was like before the new team-based organisation was introduced.

As the GEFA instrument serves as a measurement of the organisational climate as a whole, it might be argued that the categorization and comparison of different groups within the organisation that have been presented is inappropriate. However, when an organisation consists of different groups as is the case in this study, it must be considered more inappropriate not to compare different groups than to compare them. The course of action in this study has shown that the different groups compared do in fact differ from each other in some organisational climate dimensions. The results indicate that organisational climate is experienced in different ways by different groups, in particular at the arrival and departure ATCC. Nevertheless, further analyses are needed if the conclusions drawn from these preliminary findings are to be generalized to ATCCs in general.

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Cognitive problems in knowledge intensive work

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Introduction

The world may be changing at an ever-faster pace, but we tend to relate to new phenomena within a previously established framework. Modernization involves increased differentiation in systems of social stratification creating a culture in which stressors increasingly are expressed in intra-psychic processes, where events and circumstances that are perceived as threats to self-identity become an important source of stress (Dressler, 1985). Arentz (1996) has argued that prior stress research based on low- and medium-skill jobs is not well suited to the task of understanding the jobs of high-skilled knowledge intensive professionals. In such jobs mental demands are often a source of strain, as well as social interactions at work and low perceived organizational efficiency (Arentz, 1997).

These changes are a challenge to OHP. Some of these challenges arise from the increasing number of jobs that can be termed as knowledge intensive, such as many jobs in the computer industry.

Clients with knowledge intensive and cognitively demanding jobs

Because of our interest in this relative new field for OHP we recently entered into collaboration with the Union of Computer Professionals (PROSA). Union officials contacted us because of an increasing problem with member experiencing severe psychological problems.

According to the union officials those members often lost their jobs, many would go unemployed for a long period, seemingly unable to take on a new job and a substantial number would finally leave the branch. The union had tried to enlist the services of clinical psychologists, but the results had not been promising. Knowing of our work in clinical OHP we were asked to enter into a collaborative project with the dual aim of evaluating if and to what degree computer professionals were faced with specific work related demands and problems and find out if a psychological treatment based on a OHP approach would help these clients to overcome their problems. Most of the clients were on sick leave or had resigned from their job.

Three different types of problems were characteristic for this group.

1. Heavy workload consisting of large projects for which to few resources were allocated
2. Problems in project management (lack of proper guidelines,
3. Organisational conflicts between supervisors and departments

All of the clients suffered initially from severe stress. This was expressed in heightened anxiety, feelings of chronic unease and arousal, fatigue, sleeping problems, sense of disassociation and problems in remembering according to what they had been through and often found it difficult to remember in which order the problems had occurred.

All of the clients felt violated or abused. This involved a lot of anger and frustrations. They typically expressed ambivalent or traumatic feelings towards working with computers. Most of them were contemplating to leave the computer industry. This corresponds with findings that acute stress disorder involves aversion towards situations or factors that activate stressful memories and that such aversive conditioning can be established unconsciously (Shevrin, 2001).

Last but not least all of them experienced prevalence of sadness, though only one of the clients suffered from (mild) depression. They were still able to experience normal range of emotions, but on a subdued level. As one of them said “my week only consists of Mondays”. This feeling of sadness also involved a sense of getting nowhere, of being locked in a loop.

The clients differed on two types of reactions.

- One set of reactions involved cognitive reactions in the form of shortened attention span and memory problems. These clients found it difficult or even impossible to read newspapers and could not follow subtitles when watching television. Many told that they tended to lose track of time and occasionally they would “wake up” and find that some time had passed without being able to recount what had happened during “the blackout”.
- Another set involved a deep feeling of insecurity and ambivalent feelings towards their workplace and especially management. This ambivalence was expressed in a frequent vacillation between angry outbursts and explicit self-doubts where they questioned their own recount of what had happened. Often the anger and embitterment towards management also extended to their former colleagues. This reaction also involved

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1 Among stressors that are specific for such jobs are unclear and unrealistic design, repeated changes in specifications, organizational politics and client relations. Well known reactions are sleep disturbance, stress and somatic complaints (Arentz, 1997).
a weak and insecure personal identity, lack of self-esteem and lack of trust in own judgement. This can lead to depression (Beck-Friis, 2002).

The former reaction seems mostly related to the intensity and duration of heavy workload whereas the second is has to do with the extent to which the clients had experienced conflicts with management or being victim of organisational conflicts. In the following we will focus exclusively on memory and attention related reactions.

Memory and attention impairment – symptoms

The character of the memory and attention problems experienced by those clients that had been subjected to a prolonged period of heavy workload is especially important. On of the central and distinct stressors and demands in such work in the demand for rapid and accurate procession of multi-modal sensory information. In period of pressure these demands often will exceed an individual’s performance capabilities. Experiments involving simulated overload of visual information indicate that such overload involves changes in brain functions, involving among other things difficulty in distinguishing between natural and artificial sensory (mostly visual) information (Adey, 1997).* Also mental workload reduces the area of the affected person's visual field resulting in tunnelling effect as well as shape distortion (Rantanen & Goldberg, 1999). This effect has only been studied under laboratory conditions and the effects of long-term mental workload on visual information processing have not been studied. It is quite possible that such changes contribute to problems in memory and attention.

Shortened attention span is a well-known consequence of stress and seemingly even mild psychological stress can affect attention. Under such conditions attention process become more focused, but also narrower in scope (Skosnik et. al., 2000). In knowledge intensive work the ability to shift between narrow and intense focusing to wider and more complex questions is crucial. Psychological stress makes this more difficult.

But the memory problems exhibit a number of distinct characteristics. Short-term memory and attention was characterized by decreasing capacity. They could only focus on few items at time and only for a short duration. Consistent with the finding that acute stress involves significant reduction in levels of salivary cortisol that is impaired attention (Vedhara et. al., 2000). Memory retrieval was slow, an effect that has been found in laboratory experiments (Brand, Hanson & Godaert, 2000) and error prone. In a recent laboratory study Payne et. al. (2002) found that stress selectively disrupted the ability of human participants to accurately recognise words presented on a list. Specifically the participant experienced considerable difficulties in distinguishing words that were presented for study from critical lure words that were semantically related, but not presented for study. As pointed out this finding implies that stress, possibly through its impact on the hippocampus and prefrontal cortex, can contribute to or cause false memories. For computer professionals or any worker in a knowledge intensive job this effect of stress could cause severe problems.

The clients also found it difficult to recall complex information. They often said that problems they used to solve without effort now often seemed insolvable and even incomprehensible. Also the directed forgetting associated with acute stress disorder may play some role (Moulds & Bryant, 2002). It is no wonder that these clients felt that they had lost a substantial part of their professional capacity. This may very well be a realistic evaluation.

The question is: does this state merit the label “memory and attention impairment syndrome”? We believe so:

- The symptoms are clear exhibiting structural qualities and anamnesis indicates a distinct strain profile.
- These symptoms involve certain brain-centres. The question therefore is, does current neurological research substantiate the etiology suggested?

Neurological basis of the memory and attention impairment syndrome

In 1968 it was discovered that hippocampus has specific receptors for stress hormones. 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).

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, poor attention regulation (Birnbaum et. al., 1999).

Recent findings also indicate that psychological stress involves reduced across-hemisphere advantage in complex information process with loss of processing efficiency and accuracy as a consequence (Compton, Mintzer, 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).

The memory and attention impairment syndrome (MAIS) - perspective

Based in these findings we believe that a strong case can be made for the claim that the symptoms of impairment memory and attention, discussed earlier merit the label “syndrome”, with clear and distinct diagnostic markers and suggestions of valid etiology. A fully-fledged diagnosis ideally requires suggestions of treatment and prognosis, including a description of how the syndrome develops, what if any stages the affected individual goes through. In OHP that not only involves treatment of individuals affected, but also suggestions about what type of demands, work and organizational circumstances contribute to this state, and how they can be changed. Also it is important to establish the prevalence of the MAIS.

A lot of work needs to be done. At this stage it seem likely that MAIS is one syndrome, not an umbrella for several distinct problems. But that is one of the questions that need to be answered.

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Sexual harassment: Relation to other forms of discrimination and to health among women and men.

C. BILDT

Introduction

Sexual harassment at work is most often defined as unwelcome actions or verbal expressions with sexual contents that afflicts women and men's integrity at the workplace. The European Commission Code of Practice definition is for example as follows: "Sexual harassment means unwanted conduct of a sexual nature, or other conduct based on sex affecting the dignity of men and women at work" (Commission 1993). Sexual harassment is unacceptable behavior that subjects an individual or a group to unwelcome attention, intimidation, humiliation or ridicule. It may involve the abuse of seniority of position or status within the organization and may take many forms. Sexual harassment is not restricted to attempts to start a sexual relationship. The term covers harassment and offensive behavior based on the gender of the recipient. Such behavior may be verbal, non-verbal or physical and examples are given below:

- **Verbal**: telling sexual stories or jokes, making questions about personal or sexual life, making sexual innuendoes, making sexual comments about a person's dress or appearance, sexual propositions, continued suggestions for social activity outside the workplace after it has been made clear that this is unwelcome.
- **Non-verbal**: making suggestive gestures such as wolf whistling or leering, displaying pornographic material.
- **Physical**: unwelcome touching, patting or pinching, touching or rubbing oneself sexually in front of another, coerced sexual favors, criminal action, including rape or other physical assault.

The occurrence of sexual harassment differs between the various sectors of labor market, and especially women working in male dominated sectors or occupations have been found to be exposed to sexual harassment. In one example more than half of the female construction workers had experienced sexual harassment (Goldenhar et al 1998). Socio-economic status does not seem to be an important predictor since for example female physicians (at least in one study) had a prevalence of almost 48 percent gender discrimination and of almost 37 percent gender harassment. Sexual harassment in academia, at universities and college universities, has been examined in some studies, but then mostly with focus on the students, rather than the employees (Roosmalen 1998). In these studies, the prevalence of various types of expressions for sexual harassment ranged from 7 to 60 percent, depending of the definition.

It is not farfetched to assume that there is a relation between sexual harassment and other forms of workplace harassment, and such relationships has been indicated in some studies (Paterson 1997). An organization that allows harassment of one type might as well allow other forms of harassment, and some earlier studies have indicated a relation between sexual harassment and gender discrimination. Sexual harassment and gender discrimination seem to be concomitant, and sexual harassment to be a result of a work organization that in itself discriminates and that accept such behavior among the employees (Fitzgerald et al 1997). It has, for example, been shown that organizations or companies where there are few sanctions against sexual harassment, and where women have lower status than men (for example lower wages) had a much higher occurrence of sexual harassment than other organizations or companies. Also in a longitudinal context has such a relation been found (Glomb et al 1999). Where there was an acceptance for gender discrimination in the organization and where the individuals worked within non-traditional jobs, the prevalence of sexual harassment later on was much higher than in other organizations. Such a context did also predict poor mental health and low job satisfaction among individuals.

The common characteristic between sexual harassment and other forms of harassment, or mobbing and conflicts, is that they stem from conflictual interpersonal relationships. In general, when the occurrence of sexual harassment is compared between women and men, women more often than men experience sexual harassment at work (Rospenda & Flaherty 2000). During the last years, harassment experiences have more often than earlier been included in the framework of work stress, thereby being seen more as a result of how the work organization does function rather than being a result of poor characteristics among individuals (Schneider et al 1997). Also in relation to workplace violence has work organization factors been shown to be important, as has work climate (Cole 1997).

Gender differences have been observed also in that respect that even thus women and men observes the same behavior, they do not interpret it similarly. One proposed explanation is the fact that men most often have more power than women, and that power is an important aspect of sexual harassment (Wiener & Hurt 2000). One aspect of power is allocation of resources and access to information. Another aspect is access to informal power structures (or decision structures), and it has been shown that within the academia, such structures have a large influence on distribution of funds and resources for research (Wold & Wennerås 1997). In their study, male applicants had more access to the informal decision structures (knew more of the reviewers) and did therefore receive more of the funds, compared to female applicants.
The relations between sexual harassment, and to a certain degree also gender discrimination, general discrimination (a variety of causes) and health effects have been studied, and associations have been found. In most of the studies mental health has been the studied health outcome, but also leaving work and reduced job satisfaction has been studied as an outcome from sexual harassment (Goldenhar et al 1998, Gutek & Koss 1993, Piotrkowski 1998). Sexual harassment has been recognized as a continuing, chronic occupational health problem in many of today’s working environments (Bell et al 1998). Generalized discrimination has been shown to have as large influence on the population’s mental health as many of the more commonly studied stressors.

**Aim**

The aim of the present study is to examine the relation between sexual harassment, gender discrimination, bullying, conflicts and informal decision structures. A second aim is to examine the relation between these factors and health outcomes among women and men.

**Method**

During autumn 2000, a study aiming at describing the work situation for women and men working with education and research at a large university in the northern part of Sweden was performed. Sexual harassment and gender discrimination were in focus, as were informal power structures and psychosocial working conditions in general. The study was designed as a cross-sectional study and the experiences from it are planned to form the basis for a comparative European study, including all Swedish universities and college universities, as well as a number of educational institutions in other European countries.

The university have five faculties – school of education, humanistic, medical-odontologic, social sciences and science faculty – and the study group consisted of all PhD students, Assistant master, Senior master, Post doc researchers and Professors that were employed at the university in September 2000. Those 2 049 individuals received a questionnaire and a letter with a request to participate in a study performed by Statistics Sweden, with the main aim to describe women’s and men’s working condition at the university and to analyze if the questionnaire used was sufficiently designed to make it possible to answer the research questions in the study. Out of these 2 049 individuals did 68 percent (599 women and 796 men) participate in the study.

Information was collected about a wide range of work-related subjects. The “exposure” data analyzed in the present study focused on sexual harassment and gender discrimination, decision structures and equality. Poor health was defined as occurrence of psychosomatic symptoms; heartburn, acid indigestion, smarting pain in the stomach or upset stomach, been tired and listless, headache or having trouble to sleep, because of thinking about work. The eligible subjects who did not return the questionnaire within the time limit given in the accompanying letter was reminded by post. In total three reminders were sent out, and out of them did the last include a new copy of the questionnaire.

To study the relation between the studied variables, path analyses were made, using SPSS. To present the occurrence of the various factors of interest among the study group, and to prepare for analyzes of association, the variables was dichotomized. Univariate analyzes of association between the studied working conditions and health was performed, and prevalence rates (PR) have been used as a measure of association, calculated in the module PROC FREQ in SAS. The precision of the point estimates of PR was estimated by test based 90% confidence intervals (c.i.) (Miettinen 1976). All analyzes were made per gender. To analyze the influence from background variables – age, faculty and position – also stratified analyzes was performed and presented.

**Results**

Sexual harassment was more prevalent among women then among men, as was gender discrimination, which was reported by almost half of the women (table 1). A similar proportion of women and men did report that there are informal decision structures and these had negatively affected about a fifth of the respondents. The proportion of respondents who had no access to these structures was twice as high among women then among men. Both women and men reported lack of equality. Many more men than women reported that women are favoured at their institution, and more than twice as many women then men reported that men were are favoured, all thus the proportion of women reporting prevalence of favouritism was much higher than the proportion of men. Conflicts and being treated with lack of objectivity was reported to similar degree among women as among men. Poor health was more common among women than among men.

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The path analyzes revealed some differences in the pattern of associations between the studied “exposure” variables among women and men (figure 1 and 2). There were more relations between lack of equality and other studied factors among men than among women, where lack of equality only was related to gender discrimination, and not to bullying and conflicts. Among women, bullying was stronger related to conflicts, among women than among men, as was gender discrimination to bullying. Lack of equality and conflicts were significantly related to sexual harassment among women, but none of the studied factors to sexual harassment among men. Informal decision structures at work was negatively related to bullying among women and positively to bullying among women. Age, faculty belonging and position (not included in the figure) did not influence the other studied factors significantly among women or among men.

Table 1. Occurrence of harassment, discrimination, informal decision structures and health outcomes. Per gender as percent

<table>
<thead>
<tr>
<th>Whole study group</th>
<th>Women (N=599)</th>
<th>Men (N=796)</th>
<th>Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Harassment and discrimination</strong></td>
<td></td>
<td></td>
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<tr>
<td>Sexual harassment</td>
<td>9</td>
<td>2</td>
<td>*</td>
</tr>
<tr>
<td>Gender discrimination</td>
<td>42</td>
<td>15</td>
<td>*</td>
</tr>
<tr>
<td>Bullying</td>
<td>13</td>
<td>9</td>
<td>*</td>
</tr>
<tr>
<td>Conflicts</td>
<td>26</td>
<td>23</td>
<td>*</td>
</tr>
<tr>
<td><strong>Decision structures and equality</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal decision structures</td>
<td>40</td>
<td>40</td>
<td>ns</td>
</tr>
<tr>
<td>Negatively affected by informal decisions</td>
<td>25</td>
<td>20</td>
<td>*</td>
</tr>
<tr>
<td>No access to informal decision structures</td>
<td>26</td>
<td>10</td>
<td>*</td>
</tr>
<tr>
<td>Treated with lack of objectivity</td>
<td>47</td>
<td>51</td>
<td>ns</td>
</tr>
<tr>
<td><strong>Lack of equality</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Women are favoured</td>
<td>3</td>
<td>15</td>
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<tr>
<td>Men are favoured</td>
<td>49</td>
<td>22</td>
<td>*</td>
</tr>
<tr>
<td><strong>Lack of information</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Women are favoured</td>
<td>34</td>
<td>21</td>
<td>*</td>
</tr>
<tr>
<td>Men are favoured</td>
<td>49</td>
<td>22</td>
<td>*</td>
</tr>
<tr>
<td><strong>Health outcome</strong></td>
<td></td>
<td></td>
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<tr>
<td>Poor health</td>
<td>14</td>
<td>8</td>
<td>*</td>
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</tbody>
</table>

Diff= difference of proportions, *= significant at 95% level, ns= non significant

Figure 1. Associations between the studied factors and sexual harassment among women

N = 379, chi-square = 22.62, df = 12, p < .03, RMSEA = 0.048
The analyses of association did reveal that some of the studied aspects of the psychosocial working conditions were related to poor health (table 2). Common among both women and men were that gender discrimination, bullying, conflicts, being negatively affected by informal decision structures, that women are favoured and lack of information were related to poor health. Among women, also sexual harassment and that men are favoured were related to poor health, as was the occurrence of informal decision structures among men. The level of the point estimates differed somewhat between women and men, but not dramatically. The influence from age, faculty belonging and position was very modest.

Table 2. Associations between harassment, discrimination, informal decision structures and health outcomes. Per gender (Women N=599, Men N=796)

<table>
<thead>
<tr>
<th></th>
<th>PR</th>
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<th>c.i.</th>
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<td>1.3</td>
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<td>Men are favoured</td>
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<td>1.3,2,0</td>
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</tbody>
</table>

* = adjusted for age, ** = adjusted for faculty belonging, *** = adjusted for position

N = 501, chi-square = 22.62, df = 12, p < .03, RMSEA = 0.048

The analyses of association did reveal that some of the studied aspects of the psychosocial working conditions were related to poor health (table 2). Common among both women and men were that gender discrimination, bullying, conflicts, being negatively affected by informal decision structures, that women are favoured and lack of information were related to poor health. Among women, also sexual harassment and that men are favourised were related to poor health, as was the occurrence of informal decision structures among men. The level of the point estimates differed somewhat between women and men, but not dramatically. The influence from age, faculty belonging and position was very modest.
Discussion

The prevalence of sexual harassment and gender discrimination agrees well with earlier studies. Several of the results in the present study were surprising, for example that informal decision structures was more harmful to men’s health than to women’s health and also that they were related to bullying among men but not among women. I had expected it to be the other way round, since there have been many reports of women not being allowed into the chambers where important decisions are taken. Have women managed to overcome those obstacles? Also the finding that lack of equality was related to several of the studied factors among men but “only” to gender discrimination among women was a surprise. What is clear from the result of the path analyses is that the relation between gender discrimination, bullying and conflicts at work are much stronger among women than among men, even thus the relationships are statistically significant also among men. It is also clear, out from the results of the analyses of association with poor health, that both women and men’s health is influenced by gender discrimination, bullying and conflicts (the last two more strongly so among men than among women). The same trend can be seen when it comes to lack of information and lack of objectivity. An interesting finding was that women’s health are negatively influenced by lack of equality, regardless if it is women or men that are negatively treated, but men’s health affects only if it is men who are negatively treated.

A general conclusion drawn from the results in the present study is that there is a need for organizational changes at the studied university, a need for development of strategies to handle harassment and discrimination, and that such changes could be expected to have a major influence on the working climate and health among both the female and male employees.

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Teleworking and New Ways of Working: Implications for a Boundary Man-
agement

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Drawing from studies of telecommuting as social practice, this paper makes use of the notions of space, time and gender in discussing boundaries and transitions between the office and the home as work places (Birbaumer & Wagner 1998). The fieldwork results question the widespread belief that the spatial unity makes fluent transitions between both spheres easier (Kompast 1996). It shows that employees have to spend considerable effort in establishing and maintaining the boundaries between work and family responsibilities, in coping with temporal conflicts, and in getting access to the informal support structure of a rich shared office environment (Birbaumer et al. 1997).

The main problem is the separation of work and private life, not only for the individual, but also for the family, the colleagues, friends, neighbours etc. The fluent transitions between the different spheres of working and living cause stress. People working at home have to deal with the phenomenon of being physically available for private or familiar demands and at the same time not being available for anything else but work issues. So, the necessity of self-discipline increases, the necessity of justifying one’s mental absence can be really hard. Especially women mention such problems in connection with children and child caring demands. One of the main consequences is the fact, that private lives are more and more determined by rhythms of work, e.g. time management of the private life is getting more and more “work like”. Work determines all individual life-worlds. Positive aspects of teleworking or comparable working time arrangements have to be mentioned, for example the increasing flexibility for the employee, the possibility of having more spare time in the afternoon etc., but all the advantages go along with a high amount of organisation and discipline. Negative aspects are the mentioned high amount of organisational and justifying activities required, having a permanent bad conscience in both spheres work and home. The consequences can be seen in people working overtime, working the nights, working more than before, working being ill, working when children are ill etc. Responsibilities of the employees decrease, the individual is responsible not only for it’s private life, but also for it’s working life at home: one the one hand for support, for the working infrastructure, for the working environment at home, on the other hand for discipline, time management, health and vocational training and career planning. Instead of ‘privatising’ these efforts, initiatives for developing a support environment need to be taken.

The phenomenon of teleworking can be taken as an example for the developments of the labour market with its tendencies to more flexibility and more part-time employment as well as for today’s management and organisational theories. The tendencies of output orientated work instead of time orientated work is one of the most important factors to take into account. So, teleworking cannot be seen as a new form of working, but as a symptom of changes in working life and the notion of work in general. Another fact would be the project orientation in many, also traditional work environments or branches. A good example for these tendencies would be the public sector, where one of our studies was recently made. A traditional bureaucratic structure in the changing labour market has to offer modern ways of working to her employees. The public sector still is a sheltered work environment, but even there you have to face certain insecurity of jobs and “new” achievement orientated working conditions. Teleworking in the public sector still has many more advantages than teleworking in other domains of the labour market or in other forms (e.g. teleworking freelancers). Following the results of our evaluation studies, especially high skilled women in the public sector had the chance to stay in their position, to make their career and caring for children at the same time because of the flexibility of teleworking arrangements (Birbaumer & Kompast 1999). Nevertheless the models of good practice do not prevent people working overtime and having problems to find their work life balances. An important influence on teleworkers’ difficulties – just to add – have technologies, which “guarantee” to be available 24 hours a day, which “guarantee” that you can work whenever you like, because it is possible to be connected to your office from home, from your car, from somewhere in the city. That also means that the teleworker has the feeling, he or she should work all the time. Teleworkers tend to see their working situation as privileged and to work more out of that reason as well.

Managing boundaries also means to face the new paradigms of work, e.g. coping with the increasing importance of spare time in comparison with working time or the fun factor being considered as an essential factor of all areas of life. It will even be more necessary in the future to take into account to what extent work will dominate life concerning time, social management and social activities. The phenomenon of teleworking can be seen as a symbol of new ways of working building up the illusion that alienated work will disappear. In former times the notion of spare time has never been relevant, especially looking on working conditions nobody would have talked about his or her hobbies or other activities apart from work. Today the employer tends to see his work and his private life as equal status spheres, that can be observed very clearly analysing the phenomenon of teleworking. The gendered perspective in this topic can
be described as follows: „Her telework is connected to household; his is connected to business and to spare time, his baggage consisting of a dispatch case and a golf bag“ (Sturesson 1997). Women are publicly related to their home as “a locale of their own design” (Probyn 1990), which has to be seen as a power stabilising factor with all its consequences. Another notion of modern working life is the fun factor. Nowadays people do not only want to have fun in their leisure time, in their holidays, they value their job with the notion of fun. If the job is not connected with fun, it is not a preferable job. So, people do not only want secure jobs, jobs demanding certain skills, jobs that are well paid etc. – the job has to be also fun. One explanation for this phenomenon surely is, that it is no more “normal” to have secure jobs and to have jobs for your whole lifetime, so there is a need of developing new criteria of judgement. Again teleworking fits perfectly in these tendencies, because working at home in a comfortable atmosphere allows fun to come into your daily working life, allows the balance of private and working life – at least theoretically. Alienation seems to disappear.

As a conclusion consequences of melting boundaries between work and spare time, between employer and employee, between work place and home must be discussed in order to analyse the psychological and sociological factors concerning teleworking as well as the development of the notion of work and its influence on the individual. The situation of the individuals, especially women as the hardly affected persons by these tendencies, can be analysed in order to face the difficulties occurring in the work of occupational health psychologists. Today’s developments of labour, occupation and way of life must be faced while working on concepts of health promotion in industry and counselling. Our evaluative studies in the software industry as well as in the public sector may help to identify the main tasks to work on, but also to face the chances for individuals and organisations that are included in the new ways of working.

References
The influence of expression / feeling rules and interaction autonomy on different states of emotional dissonance in emotional labour

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Introduction
Hochschild (1979, 1983) defines emotional labour as the management of emotions in order to display them in accordance with situational demands and expression and/or feeling rules. She argues that service providers in such situations are forced to regulate the discrepancy between their "true" feelings and expected feelings, respectively expected emotional expressions. According to Hochschild (1983) the two major strategies of emotion management are "surface acting" and "deep acting". Surface acting means the regulation of overt emotions ("impression management", cf. Goffman, 1959). In contrast, deep acting refers to the regulation of inner feelings.

Rafaeli and Sutton (1987) claim that the match or mismatch between expressed feelings, experienced emotions and demands (job requirements) for an expression of feelings will lead to different emotional states, which are described as emotional harmony, emotional dissonance and emotional deviance. Emotional harmony occurs when expressed emotions are congruent with experienced emotions, feeling rules and ones own expectations about adequate emotional expression. Emotional dissonance results when expressed emotions satisfy feeling rules but contradict actual inner feelings. The effects of emotional dissonance depend on the internalisation of feeling rules. Two types of emotional dissonance are distinguished: On the one hand faking in bad faith, which refers to the display of "fake" emotions when service professionals believe that emotional expressions should not be part of the job (no internalisation of feeling rules) and comply with feeling rules only when monitored closely. On the other hand faking in good faith is the state of display of "fake" emotions when service professionals believe that such emotional expressions should be part of the job (internalisation of feeling rules) even if such feelings are not truly felt. Emotional deviance describes the clash of expressed emotions with local norms, i.e. feeling rules are disregarded and true inner feelings are expressed instead. Emotional deviance as well as emotional harmony can in a certain sense be regarded as "opposites" of emotional dissonance because both harmony and deviance reflect states of congruence between inner feelings and emotional expression instead of dissonance.

While the states of emotional harmony and emotional deviance described by Rafaeli and Sutton (1987) are in line with the concept of Hochschild (1983) there is a contrast between the two concepts with respect to the relative importance of different states of emotional dissonance. Hochschild (1983) emphasises the distinction between surface versus deep acting as major strategies of emotion management of service providers whereas Rafaeli and Sutton (1983) focus on the internalisation of feeling rules and the related states of faking in good faith versus faking in bad faith. Both approaches to states of emotional dissonance are reasonable and worth trying to be operationalised and investigated empirically.

As mentioned above, emotional dissonance occurs when expressed emotions satisfy feeling rules but contradict with actual inner feelings. Therefore, rules or norms concerning feelings are necessary preconditions for the experience of emotional dissonance. The psychology of emotion makes a further distinction between emotional expression and emotional experience (e.g. Scherer, 1984). Thus, rules about emotions can refer to emotional expression (e.g. the facial/verbal display of emotions) as well as to the experience of emotions (inner feelings). The statement of expression and feeling rules (e.g. Hochschild, 1990) is in line with this distinction.

Moreover, Rafaeli and Sutton (1989) describe different sources of rules about emotions in a social context: societal rules, occupational rules and organisational rules. Societal rules in the sense of Rafaeli and Sutton (1989) are not considered in this paper since they show quite an overlap in content with occupational rules. In our study occupational rules are regarded to be professional rules – taking into account the specific characteristics of professions like doctors, teachers, nurses etc. In addition, we introduce personal rules. Personal rules might influence the individual expression of emotions and seem to be important especially in occupations and organisations, which have only few or no occupational or organisational expression and feeling rules at all.

Within the context of rules or norms prescribing the emotional display or the expected feelings of service providers an additional variable seems to be of interest – interaction autonomy (Tolich, 1993). Interaction autonomy can be described as the possibility to influence main features (e.g. duration) of social interactions with clients. Empirical results support the hypothesis that interaction autonomy will moderate the relationship between emotional dissonance and well-being (e.g. Abraham, 1998; overview in Ashkanasy, Härtel & Zerbe, 2000; Zapf, 2002). According to these results, interaction autonomy shows a buffering effect quite similar to the well known effect of control respectively autonomy on the relationship between stressors and strain (e.g. Terry & Jimmieson, 1999). There is some theoretical evidence that interaction autonomy might influence emotional dissonance as well. Service professionals, who have more autonomy over their interactions with clients, might be able to deal more adequately with interaction demands and to avoid emotional dissonance by using degrees of freedom to design appropriate interaction situations (e.g. frequency, duration).

One objective of the paper is the empirical investigation of the specific impact of expression and feeling rules from different sources (occupational, organisational or personal expression and feeling rules) upon the four states of
emotional dissonance (faking in good faith, faking in bad faith, surface acting, deep acting). This focus is chosen for two reasons. First, results from emotional labour research underline that particularly states of emotional dissonance largely contribute to diminished well-being and satisfaction as well as to increased strain and emotional exhaustion (e.g. Morris & Feldman, 1996; Zapf, 2002). Second, no such results are found for emotional harmony and emotional deviance since these two emotional states point to congruence between expressed feelings and experienced emotions. A second objective of this paper is the study of the function of interaction autonomy. As mentioned before, like autonomy in general interaction, autonomy in particular seems to exert a moderating effect on the emotional dissonance-strain relationship; here we are interested in the influence interaction autonomy might have on the relationship between expression and feeling rules on the one and states of emotional dissonance on the other side. Based upon these considerations the paper is led by the following propositions:

Proposition 1: Expression rules and feeling rules do influence states of emotional dissonance.
Proposition 2: Effects of expression rules and feeling rules differ between the four states of emotional dissonance.
Proposition 3: Interaction autonomy has an impact on emotional dissonance.
Proposition 4: Interaction autonomy does interact with expression rules and feeling rules with respect to their prediction of states of emotional dissonance.

Method
The study was part of a larger research network of work psychologists and sociologists on "Interaction work as an approach towards a quality-oriented organisation of service processes", which is granted by the German Federal Ministry of Education and Research. The main goals of this research network are to develop and to operationalise an integrated concept of "interaction work" (cf. Büssing & Glaser, 2001) and to examine specific factors which support the quality of work in service processes and in different fields of service occupations (e.g. nurses, teachers).

Subjects
Data were collected in six geriatric nursing homes. 125 geriatric nurses participated in the questionnaire study. The mean response rate was 61%. 79.5% of the nurses are female, the mean age is 40 years and 2 months; average job tenure is 8 years and 1 month.

Measures
The different states of emotional dissonance were measured by four scales of the "Emotion Labour Questionnaire (ELQ)" (Büssing & Glaser, 2001). The ELQ integrates the concepts of surface acting (9 items, e.g. "I conceal anger from patients") and deep acting (9 items, e.g. "I make an effort to feel sympathy for the patients") by Hochschild (1983) as well as the distinction between faking in good faith (13 items, e.g. "I repress anger towards patients, since I take my professional duty seriously") and faking in bad faith (13 items, e.g. "I repress anger towards patients, since otherwise I expect difficulties in my job") by Rafaeli and Sutton (1987).

According to the distinction between expression vs. feeling rules and between occupational, organisational and personal rules, six scales have been developed with three items each: (1) occupational expression rules, (2) occupational feeling rules, (3) organisational expression rules, (4) organisational feeling rules, (5) personal expression rules, (6) personal feeling rules. All items are operationalised according to a systematic pattern. An example for organisational expression/feeling rules might illustrate the way of item construction: “In this nursing home there are rules about in which situations one has to [show/feel] [positive/negative/no] feelings towards patients”. According to this pattern of item construction the categories of feelings (positive, negative, no) and the sources of expression and feeling rules (occupational, organisational, personal) are systematically constructed and examined in order to determine the relative influence of different rules in the daily work of geriatric nurses. Interaction autonomy was measured by a 12 item scale (e.g. "I can decide on my own how long I carry on a conversation with a patient").

Statistical analysis
Reliability of the scales was assessed by Cronbach’s Alpha. In accordance with the propositions of the paper, data were analysed by means of hierarchical regression analysis. Four separate analyses were performed. Dependent variables were the different states of emotional dissonance: (1) faking in good faith, (2) faking in bad faith, (3) surface acting, and (4) deep acting. Main effects of the six expression/feeling rules and of interaction autonomy were considered as well as the six potential interaction terms (interaction autonomy x expression/feeling rules).

Results
Cronbach’s Alpha ranges between .61 (organisational expression rules) and .94 (faking in bad faith) which underlines the sufficient respectively good reliability of the scales under study.
### Table 1: Hierarchical regression analysis (n=125) of four different states of emotional dissonance on forms of expression/feeling rules, interaction autonomy, and interaction effects.

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* Standardised Beta; ** p-value of regression equation respectively significance of predictors.
Table 1 summarises the results of hierarchical regression analyses of the four states of emotional dissonance on expression/feeling rules, interaction autonomy as well as the potential interaction effects between rules and interaction autonomy. First of all, the results show that the explained variance of the dependent variables in the four regression models varies between 29% (faking in good faith) and 14% (deep acting).

First, results confirm the influence of expression rules and feeling rules on different states of emotional dissonance. Among the six forms of rules, the personal expression rules, personal feeling rules, organisational feeling rules and occupational expression rules have a significant impact on states of emotional dissonance. However, organisational expression rules and occupational feeling rules show no significant impact on emotional dissonance at all, and - with respect to the different states of emotional dissonance - deep acting is not correlated with any of the rules.

Second, there are different effects of expression rules and feeling rules on the states of emotional dissonance. While personal expression rules are negatively correlated with faking in good faith and surface acting (significant negative beta coefficients in table 1) we find no significant impact of personal expression rules on faking in bad faith and on deep acting. Personal feeling rules have a positive impact on faking in good faith but no significant influence on the other three states of emotional dissonance. Occupational and organisational rules show only one significant impact each, i.e. surface acting is positively influenced by occupational expression rules whereas faking in bad faith is positively correlated with organisational feeling rules.

Third, while interaction autonomy exerts a negative impact on faking in bad faith, the results reveal neither effects of interaction autonomy on faking in good faith nor on surface acting or deep acting.

Fourth, interaction effects between expression or feeling rules and autonomy can be claimed both for faking in good faith and surface acting. Faking in good faith is determined by two interactions between organisational expression/feeling rules and autonomy as well as by an interaction between personal feeling rules and autonomy. The interaction effects between (organisational, personal) feeling rules and autonomy are negatively correlated with faking in good faith, whereas (organisational) expression rules and autonomy are positively correlated with this state of emotional dissonance. Finally, surface acting is determined by the interaction between personal expression rules and autonomy – once more in a negative direction.

Discussion

An empirical investigation of expression and feeling rules as well as the exploration of different states of emotional dissonance according to the concepts of Hochschild (1979, 1983) and Rafaeli and Sutton (1987, 1989) were performed in a study with geriatric nurses. So far, most of the empirical research dealing with expression and feeling rules is qualitative in nature and mostly anecdotally. To our knowledge this is the first study, which investigates expression and feeling rules empirically by quantitative questionnaire measures. Self-report measures are probably the only – at least the best – way to explore different states of emotional dissonance since emotional dissonance is hardly observable and objectively measurable. The results of reliability estimation underline the successful operationalisation of the questionnaire measures. According to the concept of Hochschild (1979, 1983) it was possible to differentiate between expression and feeling rules and in line with Rafaeli and Sutton (1987, 1989) we were able to distinguish between different origins of these rules: occupational, organisational and personal rules.

First, results reveal that expression and feeling rules have a significant influence on three states of emotional dissonance. Therefore, the results basically confirm proposition 1 and the concept of Rafaeli and Sutton (1987, 1989), which stresses the central role of feeling rules for emotional labour. The results also show that the distinction of Hochschild (1990) between expression and feeling rules seems to be fruitful for further studies of emotional dissonance. However, rules have no effect on deep acting. It seems that this state of emotional dissonance is not influenced by any rule – neither by expression nor by feeling rules on any level (occupational, organisational, personal). Probably the state of deep acting is more or less insensitive against “external conditions” like expression and feelings rules or interaction autonomy and is rather determined by other “internal” psychological factors which have to be examined in more detail in future research.

Second, the beta coefficients of the predictors of the regression analyses point to a differential influence of different forms of rules on emotional dissonance. The occurrence of personal expression rules goes along with reduced faking in good faith as well as with less surface acting. This seems to be reasonable since inner feelings and personal expression rules of the service providers should be more congruent in case of little emotional dissonance than inner feelings and external (occupational, organisational) rules. Thus, emotional dissonance is less likely to occur if personal expression rules are predominant. In addition, personal feeling rules seem to support faking in good faith while faking in bad faith is positively correlated with organisational feeling rules. This result underlines the positive function of personal rules and points to a negative role that organisational rules seem to exert on states of emotional dissonance like faking in bad faith. Bearing in mind that faking in a bad faith is characterised by a poor internalisation of (external) rules (cf. introduction of this paper), it is not surprising that faking in bad faith is rather due to external rules than to personal rules of the service providers. Beyond that, occupational expression rules show a positive correlation with surface acting while personal expression rules correlate negatively with this state of emotional dissonance. Again, this result confirms the positive function of personal rules with respect to states of emotional dissonance and it furthermore raises the question if there are tensions between occupational and personal rules concerning the degree of showing such feelings towards clients, which are not honestly felt.
Third, only one significant main effect of interaction autonomy could be stated in our study. According to this result interaction autonomy seems to contribute to a reduction of faking in bad faith which can be considered a more or less unacceptable state of emotional dissonance in any organisation and in particular in geriatric care. To our surprise all other states of emotional dissonance are not influenced by interaction autonomy. An explanation for this result might be the process and function of organisational monitoring which is part of and might be even a cause for certain states of emotional dissonance. While the individual regulation of emotions in the sense of surface and deep acting is less likely to be determined by an organisational monitoring, the strategies of faking in good faith and especially of faking in bad faith will closely be related to ways of organisational monitoring. And it is quite reasonable from the organisation point of view that monitoring is employed to control and reduce unacceptable strategies of emotional dissonance like faking in bad faith while nurses and other service providers make use of interaction autonomy – i.e. the degree of freedom in the interaction with clients – in order to "escape" from being closely monitored in the sense of Rafaeli and Sutton (1989).

With respect to the fourth proposition the results can only confirm some moderating effects of interaction autonomy. Three moderating effects of interaction autonomy resulted from the regression analysis of faking in good faith. According to these results, autonomy interacts with organisational expression rules and with personal feeling rules and thus enhances faking in good faith. On the other hand, autonomy also interacts with organisational feeling rules and this interaction effect reduces faking in good faith. Moreover, the regression equation of surface acting reveals another significant interaction effect between autonomy and personal expression rules, which shows a positive correlation with surface acting. Since we do not have any research at hand so far concerning the impact of interaction autonomy on states of emotional dissonance, these moderating effects are difficult to interpret. More empirical studies and further statistical analyses are needed in order to explore the function of interaction autonomy at work.

Despite of some shortcomings our study contributes to the empirical research of a largely neglected point in the study of emotional dissonance: the role of expression and feeling rules. Future research might concentrate on the explanation of deep acting since this state of emotional dissonance seems to be hardly influenced by rules and autonomy. Another point for further research should be the validation of expression and feeling rules by means of expert interviews with service providers and their executives and by the study of documents (e.g. professional education and training concepts, organisational guidelines for service workers).

References


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Personality factors as a causal factor in workplace stress

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Introduction

Several sources of workplace stress have been identified in the research literature, including non-productive behavior, job dissatisfaction, absenteeism and burnout (Higgins, 1986, Gallagher, 1983). Interpersonal stress, arising from personal interactions in the workplace has not been researched to a great extent. The present study explores ways in which certain personality factors may create stress in workplace and how they may impact on perceptions of work stress. The study also explores ways in which workers cope with difficult individuals via emotion-focused vs. problem-focused strategies.

Method

A survey questionnaire was administered to 1,018 participants (426 males and 592 females) ranging in age from 17 to 64, all of whom were working in full-time jobs, in a variety of settings ranging from corporations to small family-owned businesses. The questionnaire contained items pertaining to demographic information, years on the job, sources of job stress and coping styles. Individuals who had identified co-workers as a source of job stress were then asked to describe the personality characteristics of that individual using an adjective checklist. Participants could also add their own adjectives to describe this individual.

Results

Of the participants surveyed, 88% (900) had indicated that they had encountered an individual whom they considered to be difficult to work with and who caused them stress. 30.7% indicated that individual caused them “a little stress, 27.4% indicated experiencing “a moderate degree of stress”, 10.9% indicated experiencing “a large amount of stress” and 1.7% indicated that person had created “the most stress they had ever encountered”. Participants completed a personality trait adjective checklist in which they were asked to describe that stressful co-worker, subordinate or administrator. The personality adjectives were derived from the DSM-IV (APA, 1994) descriptors for the various personality disorders. The individuals who were most likely to cause other stress were described as: “untrusting, cold, unfriendly and strange” which corresponds to Cluster A traits on the DSM-IV, “moody, selfish and manipulative” (Cluster B traits on the DSM-IV) and “critical, picky and needing to have things their way” (Cluster C traits). Of the three Cluster traits, Cluster B personality traits were judged to be the most difficult people to work with which would correspond most closely to the diagnostic category of Narcissistic Personality Disorder. With regards to coping responses, it appeared that most participant employed emotion-focused coping (Folkman & Lazurus, 1980) strategies, i.e. attempts to reduce or regulate emotional states associated with the stressors by venting, complaining etc.. These results are discussed in terms of the practical implications for coping with workplace stress created by working with these difficult co-workers, subordinates or administrators (Kelly & Caplan, 1993; Levinson, 1994; Lewey & Davis, 1984).

References

Completing planned work: a study on daily planning behaviour and the relation with job satisfaction and emotional well-being.

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Introduction

Many jobs, especially professional ones, have acquired wider scopes, often as a result of organisational changes to do more work with less people in less time. This has increased the need to work smarter and to improve work processes continuously. Moreover, higher workload, increased speed of production processes, and tight deadlines create time pressure. These developments imply that employees need self-management skills to deal with multiple tasks and to determine and monitor the quality, quantity, and timing of their performance. Here, research is needed to address questions such as: How do employees determine what tasks to perform, how do they perform in their jobs, how does this relate to their personal well-being?

Whereas simple task performance may benefit from working harder, that is increasing effort and working pace, complex tasks might need, working smarter, that is finding new strategies appropriate to a new situation, which would lead to optimal performance. Some of the strategies in complex tasks involve organizing multiple tasks over time. Here, motivation in the form of self-regulation becomes crucial, that is, starting, continuing, and finishing tasks in a way that is appropriate to the situation in which the tasks need to be performed. Self-regulatory skills include being able to avoid or deal successfully with distractions, especially when one has to perform several tasks simultaneously. Planning behaviour, as part of time management may be perceived as a self-regulatory skill. It includes deciding what tasks to perform, prioritising these tasks, and using this list as input for organizing workdays.

Little research has examined the role of planning behaviour in performance or other outcome variables such as job satisfaction. Time management studies conducted have been inconclusive with respect to effects on performance or satisfaction. A possible explanation for these results could be that the measures used in the studies were derived from ideas, statements and personal experiences of time management trainers as opposed to experiences of the respondents. Thus, little is known about how people make decisions about actions they take in certain situations. To our knowledge, there is no research to date which looks at the relationship between planning & performance during work to (and) job satisfaction and emotional well-being.

In the current study, we aim to answer some of the questions relevant to the self-regulation involved in dealing with multiple tasks. Our goal is to examine how people plan their activities and how they decide what actions to perform. Research questions are (1) how do people plan, prioritise, and perform their daily tasks in work situations?; what is the role of the task dimension’s importance, urgency and attractiveness in planning versus completing tasks, (2) what tasks and work interruptions come up during a workday and how are they rated on the dimensions importance, urgency, and attractiveness, (3) what factors are related to workday satisfaction, and (4) does daily planning show any effect on performance, job satisfaction, control of time, work strain or emotional well-being?

Method

Study design and procedure

We used a diary study and administered questionnaires before and after the diary period to investigate our research questions. A diary study allows access to ongoing behaviour in a relatively unobtrusive manner, which allows the immediacy of the experience to be captured whilst providing accounts of various phenomena over time. The distinctive feature of the diary (as a research tool) is that it is completed regularly over time by the respondent, gathering instances of events, feelings etc. as they happen (Symon, 1998).

Sixty three participants were recruited to fill out a total of 10 diaries divided over 5 weeks. Before and after the diary entry period, questionnaires were filled out by people in the diary condition (n=63) and by people in a control condition (n=62). In the control condition, participants were requested to complete both questionnaires without a diary study in between. This allowed us to assess possible changes in the diary conditions compared to a control group. The diary was filled out over a period of five weeks, on two days a week. This frequency was chosen to minimise the participants workload in connection with the study.

The respondents were instructed to choose the Monday and Wednesday in the first week, Tuesday and Thursday in the second week, Wednesday and Friday in the third week and so on to avoid bias in the choice of days chosen. They were requested to choose the following day in the event they were absent from work or in all day meetings on the allocated diary entry day.

The questionnaires were filled out three weeks before the diary period (Time 1) and five weeks after the diary period (Time 2). In the Time 1 questionnaire, personal (procrastination, general self-efficacy, conscientiousness, and emotional stability) and work characteristics (perceived workload, job autonomy, and interruptions at work) were included in order to obtain a clear picture about the individuals personality and their job. Furthermore, characteristics which might be affected by the diary study were included, these were: planning behaviour, job performance, work strain, job...
satisfaction, and emotional well-being. In the Time 2 questionnaire, only these potentially changing characteristics were included.

**Diary study**

The diary consisted of a form that contained three parts. The first part was completed at the beginning of a workday, the second and third part were filled out at the end of a workday.

The first part consisted of writing down planned tasks for a workday where they had to indicate the extent to which tasks were important, urgent, and attractive. Each response was based on a 5-point Likert scale.

The first two dimensions were derived from time management literature (Drucker, 1967, Mackenzie, 1972, Kievit-Broese, 1997), which states that people should distinguish between importance and urgency of tasks. The attractiveness-dimension was added based on procrastination studies (van Eerde, 1998), which showed that people postpone unattractive tasks. Furthermore, respondents were asked to prioritise the tasks they had planned for the day.

The second part of the diary gave an indication as a percentage the extent to which a planned task was completed. Participants were requested to note down possible consequences of not completing the task.

They were also instructed to include unplanned tasks they dealt with during the day. The unplanned tasks were also rated on the dimensions importance, urgency and attractiveness. Work interruptions (e.g., telephone calls) were noted at the bottom of the form and an estimation of the total interruption time for a workday was included.

A pilot study showed that interruption-time ranged from several seconds to almost an hour. It would have been too tedious for participants to have note the duration of each interruption. For this reason, only an estimation of the total interruption time was requested from them.

The third part was placed on the back of the form, where participants were asked to indicate whether they had worked overtime and if they had completed tasks they intended to finish. They were also asked to estimate the percentage of time they had spent on planned and unplanned tasks, interruptions at work, and activities relating to their private life. Finally, participants indicated the level of satisfaction with their workday, and how they felt in themselves.

Daily work satisfaction was measured with the Kunin (1998) job satisfaction one item scale which has a choice of 5 faces: (1) a very happy to (5) a very unhappy face. The scale was used to measure daily satisfaction.

Affective well being at work reflects the frequent experience of positive affect and infrequent experience of negative affect (Daniels, 2000). The original scale consists of 30 emotions measured on a four-point Likert-type scale ranging from not at all (1) to completely (4). Semantic differentials were constructed for the diary’s based on this scale. The five remaining items were tired-full of energy, bored-enthusiastic, cheerful-sad, relaxed-tensed, happy-angry. Responses were made on 5-point scales.

**Questionnaire**

The questionnaire was designed to assess possible changes due to the diary study and was used to obtain information on person characteristics, work characteristics, time management behaviour, control of time, job performance, and affective outcomes. Variables in the Time 1 and Time 2 questionnaire were:

**Personal characteristics, Time 1.** Procrastination (Van Eerde, 1998) is an eight-item scale to assess whether people tend to do urgent important tasks later than intended. All ratings were made on a 5-point scale ranging from (almost) never (1) to (almost) always (5). Sample item: “Even if I have to finish something urgently I still find myself doing other things”. General Self efficacy, defined as a cognitive mechanism based on expectations or beliefs about one’s ability to perform actions necessary to produce a given effect, was assessed with a 10 item scale adapted from Schwarzer (1992), translated in Dutch by Teeuw, Schwarzer & Jerusalem (1992, in Schwarzer, 1992). Ratings were made on a 5-point scale ranging from (almost) never (1) to (almost) always (5). Sample item: “I know that I can handle unexpected events”. Conscientiousness, representing being an efficient, reliable orderly person, and Emotional Stability, being an emotionally stable person, was assessed with a short version of the Big Five Factors Inventory with each of the subscales containing seven items (Harary & Donahue, 1994). Participants responded to each item using a 5-point Likert-type scale from do not agree at all (1) to completely agree (5). Sample item conscientiousness: “I see myself as someone who handles things efficiently”. Sample item emotional stability: “I see myself as someone who worries a lot” (reversed scoring). Time management training. Subjects indicated whether they had participated in a time management training program (0=no; 1=yes) prior to this study, and if so, in what year.

**Job characteristics, Time 1.** Workload (perceived) was assessed with an 11-item scale indicating whether a person feels that there is much work to do and whether the work pace is high (VBBA, Van Veldhoven & Meijman, 1994). Responses were made using 4-point scales from never (0) to always (3). Sample item: “Do you need to work fast to finish your work?”. Job autonomy, an 11-item scale (VBBA, Van Veldhoven & Meijman, 1994), was used to measure the extent to which a person experiences autonomy on the job. Responses were made using the same 4-point scale used for assessing perceived workload. Sample item: “You are free in executing your work the way you want it?”. Interruptions at work, a 6-item scale (Roe, 1998), indicates whether someone has to deal with several unwanted interruptions at work during a workday, for instance by phone calls or colleagues walking in. Participants responded to each item using a 5-point Likert-type scale from do not agree at all (1) to completely agree (5). Sample item: “Are you being hindered in your work execution?”

**Planning behaviour, Time 1 and 2.** Planning behaviour was measured with the 10 item subscale “Setting goals and priorities” of the Time Management Behaviour Scale (Macan, Shahani, Dipboye & Philips, 1990). Based on a previous study, long term goal setting items were excluded from the scale (cf Peeters & Rutte, 2002). The remaining items refer to planning behaviour, planning and prioritising tasks. Two items were deleted after examining factor loadings and item
content. Sample item: “I set short term goals for what I want to accomplish in a few days or weeks”. All ratings were made on a 5-point scale ranging from (almost) never (1) to (almost) always (5). Perceived control of time, Time 1 and 2. Six items assessing the extent to which individuals believe they can directly affect how they manage their time were derived from Macan et al. (1990). As a pilot study revealed that the Dutch translation produced an unreliable scale, we used two out of five items, and added four new items. Ratings were made on a 5-point Likert-type scale from do not agree at all (1) to completely agree (5). After examining factor loadings, 1 item was deleted. Sample item: “I feel in control over my own time”. Job performance, Time 1 and 2. Job performance was measured by asking respondents to rate their performance in relation to their colleagues (Roe, 1998). Eight statements, for example “It has been acknowledged that my performance is higher compared to my colleagues” could be rated from yes, that is true (1) to no, not true (5). One item was deleted, based on low factor loadings. Job Satisfaction, Time 1 and 2. Job satisfaction was measured with the 1-item Kunin (1998) faces measure, with 5 different faces to choose from, ranging from a very happy to a very unhappy face. Negative faces were reversibly scored. Work strain, Time 1 and 2. Work strain was assessed on a 12-item scale (Roe, 1998) and indicated people’s dealing with strain in their job caused by time pressure. Participants responded on to each item using a 5-point Likert-type scale from do not agree at all (1) to completely agree (5). Sample item: “I find it hard to relax at the end of a workday”. Emotional well-being at work, Time 1 and 2 reflects the frequent experience of positive affect and infrequent experience of negative affect on a 30-emotions scale (Daniels, 2000). Responses were made on a 4-point scale from not at all (1) to completely (4). Sample item: “I feel nervous”.

Results

Subjects
Respondents were randomly selected from two R&D departments in a company in the semi-conductor industry. In the diary condition, 30 respondents (48%) filled out two or more diaries, 26 of whom also completed both questionnaires, 3 completed only the first questionnaire. In total, 262 diaries were filled out, which included 878 planned tasks reported at the start of a working day, and 252 unplanned tasks reported at the end of a working day. In the control condition, 41 respondents (65%) filled out both questionnaires. Also, four respondents in the diary condition completed both questionnaires, but not their diaries. They were excluded from the study because their results could be biased. Respondents in the diary condition were mainly male (83%) had an average age of 33 years and worked fulltime with an average of 8.4 hours a day. Five respondents had participated in a time management training program 3 to 6 years prior to this study. Respondents in the control condition were mainly male (93%) had an average age of 33 years and worked fulltime with an average of 8.5 hours a day. Six respondents had participated in a time management training program 1 to 9 years prior to this study.

Planning and completing tasks
The first research question looked at how the different dimensions of tasks (importance, urgency, and attractiveness) play a role in planning vs. completing tasks. The respondents listed an average of 3.7 planned tasks each day. As expected, they prioritised their planned activities according to the importance (r = .29, p = .01) and urgency (r = .33, p = .01) attributed to each task, whereas attractiveness was not related to the priority of tasks. Table 1 shows that intercorrelations among urgency, importance, and attractiveness of tasks are moderate. Urgency and importance correlate .58, but the two ratings are differently related to the other measurements and therefore indicates two dimensions rather than one.

<table>
<thead>
<tr>
<th>Table 1. Correlations priority ranking and ratings of importance, urgency, attractiveness, and percentage completed of planned tasks (n=878)</th>
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<tbody>
<tr>
<td>Priority ranking</td>
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<tr>
<td>Priority</td>
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<td>Attractiveness</td>
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<td>Percentage</td>
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* p < .05, ** p < .01

On average, 73% of the planned tasks were completed by the end of a workday versus 81% of the unplanned tasks. Table 1 shows that the percentage of tasks completed correlates with the priority ranking (r = .21, p = .01) and urgency of the task (r = .11, p = .01). The higher the priority ranking and urgency of the task, the more of the task was completed. Reasons that were given in the diaries for not completing planned tasks included: no time (because start up time is high), and being interrupted by others (questions, lack of information, unexpected meetings and so on).

Planned versus unplanned tasks
The second research question was whether unplanned tasks were rated differently on the dimensions importance, urgency, and attractiveness than planned tasks. On average, 96 unplanned tasks came up during a workday. Table 2 shows the correlations among importance, urgency, attractiveness, and percentage completed for unplanned tasks. Unplanned tasks were judged as more urgent ($m = 4.15$ vs. $m = 3.93$, $t = 4.79$, $p < .001$), more important ($m = 3.93$ vs. $m = 3.53$, $t = 3.50$, $p < .001$), and equally attractive ($m = 3.37$ vs. $m = 3.43$, $t = -.69$, $p < .001$). For unplanned tasks, the percentage completed was positively related to urgency ($r = .29$, $p = .01$) and negatively to attractiveness ($r = -.17$, $p = .05$) of the tasks.

<table>
<thead>
<tr>
<th>Importance</th>
<th>Urgency</th>
<th>Attractiveness</th>
<th>Percentage completed</th>
<th>Mean</th>
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<tbody>
<tr>
<td>Importance</td>
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<td></td>
<td>4.15</td>
<td>.86</td>
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<tr>
<td>Urgency</td>
<td>.51**</td>
<td>-</td>
<td></td>
<td>3.93</td>
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<tr>
<td>Attractiveness</td>
<td>.14**</td>
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<td>3.37</td>
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<tr>
<td>Percentage completed</td>
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<td>.29**</td>
<td>-.17*</td>
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<td>81.23</td>
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* $p < .05$, ** $p < .01$

On average, 96 minutes (20%) of the total work time was filled with work interruptions with a maximum of 300 minutes. Work interruptions consisted of telephone calls (31%), colleagues walking in and asking questions and unexpected (informal) meetings (25%), broken or lost working materials (17%), unexpected tasks due to clients (13%), private matters (6%), and looking for a parking space (4%). Time spent on work interruptions was negatively related to time spent on planned tasks ($r = -.72$, $p = .01$), and time spent on unplanned tasks ($r = .56$, $p = .01$).

Relating the diary input to questionnaire input revealed that time spent on interruptions was negatively related to conscientiousness ($r = -.38$, $p = .01$). Planned task completion was negatively related to time spent on work interruptions ($r = -.46$, $p = .01$), and positively related to time management training ($r = .34$, $p = .01$).

Workday satisfaction

The third research question concerned the factors that were related to workday satisfaction. Correlation analysis (see Table 3) showed that spending time on planned tasks was, as expected, related to workday satisfaction ($r = .24$, $p = .01$). Overall, respondents indicated that they had spent 77% of their time on working on planned tasks, 16% on unplanned tasks, 5% on work interruptions, and 1% on private matters.

Furthermore, workday satisfaction was negatively related to total workday interruption time ($r = -.18$, $p = .05$), time spent on unplanned tasks ($r = -.12$, $p = .05$), time spent on work interruptions ($r = -.24$, $p = .01$), and time spent on private matters ($r = -.12$, $p = .05$). Daily emotional well being was highly related to workday satisfaction ($r = .62$, $p = .01$).

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* $p < .05$, ** $p < .01$

Results of the diary intervention

The final research question indicates if daily planning in the diary condition had any effect as compared to the control condition. The results from the questionnaires results for the diary condition did not differ from the control condition ($t$'s ranging from -1.78 to 1.66, $p$’s n.s.). The questionnaire results in both conditions indicated that work strain, autonomy on the job, planning, and workload were high in this group of respondents. Over time, all respondents increased their planning behaviour ($m = 3.38$ vs. $m = 3.59$, $t = -2.96$, $p = .001$) Time 2, and decreased their work strain ($m = 2.49$ vs. $m = 2.33$, $t = 2.49$, $p = .001$).
Respondents that had participated in a time management training program prior to this study or had high scores on self-efficacy, planned more of their activities than others. The diary entries showed that respondents were hardly ever able to finish their planned work, due to unplanned activities and work interruptions.

**Conclusion and discussion**

Results illustrate that planning by means of a diary gives an indication of what people intend to do, but does not portray what has been done during the day. Respondents prioritised their planned tasks according to importance and urgency estimations of tasks. Surprisingly, they performed urgent tasks which were rated as unimportant. Unplanned tasks were rated as more urgent, more important, and less attractive as planned tasks. Spending time working on planned tasks was related to workday satisfaction. Task completion was negatively related to time spent on work interruptions and positively to time management training. Time spent on work interruptions was negatively related to time spent on planned tasks and to conscientiousness, and positively to time spent on unplanned task.

Reasons for uncompleted work was attributed to either the worker, colleagues or the work situation (colleagues that are ill, software or materials are not available, machines are broken). Our results may partly be due to the organisation and nature of work investigated in the study. Engineers who composed the study population have a great deal of interdependency with regards to their work and results may well have reflected this aspect of their work. For instance, if someone had not prepared for a meeting, this would have an impact on the work of the other workers. Further, attribution bias could also be responsible for these results. Some of the diary and questionnaire results were seen to be contradictory. For example, some respondents indicated that they did not experience any work interruptions and felt in control of their time in the questionnaire, whereas their diary entries showed that they had to deal with interruptions during the day. There is a greater possibility that the diary data is indicative of the actual situation and more accurate than the questionnaire results. The diary method as used in this study was a very useful method for obtaining detailed information, especially in combination with a questionnaire survey. This allows for exploring patterns in the diary entries and relating them to job satisfaction and emotional well being over time. A disadvantage of using this method is the low response rate. Thus, researchers should contact respondents on a frequent basis to motivate them in responding in order to overcome this limitation.

Future studies should further investigate self-regulating strategies, in particular their effects on objective performance measures as this was not assessed in the current study. One could, for example, include supervisors judgement of whether participants are good or average time managers (following Sonnentag, 1999).

**References**

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Psychological acceptance and emotional intelligence in relation to workplace well-being

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Introduction, objectives and hypothesis

Individual differences have been studied for many years in an attempt to find explanations as to why people’s well-being can differ, despite exposure to similar workplace circumstances (Grimshaw, 1999). Popular individual difference constructs in this context include: type A behaviour (Friedman and Rosenman, 1974), locus of control (Rotter, 1966) and negative affectivity (Watson and Pennebaker, 1989). By contrast, psychological acceptance (acceptance; Hayes, 1987) and emotional intelligence (EI; Salovey and Mayer, 1990; Mayer and Salovey, 1997) are two individual differences, whose significance for workplace well-being is only beginning to be examined. The aim of the current study was to look at the relationship between well-being and these two relatively new individual difference variables.

Acceptance

Acceptance describes a strategy for well-being and productivity that encourages people not to ignore, avoid, or try to change unwanted thoughts and emotions. Instead, acceptance theory encourages people to experience these internal events, for two reasons. First, such acceptance, in itself, prevents, and attenuates, emotional distress (Bond & Hayes, 2002; Hayes, 1987), and it provides people with the attentional resources needed to identify and fulfil their goals; such attainment can, in turn, promote greater well-being and satisfaction (Bond & Hayes, 2002).

When used in a workplace setting, measures of acceptance are found to relate to affective well-being at work and to job induced tension; indeed, acceptance levels may explain as much as 40% of the variance in workplace well-being (Hayes et al., submitted). A recent longitudinal research study by Bond and Bunce (submitted) found that acceptance was the best predictor of mental health over time, even after controlling for previous mental health level and other relevant variables such as job control, negative affectivity and locus of control. This suggests that levels of acceptance may be a key factor in determining workplace well-being outcomes.

Emotional intelligence

There are a number of EI models, ranging from the ‘pure’ mental ability model, proposed by Salovey and Mayer (Salovey and Mayer, 1990; Mayer and Salovey, 1995,1997), to much broader models that define emotional intelligence as an array of coping abilities, behavioural skills and/or competencies (e.g.Bar-On 1997, quoted in Bar-On, Brown, Kirkaldy and Thome, 2000; Goleman, 1995, 1998; Higgs and Dulewicz, 1999). The current study adopts the Salovey and Mayer mental ability model of EI (Salovey and Mayer, 1990), which defines EI as “the ability to monitor one’s own and others’ feelings and emotions, to discriminate among them and to use this information to guide one’s thinking and actions” (p189).

While most models of emotional intelligence propose that this characteristic affects individual success (and there is now empirical support for a positive association between emotional intelligence and work performance, see Kaipiainen and Fletcher, 2001; Slaski, 2001), the link between emotional intelligence and well-being is more implicit than explicit. Some emotional intelligence models include factors relating to ‘stress’ and ‘stress management’ (e.g. Bar-On, 1997), but a ‘pure’ mental ability model of emotional intelligence would regard skills such as ‘stress management’ ability as emergent behaviours that result from the mental abilities that constitute emotional intelligence (Mayer, Salovey and Caruso, 2000). Where theorists do explicitly link emotional intelligence to well-being, the suggestion is that higher levels of emotional intelligence are associated with better mental well-being (e.g. Bar-On, 1997). As yet, there is little empirical research on this association. However, a recent study by Slaski (2001) suggests that managers with higher emotional intelligence do suffer less strain and enjoy better health, morale and quality of working life. Slaski also found that an intervention to increase emotional intelligence yielded concomitant improvements in well-being variables.

Comparison and hypothesis

Both acceptance and EI emphasise a conscious examination of (or a meta-cognitive approach to) emotion and behaviour. However, it appears that the acceptance construct is more encompassing than is EI, because the former specifies the meta-cognitive mechanism (i.e., acceptance) that prevents unwanted thoughts and emotions leading to psychological dysfunction. The EI construct does not posit such a mechanism; instead, it focuses on the recognition of emotions, so that they can be accurately and efficiently processed (Mayer, Salovey and Caruso, 2000). Thus, EI (as defined here) does not describe how to prevent unwanted thoughts and emotions leading to distress. Acceptance is, therefore, hypothesised to be better than EI in predicting well-being outcomes.
Method

Design
To investigate the above hypothesis, we conducted a cross-sectional study using quantitative data that we obtained through questionnaires. With these data, we were able to examine, through path analysis, the relative ability of acceptance and EI to predict the following well-being outcomes: job satisfaction, physical well-being, mental well-being and general mental health. This statistical approach allowed us to examine the association of one predictor (e.g., acceptance) and an outcome (e.g., mental health), after controlling the effect of other predictors (e.g., EI).

Research often shows that job control predicts well-being outcomes (e.g., Terry and Jimmieson, 1999). We therefore included job control, as an additional variable in our path analytic model. Thus, we were able to examine the predictive ability of acceptance and EI, after accounting for the contribution of a well-established indicator of workplace well-being.

Participants
We distributed questionnaire packs to 570 employees of several UK organisations, and 290 returned them, giving us a 51% response rate. Of those responding, 51% were men and 44% women (5% did not respond to this question). The mean age of the respondents was 38.19 years (SD 10.55).

Measures
Acceptance was measured using the Acceptance and Action Questionnaire (AAQ; Hayes, 1996; Hayes et al, submitted) and EI was measured using the Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey and Palfai, 1995). Well-being outcomes were measured using the Pressure Management Inventory (PMI, Williams and Cooper, 1996, 1998) and General Health Questionnaire-12 (GHQ; Goldberg, 1978). We used the Work Control Scale (WCS; Dwyer and Ganster, 1991; Smith, Tisak, Hahn and Schmieder, 1997) to measure job control.

Procedure
The questionnaire packs were all distributed over a two month period in 2001 and completed questionnaires were returned directly to us, to ensure confidentiality and maximise response rate. The responses were entered into an SPSS database and path analysis applied using AMOS 4.0 (Arbuckle & Wothke, 1999). The path analysis tested was as in figure 1.

Figure 1. Path analysis for the model containing all three predictors (acceptance, EI and job control)

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2 The term ‘predict’ is used throughout this article purely in its statistical sense, not to imply causality.
Results

As hypothesised, results indicated that acceptance had a greater association with the well-being outcomes, than did EI or job control. The only exception was that job control significantly predicted job satisfaction, whereas acceptance and EI did not (see table 1).

Table 1. Standardized path coefficients for the model containing all three predictors (acceptance, EI and job control)

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Mental ill-health</th>
<th>Mental well-being</th>
<th>Physical well-being</th>
<th>Job satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance</td>
<td>.25*</td>
<td>-.71*</td>
<td>-.32*</td>
<td>.01</td>
</tr>
<tr>
<td>EI</td>
<td>-.01</td>
<td>.01</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Job control</td>
<td>-.01</td>
<td>.12*</td>
<td>.05</td>
<td>.20*</td>
</tr>
</tbody>
</table>

Note. Higher scores on the AAQ relate to lower levels of acceptance.
* p < .05

Discussion

As we are not familiar with other research comparing acceptance and EI, there is clearly a need to examine further the association of these two variables with well-being. It would appear initially, however, that the impact of acceptance on well-being outcomes may be greater than that of EI.

There are certain limitations of the current study, which future research in this area should bear in mind. First, the cross-sectional design of this study means that causal inferences cannot be made, as to the relationships amongst the variables that we examined. It is possible that well-being outcomes might affect levels of acceptance and EI rather than vice versa. Although, consistent with Hayes’ (1987) theory of acceptance, Bond and Bunce (submitted) found that acceptance longitudinally predicted mental health, but that there was no evidence for such a reversed causal relationship. Second, the use of self-report measures for assessing EI is a potential confound because EI is strongly related to self-awareness. Thus, those who are self-aware may be most conscious of the gaps in their emotional intelligence and inclined to rate themselves low on EI levels; whereas, those who are not self-aware are in a difficult position to judge their emotional intelligence and may be inclined to rate themselves high. Another potential limitation of the current study is the nature of the EI measure used. The TMMS (Salovey et al, 1995), is made up of attention, clarity and repair scales. Research by Goldman, Kraemer and Salovey (1996) suggests that the attention and repair scales may have conflicting relationships with symptom/illness reporting: high repair may be associated with lower symptom reporting and high attention with higher symptom reporting. Thus a measure that combines the two scales may confound the two different effects. In summary, then, future research should, if possible, be longitudinal in design using objective non-self-report measures of the variables. It would also be helpful to use interventions to manipulate levels of acceptance and well-being. Such an outcome study would provide a stringent test of the hypothesis that acceptance and EI affect well-being; and, it would permit a robust investigation into the mechanisms by which these two variables affect their outcomes.

If the findings of this study are replicated in further research, the implication for practitioners is that interventions that increase psychological acceptance may be helpful in reducing occupational ill-health. This conclusion is consistent with a randomised-controlled stress management intervention (SMI) outcome study by Bond and Bunce (2000), which showed that an acceptance-based SMI improved participants’ overall mental health and depression, because it increased their levels of acceptance; in other words, acceptance was the mediator, or mechanism, by which the SMI led to these improvements in well-being.

References

Technology, stress and social relations: Direct, indirect and interaction effects of computer and machine technology and social relations on stress.

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Introduction

During the last few decades there has been a drastic increase in the number of organizations utilizing technology to cope with constant challenges. Research has shown contradictory findings regarding the consequences of the technology for employees’ levels of stress (e.g. Korunka, Weiss & Karetta, 1993; Agervold, 1987). Two types of technology will be examined in this study. While computer technology implies personal computers, machine technology includes equipment directly involved in the production process (including assembly lines).

The study is based on the demand-control-support model (Karasek & Theorell, 1990). According to this model, stress is mainly dependent on demands (e.g. workload, work pace) and degree of control (decision authority and skill discretion). While control is the primary risk factor for job-related stress, high demands are supposedly only a risk factor when control is low. In our study of technology and stress, we therefore find it interesting not only to focus on the direct effects, but also the technologies indirect influence on stress through its effects on employees’ levels of demands and control. Earlier studies focusing on the consequences of technology for factors like demands, power distribution and job content are inconsistent (centralization versus decentralization, degrading versus upgrading) (e.g. Dopson & Stewart, 1993; Buchanan & Boddy, 1982). Context variables like organizational size, variability in the environment and the preferences of the leader most likely contribute to the effect in each situation.

Social support, the third dimension in this model, is said to be one of the most important factors in stress reduction. It is generally suggested that social support can work to reduce stress in three ways (e.g. House, 1981): directly - by fulfilling human needs, indirectly - by reducing the stressor (in this case demands), and at last through the buffering effect. The buffering effect claims that social support modifies the relationship between the stressor and strain and is only effective when the stressors are present (in this case when the demands are high). Although the effects of social support in reducing stress have been confirmed empirically, the concept has often been criticized. Researchers have failed to agree on a common definition of social support, and are often not adequately explicit in the source or the kind of support they relate to in their studies. Many researchers seem to equalize social support with social interaction (e.g. Johnson & Hall, 1988) and even operationalize interpersonal conflicts as negative social support (Karasek & Theorell, 1990). A consequence of this is that other dimensions of social interactions have been more or less neglected.

This study has two primary goals. The first is to study the relationship between computer and machine technology and stress. To achieve this, we will test for direct effects, indirect effects (through demands and control), and interaction effects (in this case between technology and organizational size to get an idea of the role of context variables). The second goal is to expand the concept of social relations within stress research by identifying other possible types of social relations other than social support that may be important for stress. We will also test for direct effects of these relations on stress.

Method

The research is based on a questionnaire survey of employees in the Norwegian food and beverage industry. The questionnaires were distributed and collected by local labor inspectors from The Norwegian Labor Inspection who had received training in the standardized procedures. This resulted in a representative sample of 1343 employees which amounted to a mean response rate of 58%.

In this study we used questions from nine scales in the questionnaire (in addition to standard demographic variables) to measure the relevant predictors, moderators and outcomes.

Demands and Control were measured by, or based on, items from the Job Content Questionnaire (JCQ) (Karasek, 1985) and a short version of the Quality of employment survey (QES) (Theorell et al., 1991). Five items (e.g. work pace, deadlines, constant attention) constitute the Demands dimension ($\alpha$=.74), and five items (e.g. decision authority, possibilities to learn) constitute the Control dimension ($\alpha$=.76).

Computer technology was measured with a single item on how often the employee is dependent upon using a computer. Machine technology was similarly measured with a single item on how often the employee spends work time in an assembly line or in a situation that to a large degree is controlled by a machine. Response alternatives were, respectively, a 7-point scale of response alternatives ranging from “never” to “all the time”, and a 5-point scale from “very seldom” to “very often”.

Social relations among colleagues were measured by items in five scales in the questionnaire (based on JCQ (Karasek, 1985), LOQ (Watkins & Marsick, 1997), SSB (1993), QPS-Nordic (Lindström et al., 1997), and James’ psychometric model (e.g. James & McIntyre, 1996)). A factor analysis of the items resulted in five dimensions of social relations: Social support (9 items, $\alpha$=.87), Respect and development (6 items, $\alpha$=.76), Group pressure (8 items, $\alpha$=.74), Harassment (3 items, $\alpha$=.64), and Bullying (2 items, $\alpha$=.72).
Social relations with supervisor were measured by items in six scales (based on The Managerial Practices Survey (Yukl & Lepsinger, 1990) in addition to the ones mentioned for social relations among colleagues). A factor analysis identified four dimensions: Supervisor socioemotional support (5 items, $\alpha=.76$), Supervisor instrumental support (11 items, $\alpha=.84$), Supervisor informational support (4 items, $\alpha=.85$), and Supervisor delegation (2 items, $\alpha=.85$). Stress was measured by a translated version of Cooper’s Job Stress Scale (Cooper, 1981). The scale consisted of 22 items with response alternatives on a 6-point scale from “no stress” to “very much stress”.

The data analyses in this study were carried out using SPSS 10.0 and LISREL (Jöreskog & Sörbom, 1993). Factor analyses were carried out to identify the dimensions in social relations. Main effects of all the predictors on stress were then computed in using blockwise multiple regression analyses. Factorial ANOVA (General Linear Model) were used to find interaction effects, and indirect effects were uncovered by a Structural equation model (SEM).

Results

Factor analyses with orthogonal rotation were carried out to determine the underpinning structures in the surveys’ statements and questions concerning relations with colleagues and supervisors. This resulted in five types of positive and negative social relations among colleagues: Social support, Respect and development, Group pressure, Harassment, and Bullying. The Social support dimension resembles Karasek and Theorell’s socioemotional social support, while Respect and development reflects social interaction which contributes to self-evaluation, learning, and development.

The factor analysis of relations with supervisors revealed four types of positive social relations: Instrumental support, Informational support, Socioemotional support, and Delegation. The first three types of relations resemble types of social support identified earlier by among others Karasek and Theorell (1990) and House (1981), hence the names. Delegation reflects employees’ perception of whether they are given the opportunity to make their own decisions relevant to carrying out their tasks.

Main effects

The results of the multiple regression analysis are shown in Table 1. The total model explained 41% of the variance in stress. All steps in the model contributed to a significant increase in the variance explained.

Table 1. Main effects of demographic variables, demands, control, and social relations on employees’ perceived levels of stress.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>t</th>
<th>Adj. R²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td>-.04</td>
<td>-1.607</td>
<td></td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>.00</td>
<td>- .044</td>
<td></td>
</tr>
<tr>
<td><strong>Years of education</strong></td>
<td>.09</td>
<td>3.585***</td>
<td></td>
</tr>
<tr>
<td><strong>Organizational size</strong></td>
<td>-.08</td>
<td>-3.405***</td>
<td></td>
</tr>
<tr>
<td><strong>Block 1</strong></td>
<td></td>
<td></td>
<td>.014***</td>
</tr>
<tr>
<td><strong>Computer technology</strong></td>
<td>.08</td>
<td>2.990**</td>
<td></td>
</tr>
<tr>
<td><strong>Machine technology</strong></td>
<td>-.01</td>
<td>-.192</td>
<td></td>
</tr>
<tr>
<td><strong>Block 2</strong></td>
<td></td>
<td></td>
<td>.008**</td>
</tr>
<tr>
<td><strong>Demands</strong></td>
<td>.31</td>
<td>13.208***</td>
<td></td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>.17</td>
<td>5.528***</td>
<td></td>
</tr>
<tr>
<td><strong>Block 3</strong></td>
<td></td>
<td></td>
<td>.158***</td>
</tr>
<tr>
<td><strong>Social support</strong></td>
<td>-.11</td>
<td>-3.804***</td>
<td></td>
</tr>
<tr>
<td><strong>Respect and development</strong></td>
<td>-.07</td>
<td>-1.774</td>
<td></td>
</tr>
<tr>
<td><strong>Group pressure</strong></td>
<td>.16</td>
<td>5.892***</td>
<td></td>
</tr>
<tr>
<td><strong>Harassment</strong></td>
<td>.08</td>
<td>3.488***</td>
<td></td>
</tr>
<tr>
<td><strong>Bullying</strong></td>
<td>.12</td>
<td>4.650***</td>
<td></td>
</tr>
<tr>
<td><strong>Block 4</strong></td>
<td></td>
<td></td>
<td>.216***</td>
</tr>
<tr>
<td><strong>Supervisor instrumental support</strong></td>
<td>-.05</td>
<td>-1.121</td>
<td></td>
</tr>
<tr>
<td><strong>Supervisor informational support</strong></td>
<td>.03</td>
<td>.765</td>
<td></td>
</tr>
<tr>
<td><strong>Supervisor socioemotional support</strong></td>
<td>-.20</td>
<td>-5.357***</td>
<td></td>
</tr>
<tr>
<td><strong>Supervisor delegating</strong></td>
<td>-.01</td>
<td>-.390</td>
<td></td>
</tr>
<tr>
<td><strong>Block 5</strong></td>
<td></td>
<td></td>
<td>.015***</td>
</tr>
<tr>
<td><strong>Sum R² adj., block 1-5</strong></td>
<td></td>
<td></td>
<td>.411</td>
</tr>
<tr>
<td><strong>F</strong></td>
<td></td>
<td></td>
<td>51.503***</td>
</tr>
</tbody>
</table>

* : p < .05   **: p <= .01   ***: p<= .001

Demands stand out as the variable with the highest t-value; high demands cause a large increase in employees’ perceived levels of stress. The most surprising finding is that high control also results in a significant increase in stress.
The two types of technology showed practically no direct effects on stress, but as we will see later, these effects varied to some degree with organizational size. Supervisor socioemotional support stands out as the most crucial variable in the model for the reduction of stress, and is the only type of relation with supervisors that is of significance for stress. Among social relations with colleagues, social support is the only type of relation that contributes to reduction in stress. The negative relations proved to be the most crucial, with group pressure being the second strongest predictor for increased stress overall.

**Interaction effects**

Using a factorial ANOVA (General Linear Model), we tested for five interaction effects: a) Demands X Control, b) Organizational size X Computer technology, c) Organizational size X Machine technology, d) Demands X Social support, and e) Demands X Supervisor socioemotional support. Each variable was divided into two categories equivalent to a “high” and “low” level, with the exception of Organizational size which was categorized as: “small” (below 50 employees), “medium” (50-100 employees), and “large” (over 100 employees).

While no interaction effect was found between demands and control, the other four interactions proved to be significant.

![Interaction effects between computer and machine technology and organizational size](image1.png)

**Figure 1a and b.** Graphs of the interaction effects between computer and machine technology and organizational size

The interaction effect between computer technology and organizational size is shown graphically in Figure 1a: F(4.01); p < .05. A post hoc LSD test showed that there exist no significant differences in stress between employees that work with computer technology *often* in organizations of different sizes. But both the graph and the LSD test confirm that working with computer technology increases stress in small and large organizations, but has no significant effect on stress levels in medium-sized organizations.

Figure 1b shows the interaction effect between machine technology and organizational size: F(3.82), p < .05. In this case, the post hoc LSD test confirms the tendency apparent in the graph that working with machines is by far, most stressful in medium-sized organizations. As the graph indicates, work with machine technology causes a slight increase in stress in small organizations and a considerable increase in stress in medium organizations, but has no effect on stress in large organizations.

![Interaction effects between demands and social support](image2a.png)  ![Interaction effects between demands and supervisor socioemotional support](image2b.png)

**Figure 2a and b:** Graphs of the interaction effects between a) Demands and social support and b) Demands and supervisor socioemotional support
Figure 2a and 2b show the interaction effects between Demands and Social support among colleagues (F(4,59); p < .05) and between demands and supervisor socioemotional support (F(7,92); p < 0.5) respectively. As both graphs show, the effect of Demands is clearly dependent on the level of support. At high levels of support (either kind), both high and low levels of Demands cause less stress than they do at low levels of support. The graphs and post hoc LSD tests also give partial support to the so-called buffering effect. Support from both colleagues and supervisors are more effective in reducing stress when the demands are high rather than low. In other words, the moderating effect of social support on the relationship between demands and stress is stronger when demands are high. Nevertheless, the results indicate that both types of support moderate the effect of demands on stress at both levels of demands, and this is inconsistent with the buffering effect, which claims that social support reduces stress only when demands are high.

Indirect effects
Using LISREL, we studied the indirect effects of technology and social support on stress (using Supervisor socioemotional support as social support from supervisors) in a structural equation model (SEM). A chi-square of .26 df = 1, p = .61) indicates that the model is a good fit to the sample data. (It is important to be aware of the fact that models with only one degree of freedom don’t necessarily have to fit the data very well to achieve acceptable goodness of fit scores, but this will have little effect on the regression coefficients in the model that are our primary focus.)

The SEM in Figure 3 shows that both computer and machine technology contributed to an increase in stress by increasing Demands. At the same time, computer technology increases control, which in this population results in an additional increase in stress. Machine technology on the other hand, causes a considerable reduction in employee control and in that way contributes to reduce stress. Social support and supervisor socioemotional support show virtually no effect on demands, contrary to the theory of social support’s indirect effect on stress. However, support from both colleagues and supervisors bring about an increase in employees’ perceived control, and hence (under these conditions) an increase in stress. Finally, the SEM shows that control also has an indirect effect on stress: control reduces demands. So although control contributes to increase stress directly, it at the same time reduces stress by decreasing demands.
Discussion

The findings in this study contradict one of the most basic assumptions in the demand-control model. Control turned out to be one of the factors that contributed the most to increased stress in this population. Researchers have earlier suggested that social class (e.g. Karasek & Theorell, 1990) and personality and contextual aspects (Kaminski, 1993) can influence whether or not employees actually want control. On the other hand, for these employees, Karasek’s concept of control as a combination of decision authority and skill discretion may be completely irrelevant. Perhaps they experience more control through the influence of their union representatives, or from the predictability in their work, than from individual control over tasks.

This study also showed that the effects of technology on stress are far more complex than earlier studies have acknowledged by only studying the direct effect. The technologies showed practically no direct effect on stress, but this varied to some degree with organizational size (showing the importance of context variables). At the same time, both computer and machine technology strongly influenced stress indirectly, by altering the employees’ perceived levels of demands and control.

Social support from both colleagues and supervisors operated to reduce stress directly. Both types of support also showed weak tendencies to reduce stress the most when the demands were high (the buffering effect). Other forms of social relations with colleagues and supervisors were identified as well, and strong relationships with stress were found for several of them. Negative relations among colleagues (e.g. group pressure and harassment) proved to be the most crucial types of relations for perceived stress. This indicates the need for expanding our understanding of social relations in future stress research.

Conclusion

A better understanding of the effects of technology on employees and organization require the identification of the context variables that determine which of the effects that will occur in different situations. We also present two suggestions for improvements in the demand-control-support model. The results indicate the need for a more occupation-dependent control concept that to a higher degree will capture the essence of what the employees themselves actually perceive as control. Finally, the model needs to include negative social relations as own types of relations, instead of viewing such relations merely as negative social support.

References

Introduction

A good safety culture is often mentioned as being important for safety. The safety culture in an organization can affect the efficiency and success of the safety management work. Basic values, norms and attitudes concerning safety, as well as the existence of a learning culture with continuous improvements concerning safety, can be crucial. The safety culture in an organization can in turn be affected by changes in economy, competition from similar organizations, technical development and public opinion.

Air traffic control is an occupation where safety has highest priority but is subject to pressure in the form of increasing demands on efficiency, technical development and changing conditions in air traffic. The safety distances between airborne aircrafts are reduced and the respective roles of pilots versus air traffic controllers are being discussed. For example, the 'Free flight’-concept means that the pilot chooses his own route at a high altitude en route, and discussions are ongoing about a joint European FIR airspace. After the events of 9-11 2001, the aviation business is under strong economical pressure; low price companies are expanding at the expense of well-established companies that have been leaders in the field for decades.

The Swedish Civil Aviation Administration is owned by the national government. It is divided into separate divisions, one being the Air Navigation Services Division (ANS). This division is undergoing major organizational changes including the establishment of several commercialised spheres and changes in leadership structure. The ANS is now an absolute “provider” (no longer also a “regulator”), and will compete with possible new providers in the area of air traffic service.

In 2004 the Swedish air traffic control system will consist of two air traffic control centers (ATCCs). The centers are presently undergoing modernization in order to adapt to the increasing volume of air traffic and to harmonize with international standards of air traffic control. Divisions within the ATCCs are being combined and new leadership structures are being formed. For the individual air traffic controller, the adaptation will involve a conversion from a strip-based air traffic control working method to a new computerized and cognitively different working method (System 2000). A team-based work organization is also under development.

These ongoing change processes at the ANS and at the air traffic control centres may affect safety culture and, in extension, flight safety. Maintaining a good safety culture is especially important in times of change.

Aim of the study

This is a joint research project between the Swedish Civil Aviation Administration and Lund University, the aim of which is to study and monitor the safety culture, organisational climate, the psychosocial work environment, work climate at a team level, and leadership effectiveness in the Swedish Air Navigation Services. This paper focuses on the safety culture part of the study. Results from the other parts of the project can be found in Arvidsson, Johansson, Ek & Akselsson, 2002. Included in the study are the two main air traffic control centres in Sweden and the ANS division head office at the Swedish Civil Aviation Administration.

The safety culture sub study investigates what effect the organizational changes will have on the safety culture and how well identified strengths in the safety culture will be preserved and weaknesses be improved upon during the change processes. Research questions of interest are 1) whether safety culture differs in the three study locations, 2) if safety culture differs across different levels in the respective organization, e.g. if managers perceive a different safety culture than operators, and 3) whether the changes about to take place will influence safety culture.

In the investigation three measurement rounds are being conducted during the course of about three years. The first round measured safety culture before the new work and leadership organization had been fully adopted at the ATC centres and before the transition to the new ATC work method. The results from this measurement will serve as a baseline for the coming two measurement rounds. The second measurement round will be conducted shortly after the introduction of the new ATC system, while the third round will take place after the situation can be considered to have stabilized (after approx 6 months).
This paper will give some results from the first baseline study. Comparisons have been made, for example, to see if individuals with leading positions report a different safety culture than individuals with no leading position.

As mentioned, the study measures dimensions of safety culture on different organizational levels. In relation to this, another aim is to continue development of a method for measuring safety culture, with special emphasis on making the method suitable for different organizational levels.

**Safety culture model**

The safety culture model used in the study is based on a systems perspective for controlling safety. In a system perspective one is aware that a socio-technical system is divided into levels (politicians, regulators, managers, safety officers, work planners and workers) and that these levels need to have well functioning co-ordinations for safety (Rasmussen, 1997). It describes the importance of strong connections between the levels in the form of goal directedness with feedback, learning and action both within and across levels. Learning becomes a basic principle in the dynamic socio-technical system. A working definition consisting of nine dimensions reflecting different aspects of a safety culture is used in this study. The following dimensions are included: One of the elements in a learning organization is a Reporting culture where individuals are willing to report incidents and anomalies in a constructive manner. This is closely connected to a Just culture where the reporter in most cases is praised instead of being punished even if he is reporting his own mistake. The fourth dimension, Flexibility in an organization, comprises e.g. respect for individuals’ skills and experiences. These four dimensions have been proposed to be important for a safety culture (Reason, 1997). The other dimensions in the working definition are Communication in daily work, Safety-related behaviors, Attitudes to safety (from both management and staff), perceived Working situation and Risk perceptions. These are dimensions used by researchers reviewed in Guldenmund (2000).

**Method**

The project was conducted at the two main air traffic control centers in Sweden and at parts of the ANS division head office.

In the total project each individual in the organisations was given five questionnaires in the three measurement rounds. The questionnaires were: 1) Questionnaire for Safety Culture Assessment, (Ek & Akselsson, 2002), 2) GEFA: Atmosphere at your place of work, (Ekvall, 1986) which measures organizational climate at a workplace, 3) TCI: Team Climate Inventory, (Anderson & West, 1994) which measures work climate concerning innovation and change on a team level, 4) LEAD: Leadership Effectiveness and Adaptability Description, (Hersey & Blanchard, 1988) which measures leadership behavior, and 5) COPSOQ: Copenhagen Psychosocial Questionnaire, (Kristensen & Borg) which measures the psychosocial work environment and health and well-being at the workplace.

In the safety culture sub study that is the focus of this paper, interviews were conducted along with the questionnaire. The aim of the interviews was to get more in-depth information about dimensions of safety culture and to get a method for validating the results from the questionnaire. The interviews were conducted at the two ATC centres with personnel on different organisational levels, from air traffic control assistants to ATCC leaders.

**Response rates**

The questionnaire response rates were 66% for ATCC A, 58% for ATCC B and 63% for the ANS division head office.

**Statistical analysis**

Analyses were conducted in order to investigate how various subgroups perceived the safety culture dimensions. For every individual a mean score was calculated for the questions belonging to each respective dimension. The mean scores were used in statistical analysis as correlations to other individual characteristics and t-tests of differences in perceived safety culture dimensions between subgroups. The given p-values in the results section are two-tailed.

**Results**

Safety culture dimensions at the three study locations

To obtain an overall picture of safety culture dimensions at the three study locations, each sample’s mean score for each safety culture dimension was calculated and is presented in Figure 1 below.

Across the nine dimensions, the ATCC A sample generally reported the most positive safety culture, followed by ATCC B. ANS division was clearly poorest with respect to Work situation, Learning, Communication in daily work and Risk perception. The reasons for these differences require further investigation.
Results from the two ATC centres

Age groups
At ATCC A, age did not correlate significantly to any of the nine safety culture dimensions. Comparisons using t-tests showed that individuals older than 40 years (compared with younger) reported significantly lower means on Communication in daily work (p=.027).

Similar results were found at ATCC B were individuals older than 30 years (compared to younger) reported significantly lower means on Communication (p=.043), but also less Justness (p=.013). Results also showed that higher age correlated significantly with less positive views of the Working situation (p=.023), with poorer Communication (p=.007) and with less Justness (p=.020).

Air traffic controllers vs air traffic control assistants
At ATCC A air traffic control assistants sit together with the traffic controllers, while at ATCC B the assistants sit together in another area in the room. This difference may have implications for safety culture perception.
At ATCC A air traffic control assistants (compared to air traffic controllers) reported experiencing a less positive view of their Working situation (p<.001), poorer Communication in daily work (p=.027) and less Justness (p<.001).
At B the result was somewhat different: assistants had a significantly more positive view of the Safety related behaviors (p=.049). During interviews at both locations, it was mentioned from time to time that the assistant group did not always get the information needed for the job or the necessary attention during briefing and debriefing.

Watch supervisors vs air traffic controllers and assistants
The watch supervisor (WS) answers for the operative work during a watch, which includes rapid decisions in a dynamic environment. Often he or she also works regularly as an air traffic controller. The following results were obtained when watch supervisors were compared with controllers and assistants on perceived safety culture dimensions: At ATCC A WS perceived more Flexibility (p=.019), better Reporting (p=.005), better Attitudes to safety (p=.004) and a more positive view of the Safety related behaviors (p=.007) and Risk perception (p=.046).
The comparisons at ATCC B did not reveal as many differences between WS and controllers/assistants: WS perceived better Reporting (p=.050) and better Learning (p=.048) there.

Top management group vs non-top management group
Group analyses were conducted in order to see whether individuals belonging to the management group would yield differences in perceived safety culture dimensions compared to other groups. The results showed that at ATCC A the management group reported a significantly better perception of Attitudes to safety (p=.003). The same result was found at ATCC B (p<.001). At ATCC B the management group also reported perceiving significantly better Reporting (p=.030) and Risk perception (p=.038).
Leadership position vs non-leadership position
After excluding the top management individuals, further analyses were made in order to compare individuals with some leadership function (i.e. WS, team managers and tactical supervisors) vs. individuals with no leadership function. At ATCC A the comparisons showed that individuals with leadership positions perceived significantly better Communication in daily work ($p=.049$), better Reporting ($p=.004$), better Learning ($p=.017$) and more positive views on Attitudes to safety ($p=.001$) and Safety-related behaviors ($p=.036$). Interestingly, no differences were found when the same analyses were made at ATCC B.

Results from the ANS division
Age groups
At ANS higher age correlated positively with a more positive view of the Working situation ($p=.037$), more Flexibility ($p=.004$), better Communication in daily work ($p=.026$), better Reporting ($p=.024$), better Learning ($p=.014$), and a more positive view of the Safety related behaviors ($p=.035$).

Leading position vs non leading position
Analyses were conducted in order to see whether individuals having leading positions at the ANS division (including the top management group) would yield differences in perceived safety culture dimensions compared to other groups at ANS. The results showed that leaders had higher means on seven of the nine safety culture dimensions: i.e. more Flexibility ($p=.016$), better Communication ($p=.006$), better Reporting ($p=.003$), better Justness ($p=.008$), better Learning ($p=.024$), better perceived Attitudes to safety ($p=.021$) and a more positive view of Risk perception ($p=.011$).

ANS division vs the two ATCCs
As compared to the personnel at the two ATC centers (combined), ANS personnel reported a more negative view of their Working situation ($p<.001$), less Flexibility in their work ($p=.027$), poorer Communication in daily work ($p<.001$), poorer Reporting ($p<.001$), lesser Learning ($p=.004$) and a more negative view of the Safety related behaviors ($p=.001$).

Discussion
The results to date clearly suggest that safety culture varies both across different locations and across different personnel categories at the same location, and further appears to vary with the individual employee’s age. Leaders were especially positive in their reports of safety culture.

The existing differences in safety culture between different organizational levels could motivate a continued study of the co-ordinations for safety between the levels. Strong connections between the levels in the form of goal directedness with feedback, learning and action both within and across levels are important for maintaining safety.

Further analysis must be done to determine the exact causes behind the differences in safety culture. One purpose of the safety culture measurement tool is that it should yield results which can be used in discussions at the ATC centers in order to find out what measures are needed in the improvements of safety culture and for safety. This will be an important step in the continuous improvement process. In this process, the results from the remaining measurement rounds of safety culture will be affected. However, we will be able to see what results different changes would yield.

References
Kristensen, T., & Borg, W. Copenhagen Psychosocial Questionnaire (COPSOQ). A questionnaire on psychosocial working conditions, health and well-being in three versions. Developed at the Psychosocial Department, National Institute of Occupational Health, Copenhagen, Denmark.

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Effort-reward imbalance, coping behaviour and health in flexible work arrangements

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Federal Institute for Occupational Safety and Health, Berlin, Germany

Introduction

This questionnaire based study aims to explore the impact of flexible working conditions on well-being and health among freelancers in the media sector, an under researched target group in occupational health and safety. In recent years, this sector in particular has seen widespread organisational restructuring (e.g. delayering, outsourcing), resulting in increasing psychological job demands, boundary-less working time and growing job insecurity. Our main hypothesis is that the erosion of occupational structures, in conjunction with inadequate coping behaviour and discrepancies between efforts spent and rewards received, represent important risk factors that may adversely affect freelancers well being and health (Ertel et al., 2000).

Method

Data was gathered with an adapted version of the “Health at the VDU workplace“ questionnaire (Ertel et al., 1994) which was administered to media freelancers by letter (journalists for newspapers, TV and radio stations, multimedia designers, public relation agents, etc.). The results presented are drawn from a second wave of an ongoing panel study (Ertel et al., 2001). The quantitative data of the 290 respondents was analysed using advanced statistical methods which included Principal Component Analysis (PCA), cluster analysis and Chi Squared Automatic Interaction Detector (CHAID). Sum scores for the dimensions of “Effort-Reward Imbalance"(ERI; cp. Siegrist, 1996) were calculated as an index of extrinsic effort. To extend the Effort-Reward-Imbalance Model (see Figure 1) by intrinsic effort “Disturbed Relaxation Ability” (DRA; cp. Richter et al., 1994; Richter et al., 1996) was added as an index of coping behaviour. For proving health effects of ERI, DRA or combinations of both, two levels of health complaints were determined by cluster analysis on the basis of sum scores resulting from PCA.

![Figure 1. The Effort-Reward Imbalance Model (Siegrist, 1996; 2001), adapted and extended by “Disturbed relaxation ability” (Richter et al., 1996).](image)

Results

Table 1 shows an overview of selected descriptive characteristics of the participating freelancers. An imbalance between effort and reward (effort/reward ratio > 1) is observed in 23.3% of the respondents (female 26.2%, male 20.1%). 38.2% of the respondents indicated a disturbed relaxation ability (female 36.9%, male 39.7%). There are several characteristics of particular working conditions in flexible compared to standard work arrangements. “Control of individual work organisation” and “possibilities to utilise knowledge and skills” are usually higher in flexible than in standard work arrangements. On the other hand, there is often a “permanent performance pressure”, an “intermixing of work and private life” and a “permanent need of order acquisition”. Effects of these factors on the expression of ERI and DRA are presented in Table 2. Most of the freelancers with high “control of individual work organisation” do not suffer from effort-reward imbalance neither do they suffer from disturbed relaxation ability. The opposite is...
true when (less frequently) the “control of individual work organisation” is low. A similar positive effect of freelancers working conditions, but less expressed, occurs for the “possibility to utilise knowledge and skills”. In contrast, high “permanent performance pressure”, permanent “intermixing of work and private life” and high “permanent need of order acquisition” associate with a prevalence of high expressions of ERI and DRA.

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Table 1. Descriptive characteristics of the respondents.

PCA computed across the 29 health complaints listed in the questionnaire (cumulated explained variance 65.5%) led to three main complexes of complaints, namely “depressive mood”, “exhaustion” and “cardio-vascular-system complaints”, which were clustered into two groups with a high (cluster 1) or low level (cluster 2) of health complaints, respectively. Interestingly, the most often indicated complaints concerning the musculoskeletal system did not significantly differ between both clusters of the present sample of freelancers.

CHAID was applied to detect best predictors for membership of respondents to one or both clusters of health complaints (28% of the respondents belong to cluster 1; 72% belong to cluster 2). The following parameters were included into the analysis: main work activity, age, gender, body mass index, education, working hours per week, duration of vacation, sum scores of DRA and ranks of ERI. Three parameters reached the level of significance as predictors, namely sum scores of DRA, ranks of ERI and duration of vacation. The highest risk to fall into the cluster 1 is observed when a high effort-reward imbalance occurs in combination with disturbed relaxation ability. As demonstrated in Figure
2, high expression of ERI predicts membership of the high-complaints cluster (46%); the predictive value increases considerably when high ERI is combined with high expression of DRA (65%). On the other hand, only 14% of the respondents belong to this cluster when ERI is low and the annual vacation used to be longer than 20 days.

The particular conditions of flexible working arrangements obviously also influence the sick leave. Contrary to expectations, sick leave does not significantly differ for the respondents in both clusters; neither high ERI nor DRA significantly predict respondents’ sick leave during the preceding 6 months. However, respondents indicating that they often work when feeling ill belong to 44% to the high-complaints cluster in comparison to only 25% who never or seldom work when feeling ill. In addition, 49% of respondents belonging to cluster 1 specified that they are not able to afford any loss of income due to sick leave.

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Table 2. Effect of freelancers’ work conditions on the expression of Effort-Reward Imbalance (ERI) and of Disturbed Relaxation Ability (DRA).

**Discussion and Conclusion**

The results drawn from the first wave of the panel study (Ertel et al., 2001) indicated that the incidence of work stress is significantly influenced by the interaction between working hours, rest periods and vacations. For the data of the second wave of this study we investigated indices of extrinsic effort (measured as Effort-Reward Imbalance) and coping behaviour or intrinsic effort (measured as Disturbed Relaxation Ability). ERI reflects the discrepancy between efforts spent and rewards received at work and is considered a crucial determinant of strain reactions and their adverse effects on health (Siegrist, 2001). DRA is regarded as specific coping behaviour that mediates between external stressors and individual symptoms of stress. Scheuch (1997) hypothesised that the erosion of traditional career patterns and of occupational structures and social networks may foster the development of this “personality trait”.

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It was shown that the well-established model of Effort-Reward Imbalance applies also to freelancing workers outside traditional workplaces and stable employment conditions. The health effects resulting from combined high Effort-Reward Imbalance and Disturbed Relaxation Ability highlight the importance of the interplay between situational and personal factors (coping behaviour) in that context.

Under the conditions of ‘boundary-less’ work, sickness absence does not seem to be a valid indicator of chronic work stress leading to an impairment of well-being and health. Working through illness is obviously more common between freelancers than employees and it is significantly associated with ERI and DRA. This also means that the concept of ‘absenteeism’ becomes vague in flexible work arrangements. To preserve health and work ability under flexible working conditions freelancers need support to benefit from the advantages of flexible work as for instance the control of individual work organisation and the possibilities to utilise their knowledge and skills, and to achieve competence in setting own limits to their work regarding the performance pressure as well as to reach a reasonable relationship between work and private life.

Finally, one should emphasise that the difficulties in gaining access to a dispersed workforce, resulting in a disproportionately low response rate, restrict the generalizability of our results. Despite these limitations, the findings underscore the necessity for institutions in Occupational Health and Safety to envisage possible health costs of flexible work arrangements and to raise awareness on that issue.

**Figure 2.** Significant predictors (computed by CHAID) for membership in the health-complaints clusters: Effort-Reward Imbalance (ERI: 10 ranks), Disturbed Relaxation Ability (DRA: sum scores 1 to 24) and duration of annual vacation (< 20 / >20 days per year).

C1: Cluster with high level of health complaints. C2: Cluster with low level of health complaints.

<table>
<thead>
<tr>
<th>Levels of health complaints</th>
<th>C1: 28%</th>
<th>C2: 72%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n = 290)</td>
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<table>
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<tr>
<th>ERI (10 ranks)</th>
<th>C1: 20%</th>
<th>C2: 80%</th>
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<tbody>
<tr>
<td>(n = 197)</td>
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<tr>
<th>Vacation (days/year)</th>
<th>C1: 20%</th>
<th>C2: 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&lt; 20 days)</td>
<td>32%</td>
<td>68%</td>
</tr>
<tr>
<td>(n = 63)</td>
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<table>
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<tr>
<th>DRA (sum scores)</th>
<th>C1: 46%</th>
<th>C2: 54%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&lt; 20 days)</td>
<td>14%</td>
<td>86%</td>
</tr>
<tr>
<td>(n = 134)</td>
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</tbody>
</table>

| <= 20 days       | 30%     | 70%     |
| (n = 197)        |         |         |

| >= 20 days       | 40%     | 60%     |
| (n = 63)         |         |         |

| [1-8]            | 50%     | 50%     |
| (n = 93)         |         |         |

| [9-10]           | 60%     | 40%     |
| (n = 45)         |         |         |

| [11-16]          | 70%     | 30%     |
| (n = 134)        |         |         |

| [17-24]          | 80%     | 20%     |
| (n = 48)         |         |         |

**References**


Individual-Focused Stress Management Interventions: A New Era

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Theoretical background

Individual-focused worksite stress management interventions (SMIs) have traditionally consisted of cognitive-behavioural therapy (CBT) techniques, borrowed from the fields of clinical and counselling psychology. Thus, techniques such as muscle relaxation, cognitive restructuring, and assertiveness training have been utilised, usually within multicomponent group training programmes. Major reviews of research on a range of CBT-based SMIs have concluded that such programmes are generally effective in reducing mental ill-health in the workplace (e.g., Murphy, 1984; 1996; Van der Klink et al., 2001).

The study reported below constitutes two major developments in worksite SMI research, by (1) identifying the mechanisms of change in 2 different, CBT-based SMIs; and, (2) by demonstrating the importance of recent developments in CBT for the design of stress management programmes.

Research design

This randomised controlled trial (RCT) involves the comparison of a more ‘traditional’ CBT SMI, with an ‘acceptance’-based intervention, which stems from recent developments in CBT (Acceptance & Commitment Therapy [ACT]; Bond & Hayes, 2002; Hayes et al., 1999). The central hypotheses are that (1) both SMIs will lead to improvements in employee mental health; and (2) the mechanisms (or mediators) of change will be different for the two training programmes.

100 UK local government employees were randomly assigned to one of three groups:

1) Traditional CBT SMI – including cognitive restructuring, cognitive coping skills, and arousal reduction techniques.
2) Acceptance & Commitment Training – including various metaphors and experiential exercises, designed to encourage participants to develop a willingness to accept negative thoughts and emotions, and to help them move towards valued goals.
3) Waiting-list control group (to receive the training 6 months after the initial training groups).

The training was delivered in a ‘2+1’ format (Barkham & Shapiro, 1990; Bond & Bunce, 2000), in which the training groups receive three sessions: two on consecutive weeks and a third 3 months later. The training was delivered to small groups of approximately 10 employees, during work time, with each session lasting 3 hours.

Participants in the training groups completed a battery of self-report questionnaires in each training session and three months after the third session (T1, T2, T3, and T4 respectively). Individuals on the waiting list completed the same questionnaires at the same time intervals. The measures include a number of potential mechanisms that are hypothesised to be activated by one or other of the training programmes (e.g., psychological acceptance; content of dysfunctional thinking; and thought control strategies). Two additional scales were used to measure general mental health.

Results/Conclusion

Initial (T2) results suggest that the two programmes do have differential impacts upon the hypothesised psychological mechanisms. For example, individuals in the ACT group show a significant increase in psychological acceptance from T1 to T2, whereas individuals in the traditional SMI group report a significant decrease in psychological acceptance. The T3 and T4 data will be collected in May and September respectively.

There will be two important implications of this study. Firstly, the identification of specific mechanisms of change could be used to ensure that future SMIs are designed for maximum effectiveness. Secondly, the comparison of a traditional stress management programme with a more contemporary intervention marks an advancement in SMI research, in line with recent advancements in the theory and practice of cognitive behavioural therapy.

References


Can quality and cost-effectiveness of rehabilitation plans be improved?

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Introduction
Since 1991 employers in Sweden have to plan, monitor and control that their work environments are of an acceptable standard. Within the “internal control of the working environment” each employer is responsible for preventive actions, safety regulations, accident prevention and organized rehabilitation. According to the social insurance regulations from 1992 each employer shall design rehabilitation needs and solutions when employees have been sicklisted for more than 4 weeks as a basis for the rehabilitation planning at the social insurance company. The rehabilitation plan shall focus on all actions from all actors (social insurance company, rehabilitation actors, social authorities) aimed at regaining functional capacities, health and well-being (SoS rapport 1993:10). Each individual’s resources and individual functioning as well as actions from different rehabilitation actors shall be focused.

Rehabilitation can be described as the mobilisation of each individual’s resources towards finding new realistic goals, to regain functional abilities and quality of life (Keith, 1995). It is important in rehabilitation to focus on both practical solutions and on the process itself. The rehabilitation process can be seen as a training process to regain a balance between the demands of work and individual capacity (Gard, 1998). In this process rehabilitation involves early and coordinated actions from different rehabilitation actors, a coordination of medical, psychosocial and technical actions according to an individual’s needs and interests (Socialstyrelsen, 1993). During a rehabilitation process, motivation for change in work and life situation is very important. Research has shown that motivation is influenced by a combination of personal and social factors such as having individually formulated goals, expectations for the future, and self-efficacy (Lewthwaite, 1990). Expressed goals and the issue of whether the goals are on an adequate level are important for a high level of motivation in rehabilitation situations. Unrealistic expectations can reduce motivation, but realistic goals can stimulate action (Paulsberg, 1995).

Different authorities in society often have different goals with rehabilitation and the lack of coordination often makes an effective use of the resources difficult. (SOU 1988: 41 s 163).

The aim of this study is to describe and compare the goals, content and results of rehabilitation processes. Another aim is to compare the views on how to improve the quality and cost-effectiveness of the rehabilitation plans.

Method
Clients and members of a rehabilitation team and social insurance officers were interviewed. The interview guide contained questions about rehabilitation goals, content and results and views on how to improve the quality and cost-effectiveness. The study was performed with clients from a rehabilitation center within the county council of North Bothnia in northern Sweden. The clients lived at this rehabilitation center during a 3-week period during their work rehabilitation. In this study the focus is on the views of the rehabilitation team and social insurance officers as well as the clients. There were 8 members in the rehabilitation team (doctors, physiotherapists, occupational therapists, psychologists), 10 social insurance officers and 10 clients that were interviewed. When the clients arrived at the rehabilitation center, they reported musculoskeletal symptoms in the neck and shoulder or low back pain. The clients were selected from the total group of 60 patients who participated in work rehabilitation at this center during 2 years. The clients were selected in such as way so as to get as great a variety as possible in age, sex, work experience and geographical location. The other groups selected were all social insurance officers as well as the whole rehabilitation team involved in the rehabilitation at this center.

Results and discussion
Rehabilitation goals
The results showed that the rehabilitation was perceived very differently among the different groups, since they each had different roles. However all of them worked with the formulation of goals and had the opinion that goals are very important for a good rehabilitation outcome.

The clients defined their goals to be confirmed in their diagnosis, so as to test their functional capacities, regain well-being and the ability to live independently in society.

Some clients specified the goal of return to work, others the need for confirmation that they could not return to work. The social insurance company defined their goals in terms of meeting the client where she/he was formulating goals together on a realistic level, and defining expectations. According to the social insurance company, clients are not often aware of their goals. The rehabilitation team helped define the goals in terms of finding the right job for the client according to his/her functional abilities and or to support the client in the overall rehabilitation process.
Rehabilitation content

All groups had different experiences of the rehabilitation content as they had different priorities in the rehabilitation process. All were of the opinion that it is important to respect each individual’s own resources, ambitions, will and motivation for change in relation to his/her job to get a positive job content. The job content can be improved with time for rehabilitation plans tailored to each individual’s situation. All of them considered motivational aspects as vital. Cooperation between different rehabilitation actors can be improved by increased knowledge about each other's work roles, rules and opportunities. Interventions must be introduced at an early stage, and must be planned. Clients had different opinions about the rehabilitation content. Some of them were of the opinion that the rehabilitation had given them deeper knowledge and awareness, a test of functional capacities assessment and a possibility to meet others in the same situation as reassurance that they were not alone. Others were of the opinion that the rehabilitation content was not adapted to them and their needs, so they searched for alternative rehabilitation opportunities.

The social insurance personnel defined successful rehabilitation as a situation where it is possible to find a solution that fits all. It requires correct medical tests and examinations, functional tests and good cooperation with all. All groups considered the client’s own motivation, a positive client attitude and an early and good contact with the rehabilitation team as prerequisites for a successful rehabilitation result. All groups emphasised the importance of focusing on the client’s resources and the client’s responsibility for his or her own quality of life. It can be problematic if the timing is wrong, if the solution is at an inappropriate organisational level or if no one listen to the client’s needs. Unsolved medical problems are serious and should be solved. Higher priorities for time scheduling and individual counselling are recommended. According to the rehabilitation team the rehabilitation content was to a high extent physical activity and different educational activities about health-related factors. Workplace analyses were conducted with suggestions for ergonomic, psychosocial and work organizational improvements, but more tailored solutions were needed.

Rehabilitation result

The rehabilitation result varied from practical workplace redesign to increased self-awareness. Workplace analyses were carried out in many workplaces and ergonomic re-organisation was implemented as well as introduction of new equipment. Some changed their work or work roles. They learnt how to cope with stress, how to identify early stress signals and how to optimize work strain. Some did not feel understood in their change process by colleagues or friends. The different groups had different priorities concerning what the most effective rehabilitation solutions might be, but all were of the opinion that education, work training, workplace analyses, medical investigations and motivational talks were effective. All interviewed groups were of the opinion that the client’s own motivation for change in work and life situation was important. Clients had to be motivated both to actions and to changes in life-views and perspectives. Research has shown that motivation in a rehabilitation situation is influenced by many different factors; individual factors, work-related factors and factors within the rehabilitation process (Gard, 2001). Individual factors to consider can be clients interests, attitudes, expectancies, needs and self-confidence. Motivation can also be influenced by work environment factors such as structural factors, goals, work content, social support and type of rewards. Motivation is also influenced by factors in the rehabilitation situation for example level of participation, communication with rehabilitation actors and information about rehabilitation alternatives (Gard, 2001).

How can quality and cost-effectiveness be improved?

The social insurance officers perceived that the quality of the rehabilitation plans could be improved by a higher frequency of meetings with the rehabilitation team. High competence in the rehabilitation team and among the officers is also important for a higher quality as well as shared knowledge about each other’s competence and knowledge about how to use each other’s resources. There is also a need for new rehabilitation concepts and competent actors within the rehabilitation system. The quality of rehabilitation plans can be improved by a higher motivation and engagement among employers in the rehabilitation arena and by educating employers about working environment factors, rules and regulations; they do not always have a lot of knowledge about rehabilitation planning. The quality of rehabilitation plans can also be improved if the coordination of rehabilitation cases is improved between the different actors. It is important to listen to all actors within each case at an early stage and solve problems immediately. In difficult cases it can be important to leave the rules and regulations and the secrecy aside and focus on individual problem solving. If all actors get to know each other and meet now and then, there will be an improved quality and cost-effectiveness in rehabilitation planning. Physiotherapists and occupational therapists are very important actors in the process and they are required to a much higher extent for successful solutions. Training for all actors on how to be more service-minded can also improve quality and effectiveness of rehabilitation planning. Clients needs are not always in focus among all actors and not all actors focus on good contact and communication with others; this can be improved.

The rehabilitation team were of the opinion that the communication with the social insurance office can be improved on the individual level by increased frequency of contacts. Early identification of needs or psychological support and physiotherapy is needed and interventions not only at a group level but also at an individual level as tailored programmes are needed for improved quality of rehabilitation plans.
According to both groups, the quality of rehabilitation plans can be improved by:

- Clearer goals during the rehabilitation process, making it a step-wise process (cognitive model)
- Clear and more frequent communication and information between rehabilitation actors
- All actors must have knowledge about each others work procedures and policies, rules and regulations and about competent rehabilitation actors available in the area
- Early contact between client, rehabilitation team, social insurance company and employers
- Earlier identification of clients in need of psychological treatment, physiotherapy and occupational therapy.
- Time for actions tailored to each individual
- Early planning of return to work. More frequent workplace assessments
- Develop work tasks for training in realistic work environments
- Close contact and communication with employers during the rehabilitation process
- Cooperation between different authorities in difficult client cases for early solutions
- Minimize waiting list for medical examinations within the rehabilitation process
- Develop instruments to study motivation for change
- Focus on motivational aspects during the rehabilitation process.
- Use employers innovativity, competence, economic resources and motivation to a greater degree in practice

Research within the rehabilitation arena has shown that multidisciplinary rehabilitation using clients motivation for change has a positive effect on return to work (Grahn, 1999). There are different rehabilitation strategies that have been shown to be effective for example to focus on functional activities and psychosocial factors in the rehabilitation (Gard et al, 2000) and physical activity in combination with education (Mannerkorpi, 1999). To work with psychosocial working environment factors to a greater degree in rehabilitation has shown to be effective in relation to return to work (Gard and Sandberg, 1999).

Research also shows that effective rehabilitation outcomes from clients perspectives are influenced by the clients experience of the meaning of the illness situation and the relevance of return to work (Shaw et al, 2002). During the rehabilitation clients reflect about the meaning of different factors of important for their health, test their work ability and the consequences of not working and decide how to solve their return to work problem. The final decision depends on the meaning of the illness situation and the relevance of the work for the individual (Shaw et.al., 2002).

Conclusions

All actors worked with goal-formulations.
All actors were of the opinion that it is important to respect each individuals own resources, ambitions, will and motivation for change in relation to his/her job to get a positive job content. It is important to focus on motivational aspects.

Cooperation between different rehabilitation actors can be improved by increased knowledge about each others work roles, rules and opportunities. Interventions must be introduced at an early stage, and must be planned. The frequency of contacts within cases depend on at what in the process the client is.

The rehabilitation result varied from practical work place changes to increased self awareness. Workplace analyses were carried out in many workplaces and ergonomic reorganization were implemented as was the introduction of new equipment. Some changed their work or work roles. They learnt how to cope with stress, how to identify early stress signals and how to optimize work strain. Some did not feel understood in their change process.

The different groups had different priorities about effective interventions, but all agreed on the fact that education, work training, work place analysis, social insurance investigations and motivational activities were effective.

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A Participative Approach to Developing Comprehensive Stress Management Interventions

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Introduction

At the core of the UK Health and Safety Commission’s 10-year plan for occupational health is a strategy to reduce the prevalence of work-related stress. This paper is based on a one-year Health and Safety Executive (HSE) commissioned study involved with the identification of good practice in organisational stress prevention and management (Giga et al., 2002). The research included a systematic literature review of organisational stress prevention and management initiatives, collating information using published articles from conventional sources as well as simultaneously enlisting the support of a panel of international experts to provide advice and guidance. As a result, several examples of workplace endeavours to tackle work-related stress were evaluated.

Analysis of the pool of research presents some evidence of the short-term value of assisting individuals by developing their own coping abilities. However it is apparent that a lack of action to simultaneously deal with work environmental stressors may result in the underlying cause of the problem to merely be concealed temporarily. Therefore, we suggest that a combination of work-related and worker-related stress prevention and management strategies should be implemented - primarily aiming to eliminate environmental stress at source and, as a precautionary measure, providing support for those employees who may not be adequately covered by a uniformed approach.

Since work-related stress has been identified as dynamic and multi-dimensional in nature (Daniels and Harris, 2000), stress prevention and management strategies must also continually maintain a dynamic and multi-dimensional stance. Fundamental to this approach is the development of appropriate communication channels between various organisational members with the aim to motivate individuals to participate in the intervention process, and simultaneously limit process ambiguity and ensure continuity (Schabracq et al., 2001). Moreover, since employee involvement in organisational development and job redesign has been a major factor to its eventual success, especially in the planning, implementation and evaluation of change (Elo et al., 1998), such a participative approach could encourage the identification and confrontation of work environment and worker level issues by developing communication and encouraging company-wide involvement.

Comprehensive Stress Management Interventions

Risk assessment endeavours within organisations should not simply be restricted to identifying a limited number of presumed factors that could possibly influence employee health, as it is imperative that the causes and effects of situation specific variables are also accounted for (Sparks and Cooper, 1999; Van Yperen and Snijders, 2000). For example, researchers from the Whitehall II study (Stansfield et al., 2000) investigating the relationship between work-related factors and ill-health, reported that a variety of health outcomes are dependent on many different aspects of work including effort-reward, job demands, decision latitude and social support. Similarly, specific occupational issues and demographic factors can influence stress, with teachers, nurses and managers reporting the highest levels of stress (Smith et al., 2000).

Although it is evident from our research that organisations are confronting work-related stress by intervening at various levels with a range of programmes, our model is derived from the limited number of studies that have instigated a comprehensive approach, encompassing situation-specific methods that have been identified by encouraging a participative process involving members from all levels of the organisation (Figure 1 below). In such an environment, a culture is developed whereby employers and employees have a say in the instigation of the intervention process and are committed to continually communicate, evaluate and modify their plans by learning from interventions that may or may not achieve a desired outcome.
Supervisors play a central role in identifying and assessing risks, developing stress prevention and management strategies, and supporting employees by ensuring effective and consistent communication. Fundamentally, implementation of the above model (Figure 1) may help to eliminate many of the weaknesses identified by previous researchers (e.g. Ivancevich et al., 1990) afflicting conventional stress management interventions (i.e. identification of situation specific stressors, dealing with individual differences and reduction of attrition rates).

Participation and Communication as Stress Identification, Prevention and Management Tools

Organisational and individual performance can benefit from eliminating stress from the workplace, and similarly both stand to lose out when stress is mismanaged (Quick et al., 1997). Therefore, an organisation that endeavours to create and sustain healthy conditions for the physical, mental and social well-being of its employees must have a strategy that focuses on health and safety issues (Cooper and Cartwright, 1997). As poor communication has been cited as one of the major causes of stress in the workplace (Industrial Society, 2001), both organisational and individual health can be maintained by minimising uncertainty through strategic planning and appropriately conveying any proposals for change (Adkins et al., 2000). Specifically, organisation-wide participation and communication may enable the identification, prevention and management of work-related stressors by encouraging the application of specific solutions to specific problems.

Prior to introducing work stress intervention strategies, organisations need to ensure that processes are in place to allow the development of a culture that encourages company-wide management and employee involvement in a continuous communication, analysis and revision process. The development of communication, culture, participation and negotiation may prepare organisations to effectively confront future challenges (Nytro et al., 2000). Employees are likely to show signs of despair long before they reach a crisis point and a lack of communication with superiors may intensify feelings of isolation and desperation (Froiland, 1993). The success of conventional stress management programmes has been criticised for their short-term effectiveness and focus on individual employee issues (NIOSH, 1999). However, as stress is unlikely to be eliminated completely from the workplace by simply concentrating on work-environment issues, a process of open communication and risk assessment could identify whether there is an actual need for an intervention programme to protect the well-being of individual workers.
Both management and employee participation is necessary to ensure that interventions address the right issues and have a successful outcome. Furthermore, managers must understand the role they play in supporting employees and influencing health and well-being, not only emotionally, but also by ensuring effective and consistent communication (Stansfield et al., 2000). Emphasis should be placed on the development of relationships, commitment, communication and flexibility within the organisation. Information should be regularly updated and shared by individual units, middle management and senior managers so that processes are continually improved. This continuous assessment has been deemed necessary in order to recognise unexpected or progressive stressors during their primary stages.

The organisation’s communication climate can reflect individual attitudes toward personal and organisational level communication. Organisational awareness, top management openness, supervisor relationships, horizontal worker co-operation and personal feedback can all determine the healthiness of an organisation’s communication systems (Varona, 1996) and ultimately its ability to implement successful stress intervention strategies.

Summary

As it is generally accepted that stress is dynamic, within the work environment it should be constantly evaluated and reviewed so that organisations can maintain and develop the health and well-being of their workforce. Researchers that use pre-defined models comprising of specific factors to investigate work-related stress, may well be disregarding specific issues that could be affecting employees from that specific environment. Our comprehensive stress prevention and management model addresses organisation-specific employee, job and environmental characteristics, and considers the dynamic nature of stress. Furthermore, to improve the likelihood of interventions succeeding in the long-term, the development of effective communication channels should be the focal point of the process in order to encourage employee and middle management participation and senior management commitment. The method advocated could facilitate the establishment of more suitable, and ultimately more successful, work-directed and worker-directed preventive and management strategies that are implemented by encouraging organisational-wide participation in the decision making process.

References


Acknowledgements

The authors would like to thank Sue Cartwright, James Quick, Arie Shirom, Michiel Kompier, Michael O’Driscoll, Stephen Palmer, Lawrence Murphy and Naomi Swanson for their expert opinions, and the UK Health and Safety Executive (HSE) for funding the research on which this paper is based.

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Managing Health and Safety in Drilling

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Introduction

This paper studies how health and safety is managed in drilling operation in the North Sea. The oil industry in Norway contributes hugely to incomes and is the largest single contributor to the Norwegian economy. The industry is strongly influenced by the level of oil prices, which fluctuate. In periods with low oil prices, activity is low and vice versa. Another characteristic is outsourcing in Norwegian oil-drilling activities. There are several explanations for this. In Norway the tax systems favor outsourcing and the oil companies would not perform the drilling themselves, unlike systems common in other parts of the world. Oil companies hire drilling activities on a contractual basis and this implicates 10-20 different companies being involved at the same time in a drilling operation offshore. Information flow and knowledge interfaces within and between the different companies involved become a critical factor for operations to succeed. The need for examining issues regarding aspects of outsourcing has been addressed by Torvatn (2001) and Steiro (2001). Steiro (2001) raised the need for more indepth studies of management within outsourced activities regarding health and safety issues and examination of how customers affect the health and safety of the suppliers.

Being an offshore worker in the North Sea has been characterized as sitting on a fuel pump in an unfriendly environment far from home (Flin and Slaven, 1996). Therefore health and safety issues are very important. In Norway the work cycle between home and offshore is a 2/4 – 2/4 system, meaning working 2 weeks then off 4 weeks. However, the four weeks can be disrupted by office work onshore, training courses etc. This means that there are three shifts and this is another challenge for knowledge management. The drilling crew’s work situation is characterized by close cooperation, mentally challenging situations, and balancing between efficiency and the risk of wrongdoing (Rosness et. al. 1998). In addition, a production failure is expensive. For oil drilling, a stop in the activity on the field is regarded to cost approximately 130 Euro per minute.

As part of an action research program done on one offshore installation in the Northern Sea, we examined how health and safety is managed in drilling operations. The following question is answered:

- How is health and safety managed on the installation?

In addition, we discuss what roles and responsibility the Operator Company should have.

Method

This study is part of an action research program. The participants are three companies involved in drilling operations on a Norwegian oil platform (further referred to as "The platform", due to confidentiality restrictions). Our study is based on data collected mainly from three involved companies: The Operator (responsible for the oil field), The Contractor (undertaking the drilling-operations) and the service provider (the main supplier of drilling-equipment and monitoring of sub-sea parameters). Data was derived from both offshore-workers and personnel located in the mother organisations on-shore.

Data was collected through qualitative interviews, group discussions and reviews from a database containing reports of accidents and near-accidents at the platform. Data was collected over a period of one year, from spring 2001 to spring 2002. The data included statements from managers and employees from the three companies involved.

Three researchers offshore at "The platform" undertook seven interviews. The participants were middle managers, distributed between the three companies. A main theme was communication between companies, employee groups and individuals. The interviews were taped and transcribed.

Three months later, the whole research group (seven researchers) was present at a group meeting/ group discussion with fourteen employees. Three employees from the Operator Company, eight employees from the Contractor Company and two employees from The Service provider participated in the discussions. The session lasted two days. The main theme discussed was "Awareness of work roles and overcoming knowledge and communication barriers which can be a menace too safety". The discussions were videotaped and later transcribed.

In addition to interviews and discussion groups, we reviewed approximately fifty reports of accidents and near-accidents at the platform. The purpose of this was to investigate if some of the unwanted incidents could be seen as a result of communication and knowledge barriers between the companies.

During spring 2002 we arranged five three-day seminars on the Norwegian coastal express. A total of 110 offshore workers, offshore managers and onshore managers participated in these seminars. Bringing employees and managers together for work related problem detecting and problem solving was a central factor in the action research de-
The main goal was to let participants discuss problems and find solutions regarding the interface of safety and efficiency at work. The companies’ roles and responsibilities in both safety and work operations were also a main theme. Our role as researchers was to start the discussions, hold the discussion “on track” and take notes. All discussions were carried out in groups with seven participants. In each group there was one researcher and a balanced mix of employees and supervisors.

Results

The Operator Company mainly manages health and safety on the installation. The operator has one security chief (HSE-responsible) and one nurse located on the platform. These individuals report directly to the platform chief who has overall responsibility for human and operation safety offshore. The Contractor Company has the HSE-coordinator whose responsibility is to monitor and take action regarding HSE-deviations.

The operator’s tool for managing HSE is the HSE-monitoring report system called SYNERGI. This is a database for reporting HSE-deviations in which every worker has the responsibility to report observations. The security chief and an HSE-coordinator manage this system. The SYNERGI database is an important tool for managing the HSE work. SYNERGI is used thorough the Norwegian shelf. SYNERGI is based on reporting from incidents and accidents. The idea behind SYNERGI is the so-called “iceberg” theory. The dominant approach for accident prevention in the Norwegian petroleum industry is largely based on the Iceberg theory (Bird and Germain, 1985). By removing all misses, near accidents and garbage, you will also remove the basis for accidents. The reporting system is considered to be important by all parties, however, there is a tremendous amount of information. Every person is expected to report at least two HSE-deviations or near misses per offshore trip.

When employees report, they also have to formulate solutions to the problem. We observed that in many cases the solutions were just rewritings of the problem. A quotation from a group discussion illustrates this: Roughneck: We have problems with falling objects on the installation. Researcher: And what action can be applied to avoid these hazard situations? Roughneck: We just avoid the falling objects.

There seemed also to be a challenge to the system. One example came from a mud-log operator. He had seen two other people at the same time reporting a hammer lying on the derrick floor. This was of course correct of them; however, none of them actually removed the hammer. It indicated that the system did not motivate personnel to take action to the reported problems. SYNERGI is still a very important tool. But there were frustrations regarding what was considered an administrative overload and where people complained that they got too little out of the system compared with their effort in reporting. Through facilitated discussions, they came to the conclusion that one position should have the overall responsibility to collect, disseminate and report data.

The platform has improved the HSE records significant the last year from the medium to the best in class concerning both Loss Time Injury figures, sick leave statistics etc. Concerning operational issues, the contractor companies have been more integrated in the planning processes. These operations are also very important to ensure safe operations. It has lead to leaner operations. And in one well operation, 2 million Euros were saved. Of course, at this level it is too early to say if it is permanent and it is not of course attributable to the action research project alone. However, the results of the project seem promising for the entire platform.

Discussion and conclusion

There are several means by which the Operator Company can manage health and safety on the installation. Formal systems are found in safety meetings (all), planning meeting (managers, and then again not necessarily all partners involved) and data based system involving all. The SYNERGI database is playing a vital role today. Reason (1997) perceives a reporting culture as an important means for improving the safety culture. But it could also be a more powerful tool if the personnel had more ownership to health and safety. Then SYNERGI could be a tool for public testing, to use the term of Argyris and Schön (1978). The reports need to be more balanced regarding responsibility. Rather than just reporting by duty, they need some training to improve their learning and reflect on their practice and establish more ownership for health and safety issues. Only then will perceptions of the reporting system be more positive. In order to overcoming problems of top-down imposition of rules and procedures, Visser (1991) advocates the creation of ownership through creating procedures and keeping them current. It seems that actions and practices often seem not to be included in the connotation of “culture”.

Through the establishing the action research program, the Operator Company has managed to take a more active role and a participative process has been established. So far, positive effects concerning both the effectiveness of operations and improved health and safety records have been achieved. But of course we should be humble in light of the possibility of Hawthorne effects. Since this was a three year project and since surveys were conducted at the start and also sent out by the end of the project, long term effects could be evaluated. We will argue that through action research, health and safety is not merely reported in the SYNERGI data-base; more people have become more directly involved in these issues. We think it can be justified that they are moving away from a top down management approach. People from the
contractors have been involved in planning of the drilling program, which was not the case before. We would also argue that more positive attitudes regarding health and safety and the SYNERGI database would appear.

Both the findings related to insufficient solutions to problems and the example of the reporting without removal of the hammer, show that top-down management of health and safety is not the solution if the goal is to take action regarding problems. Personnel need to be more involved in HSE work to reduce a feeling that it is a system that is being given to them from the outside to please people in staff functions at the offices of the operator. Argyris and Schôn’s theories (1978) seem to be very relevant here. In improving effectiveness and HSE standards, people need to be given the opportunity and training to formulate problems more adequately. In particular there is a need to be able to raise questions concerning their own practice to create double-loop learning. What we have seen is a tendency towards more discussion on how actions, roles and responsibilities are dealt with.

Rundmo et al. (1996) found that the top management commitment in Health and Safety matters is the most important factor for personnel’s risk perception. Here the top management have shown their commitment. An organizational change towards enhancement of HSE and propulsion that involves all parties in a participative way will take a long time and will of course never be finished. It is an iterative process that has to be worked on continuously. We conclude that top management commitment is very important. What the top management did at "The Platform" was to decide that all parties at "The Platform" should be involved in the project. The parties still have a customer-client relationship. However, some of the natural boundaries have been tuned down. Outsourcing in Norwegian drilling activities is here to stay. The results of this study indicate that Operator Companies could benefit from the greater involvement of all parties. The oil and gas companies core competence is described as putting together technology and competence (Olsen, 1994). "Putting together", the Operator Company at "The Platform" has learned, means establishing more involvement and participation and reducing top-down management from the operator to the contractors.

Acknowledgements

We express our gratitude to personnel involved at "The Platform" and our colleagues in this project. We also would like to thank the Norwegian Research Council that sponsored this study and made this paper possible. The overall responsibility is of course the authors.

References


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A Longitudinal Study of Job Strain and Burnout among Interactive Service Workers

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2 Department of Psychology, Norwegian University of Science and Technology, Trondheim

Introduction

In the past twenty years, Karasek’s “Job demand-control model” (1979) has been a central model in the study and research of work-related stress. According to this theory, health and wellbeing are related both to the demands made on the employee, and to her or his scope for exerting control (“decision-making freedom”) over the work situation. Moreover, “job-strain”, defined as high demand in combination with low decision latitude, constitutes the greatest negative risk factor to employee health and wellbeing. Research on the demand-control model has largely been evaluated within the contexts of manufacturing and administrative work (e.g. Söderfelt, Söderfelt, & Warg, 1995), and to a lesser extent within situations where interactive service constitutes an important part of the work (e.g. health and social sector jobs) (see Kristensen, 1995; Muntaner & O’Campo, 1993). Furthermore, most evaluations of the model are based largely on cross-sectional studies.

In the present study the demand-control model was tested through a longitudinal design, with burnout as the dependent variable. We tested the extent to which employees within interactive service jobs who were exposed to job-strain display a higher degree of burnout than employees not exposed to job-strain. At the same time, we studied whether changes in exposure to job strain can be related to changes in burnout among employees. The study presents a focused investigation of the connection between job-strain and burnout – a connection that has received little attention up until now (e.g. de Jonge, Mulder, & Nijhuis, 1999; de Rijk, Le Blanc, Schaufeli, & de Jonge, 1998). Furthermore, as far as we have been able to ascertain, no previous study has looked at this connection over a similar length of time. This study therefore constitutes a wider empirical evaluation and validation of the demand-control model, with the application of a longitudinal design representing a stronger test of the model than those based solely on results garnered from a more limited period of time.

Burnout may be considered a reaction to prolonged job stress (e.g. Maslach & Schaufeli, 1993) or a reaction to emotional involvement over a long period of time (e.g. Furnham, 1997). Despite the fact that burnout may be characterised as a reaction to prolonged job stress (e.g. Furnham, 1997), or as a relevant manifestation of reactions to the way the work is organised, the demand-control model has been applied only in isolated examples to studies of burnout (e.g. de Jonge et al., 1999; de Rijk et al., 1998).

The purpose of the present study is to investigate the connections between job strain and burnout over an extended period of time. Our study had the following two objectives:

1. On the basis of an assumption that there is a causal link between the degree of job strain and levels of employee health and wellbeing, we examined whether or not changes in the exposure to job strain from the first survey to the second are reflected in parallel changes in the rate of burnout.

2. Based on Karasek and Theorell’s integrated model (1990), which assumes that job strain has cumulative detrimental effects on the health and wellbeing of employees, we examined whether staff exposed to job strain during both the first and the second survey not only report a higher level of burnout, but also a further increase in burnout compared to those who have experienced no exposure to job strain whatsoever. In addition, we investigate whether employees who were exposed to job strain at both surveys (i.e. over a prolonged period) display a higher level of burnout than those who were only exposed to job strain at the time of one of the surveys (i.e. short term exposure).

Method

The study was based on a longitudinal design using two questionnaire surveys. The same questionnaire was used for both surveys. The survey was conducted on the basis of a sample consisting of employees from banking, retailing (shopping mall), and of employees from the health and social sector of two different health districts within a municipality.

In the course of the first survey, the original questionnaire was sent out to 1364 employees. 953 (69.86%) returned the questionnaire. For the 18-month follow-up test, the questionnaire was handed out to 644 employees in total, all of whom had taken part in the preliminary test. The response rate for the post-test was 84%, which is to say that 541 employees answered the questionnaire for both of these surveys. Of the pre-test respondents, 84% were women and 16% men. For the second survey, 87% were women and 13% men. The average age for the preliminary test was 41 years (SD = 11.08), while the average age for the follow-up test was 42 years (SD = 10.04). The average amount of time spent in the present job was 7.6 years for the first survey (SD = 6.62), and 7.8 years for the second survey (SD = 6.42).

Burnout was measured using a translated version of the "Maslach Burnout Inventory" (MBI: Maslach, Jackson & Leiter, 1996), and nine questions were designed with the purpose of gauging the presence and/or degree of emotional exhaustion (Cronbach’s $\alpha = .92$). The frequency for each question in the MBI was measured according to a 7-point scale, where the alternative answers ranged from “never” to “every day”.

The demand-control dimensions were tested using a translated version of the Job Content Questionnaire (JCQ: Karasek et al., 1985). Psychological demands were monitored by using five criteria (e.g. fast work, hard work, too much...
work) (Cronbach's $\alpha = .53$), and nine criteria were used to test levels of control (e.g., continuing to learn new things, able to develop new skills, variation in tasks, being able to decide how to carry out the job). (Cronbach's $\alpha = .78$). All the criteria were scored on a 4-point scale where the alternative answers ranged from "I disagree strongly" to "I agree strongly". The two-year test-retest correlation was .54 for demands and .68 for control.

The most common way to define the interaction between psychological demands and job control has been to place employees who score above the arithmetical mean value or median for psychological demands and below the arithmetical average value or median for job control as a "job strain" group (e.g. Landsbergis, Schnall, Schwartz, Warren, & Pickering 1994; Lange, Taris, Kompier, Houtman, & Bongers, 2001). The variables tapping job demands and job control at both pre- and post-test stages were dichotomised using the mean-split. Based on the "job strain" status during the preliminary and follow-up tests, we constructed four different categories of job-strain into which the employees were divided (see figure 2). The No-No group ($N = 296$) reported no "job-strain" neither for the pre-test nor the post-test. Employees without "job-strain" at the pre-test but with "job-strain" at the post-test stage constituted the No-Yes group ($N = 48$), while those in the Yes-No group ($N = 41$) reported "job-strain" in the pre-test but not in the post-test. Employees in the Yes-Yes group ($N = 34$) reported "job-strain" both in the pre-test and the post-test, and are also described as a chronic "job-strain" group.

A question developed by Karasek et al. (1985) was designed to evaluate the perceived level of job insecurity. The question was formed as a statement: "My job security is good". It was measured on a 4-point scale where the alternative answers ranged from "I disagree strongly" to "I agree strongly".

The survey included demographic data, such as sex, age, number of years in present job, was carried out using a standard question for these matters.

### Results

Descriptive data for the four job-strain groups showed small but non-significant differences, none of them were significant. A regression analysis with changes in burnout as the dependent variable and sex, age, number of years at present place of employment, job insecurity, burnout at baseline, and the 'job-strain' groups as independent variables showed that baseline burnout and "job strain" groups constituted the two variables that produced a significant contribution in terms of prediction of changes in burnout over a period of time ($p < .01$). Table 1 shows that the variables included in the regression analysis explained 32% of the variance in the dependent variable 'change in burnout' from pre- to post-test ($R^2 = .32$, $F = 28.52$, $p < .01$).

<table>
<thead>
<tr>
<th>Prediktor</th>
<th>Beta</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.03</td>
<td>-0.68</td>
</tr>
<tr>
<td>Age</td>
<td>.03</td>
<td>0.67</td>
</tr>
<tr>
<td>Tenure (years)</td>
<td>-.02</td>
<td>-0.47</td>
</tr>
<tr>
<td>Job security</td>
<td>.08</td>
<td>1.77</td>
</tr>
<tr>
<td>Burnout at baseline</td>
<td>.59</td>
<td>12.76**</td>
</tr>
<tr>
<td>Job strain groups</td>
<td>.20</td>
<td>4.27**</td>
</tr>
</tbody>
</table>

$^{**} p < .01$.

Table 1. Changes in burnout over time predicted by gender, age, tenure (years), job security, change in burnout, burnout at baseline, and job strain groups ($N = 419$) (Regression, Method Enter)

As the "job strain" groups contributed towards explaining the variance in "changes in burnout" from the first to the second survey, we could in turn look at connections between changes in "job strain" exposure and changes in burnout. Figures for average burnout at the preliminary and follow-up test-stages, and differences in burnout from pre- to post test, are shown for the four different "job strain" groups in Figure 1.

For the gauging of burnout over a period of time, the No-No group was chosen as a reference group, on the grounds that this group did not perceive any job strain exposure in either of the tests. T-tests showed that only the No-Yes group experienced a significant change in burnout. There was, moreover, a reduction in the burnout score both for the reference group and for the sample as whole.

With regards to parallel changes in job strain and burnout, the results show that only one of the groups that experienced changes in job strain exposure from the first to the second test, also had an assumed significant change in burnout, namely the No-Yes group. As expected, there were changes in burnout among employees in the Yes-No group, but these changes were not significant. Our study lends only partial support to the assumption that there would be parallel changes between job strain and burnout.
Figure 1. The figure shows that all groups had lower scores at post-test, except the “no-yes” group.

The results showed that employees who were exposed to job strain in both surveys had the highest level of burnout in the second test: employees who were exposed to job strain at either the pre- or the post-test displayed a medium level of burnout; and employees who were not exposed to job strain at either occasion had the lowest level of burnout for the second test (see Figure 1). Employees who experienced job strain at both stages of testing did not, however, report an increased exposure to burnout from the first to the second test (M= 32.0; M= 30.4), but nor did they display any significant decrease.

<table>
<thead>
<tr>
<th>&quot;Job-strain&quot; at post-test</th>
<th>Yes-yes (N = 34)</th>
<th>Yes-no (N = 41)</th>
<th>No-yes (N = 48)</th>
<th>No-no (N = 296)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burnout</td>
<td>30.4</td>
<td>26.9</td>
<td>28.1</td>
<td>21.2</td>
</tr>
</tbody>
</table>

All groups were significantly different from the no-no group at t-test.

Table 2. The difference between the groups means in burnout at post-test

A post hoc LSD analysis showed that the employees exposed to job strain in both surveys had a significantly higher level of burnout than the employees not exposed to job strain in either of the surveys (mean difference = 9.24; SE = 1.77; p < .05), but not significantly higher than the two groups exposed to job strain in only one of the surveys.

The results thus showed that the chronic job strain group had a significantly higher level of burnout during the period that coincided with the second test than the group that was exposed to job strain on neither of the two occasions. Employees who experienced continuous exposure to job strain did not, however, report any further increase in burnout from the first to the second test, and nor did they show a significantly higher level of burnout than those employees who had experienced job strain over a shorter period of time (No-Yes and Yes-No). The assumptions of the demand-control model relating to cumulative effects of continued exposure to job strain were not confirmed in this study.

Discussion and conclusion

The results showed that employees who had not experienced job strain exposure at the time of the preliminary test, but who had gone on to do so by the time of the follow-up test (No-Yes), had significantly increased levels of burnout. The employees who had experienced job strain exposure at the time of the pre-test, but not at the time of the follow-up test (Yes-No), reported a reduced level of burnout, but this decrease was negligible.

The results indicate that assumptions about parallel changes in job strain and burnout were confirmed in one direction, but not in the other. Furthermore, the results showed that employees who experienced job strain exposure at both periods of testing (Yes-Yes, chronic job strain group), displayed significantly higher burnout than those employees who were not exposed to job strain at any of the tests (No-No). The group who suffered from chronic job strain did not, however, show any further increase in burnout compared to those who were not exposed to job strain on either occasion (No-No). In addition, the employees in the chronic job strain category did not display any significantly higher levels of burnout during the initial phase of testing than those employees who had only been exposed to job strain at one of the two tests (Yes-No, No-Yes). As a consequence of these results, the assumption about the cumulative effects of job strain was not confirmed.
References


Transformational leadership and its effect on different layers of the organization

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Introduction

To keep a stable workforce, a leader's ability to inspire, motivate and create commitment to shared goals is crucial. Charismatic/transformational leadership implies motivating people by inspiring, questioning old assumptions, and giving special attention to individual needs, as opposed to transactional leadership, consisting of exchange of rewards (Bass, 1985, Burns, 1978, House, 1977).

The aim of this study is to investigate the effect of transformational leadership on several layers of the organizational structure. Outcome ratings of transformational leadership give insight into how transformational leaders affect their surroundings. Subordinates' evaluations of transformational leadership are commonly used in research (Alimo-Metcalfe, 1998). Transformational leaders are, however, also thought to facilitate communication upward in the organization, and therefore influence their own superiors as seen in Judge & Bono (2000). In the study reported in this presentation we also include the latter perspective, to gain further knowledge of how transformational leaders are evaluated by their surroundings.

Increasing our knowledge about ratings from multiple sources is important, as several raters are thought to offer greater objectivity, a fairer and possibly less biased view of the leaders being rated. Including both subordinates' and superiors' evaluation of transformational behaviour gives room for comparison of different viewpoints and discovering possible differences in rating patterns. Outcomes of transformational leadership in a Norwegian setting will be examined when controlling for laissez-faire and transactional leadership, to see whether transformational leadership augments these behaviours as hypothesized (Howell & Avolio, 1993).

Hypothesis: Transformational leadership rated by both subordinates and superiors is related to the outcome ratings of satisfaction, effectiveness and work motivation, and adds to explaining these variables beyond that the effects of transactional and laissez-faire leadership.

Method

A sample of 200 subordinates and 100 superiors rated the leadership behaviour and outcomes of 100 middle-level Norwegian managers employed in five different companies, using the Multifactor Leadership Questionnaire, containing 45 items describing behaviour to be rated on a 5-point scale (0=seldom, 4=to a large extent). The scales include transformational, transactional and laissez-faire leadership behaviours and the outcome scales describe satisfaction with the leader, leader effectiveness and work motivation. Internal consistencies of the scales ranged from Cronbach's alpha .62 to .85.

The study reported here employed a Norwegian translation of the MLQ5X (Form 5x-Short), obtained by translating the original questionnaire to Norwegian and then back to English by two bilingual translators, in accordance with the procedure suggested by Berry, Poortinga, Segall, & Dasen (1995).

Results

Hierarchical multiple regression analyses (see tables 1 and 2) showed that transformational leadership predicted the outcome measures in both subordinates' and superiors' ratings above transactional and laissez-faire leadership, supporting the augmentation hypothesis (Bass, 1985).

Table 1. Summary of hierarchical multiple regression analyses based on Transformational Leadership with ratings of satisfaction with leader, effectiveness of leader and work motivation as dependent variables (N = 95 for subordinates, N = 75 for superiors)

<table>
<thead>
<tr>
<th></th>
<th>Satisfaction</th>
<th>Effectiveness</th>
<th>Work motivation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-.02</td>
<td>-.02</td>
<td>-.03</td>
</tr>
<tr>
<td>Organization</td>
<td>-.01</td>
<td>-.03</td>
<td>-.03</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>ΔR² .04</td>
<td>ΔR² .09**</td>
<td>ΔR² .02</td>
</tr>
<tr>
<td>Laissez faire</td>
<td>-.43</td>
<td>-.37**</td>
<td>-.20</td>
</tr>
<tr>
<td>Leadership</td>
<td>-.01</td>
<td>-.02</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>ΔR² .41**</td>
<td>ΔR² .32**</td>
<td>ΔR² .25**</td>
</tr>
<tr>
<td>Transformation</td>
<td>.22</td>
<td>.61**</td>
<td>.17</td>
</tr>
<tr>
<td>Leadership</td>
<td>.03</td>
<td>.02</td>
<td>.04</td>
</tr>
</tbody>
</table>

Note: *p < 0.05  **p < 0.01
Table 2. Summary of hierarchical multiple regression analyses based on Transformational Leadership with ratings of satisfaction with leader, effectiveness of leader and work motivation as dependent variables (N = 95 for subordinates, N = 75 for superiors)

|                     | Satisfaction | Effectiveness | Work motivation |
|---------------------|--------------|---------------|----------------
|                     | B  | seB | Beta | B  | seB | Beta | B  | seB | Beta |
| **Superiors**       |    |     |      |    |     |      |    |     |      |
| Step 1.             |    |     |      |    |     |      |    |     |      |
| Gender              | -.09 | .11 | -.07 | .02 | .08 | .02  | .04 | .08 | -.03 |
| Organization        | .01 | .03 | .02  | .05 | .03 | .13  | -.05 | .03 | -.09 |
| Step 2.             | ∆R² | .02 | ∆R²  | .02 | ∆R² | .02  |
| Laissez faire       | -.39 | .08 | -.40** | -.31 | .06 | -.40** | -.30 | .06 | -.32** |
| Leadership          | .03 | .04 | .07  | .13 | .03 | .33** | .14  | .03 | .30** |
| Step 3.             | ∆R² | .38** | ∆R²  | .40** | ∆R² | .40** |
| Transformational Leadership  | .17 | .03 | .48** | .05 | .04 | .20** | .21  | .02 | .65** |
|                      | ∆R² | .17** | R²  | .58 | ∆R² | .18** | R²  | .61 | ∆R² | .32** | R² | .73 |

Note: *p < 0.05  **p < 0.01

Discussion and Conclusion
The results indicate that increased satisfaction with the leader, effectiveness ratings and own work motivation are associated with transformational leadership in both subordinates' and superiors' ratings. Overall, similar judgments by subordinates and superiors about transformational leaders and their behaviours indicate that leaders actually do influence several levels of their environment in positive ways, resulting in an increasingly motivated and satisfied workforce. These are all important aspects of empowerment.

References

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Development of a job specific model of occupational stress: extending Karasek’s model.

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Introduction.

Concern about stress in the workplace, coupled with a growth in litigation, has resulted in an increased need to identify and address poor conditions of work. Theoretical models of work stress are required to underpin this process by suggesting frameworks for research and intervention. Currently, however, theoretical developments lag behind the demands for good practical models.

One of the most well-known and influential models of work stress is Karasek’s (1979) Job Strain model. This suggests that psychological strain and poor physical well-being result from the combined effects of having a job which is high in demands (e.g. heavy workload, fast pace and conflicting demands) and low in control. In contrast, a ‘low strain’ job is one which is high in control and low in demand. The model predicts both additive and interactive effects of demand and control on psychological well-being and health. It has the advantage of offering a simple framework which is fairly easily testable and is applicable to all jobs. However, it has been criticised precisely because the limited focus on two core variables does not capture adequately the stressors in many work environments. It has further been criticised because the measures of demand and control are themselves too vague and all-encompassing to suggest useful interventions (i.e. they do not tell us in what ways employees need more control). As a result more specific measures of demand and control have been advocated (Jackson et al, 1993). Furthermore, Wall and Jackson (1998) have found interactive effects using such measures but not when conventional measures are used. Finally the model does not include individual difference variables, although various authors have shown that personality factors may be important (e.g. Parkes, 1991).

Various extended versions have been advocated and tested, and social support is frequently added to form the Iso-strain model (Johnson and Hall, 1988). Nevertheless, a general model of this nature may not encompass many stressors relevant to a specific job and, consequently, a number of writers have suggested the need for job specific approaches (e.g. Haynes, et al. 1999, Sparks and Cooper, 1999).

In the present study we aim to develop a workplace specific model of work stress by building on the framework suggested by Karasek. In the first instance, we test Karasek’s model using focused measures of job control relevant to the workplace. Next, we take into account the effects of the individual difference variable, conscientiousness. Finally, we develop an extended model encompassing job specific stressors derived from an initial interview study.

Method

Procedure and sample.

Initial interviews were conducted with 32 managers and staff. These were used to help identify key issues to be included in questionnaires. Questionnaires were designed which were distributed to approximately 900 staff in a range of roles in a large service organisation. While specific roles varied, the focus of the organisation on customer service was reflected in the individual work of most employees. Questionnaires were returned by 331 employees (61% male).

Measures.

Occupational impact factors -based on Karasek’s model included

   a) Timing control, Jackson et al. 1993 (4 items, \( \alpha = .92 \))
   b) Method control, adapted from Jackson et al. 1993 (3 items, \( \alpha = .44 \))
   c) Monitoring demand, adapted from Jackson et al. 1993 (3 items, \( \alpha = .72 \))
   d) Unpredictable and changeable demand (3 items, \( \alpha = .85 \))
   e) Managerial Support (7 items, \( \alpha = .80 \))

Occupational impact factors -based on interviews

   a) Dealing with difficult customers (2 items, \( \alpha = .89 \))
   b) Conflicts with colleagues (2 items, \( \alpha = .59 \))
   c) Physical demands (2 items, \( \alpha = .84 \))
   d) Feedback and recognition (3 items, \( \alpha = .80 \))

Well-being measures included

   a) Job related anxiety /contentment, Warr, 1990 (6 items, \( \alpha = .85 \)). A low score represents anxiety, a high score contentment.
   b) Job related depression/enthusiasm, Warr, 1990 (6 items, \( \alpha = .88 \)). A low score represents depression, a high score enthusiasm.
   c) Job Satisfaction, Warr,1973 (15 items, \( \alpha = .90 \))
   d) Number of physical symptoms (a list of 18 physical symptoms adapted from Spector and Jex, 1998).
Individual differences
Conscientiousness, Benet-Martinez & John, 1998. (9 items, \( \alpha = .72 \))

Results

Job Stressors and Wellbeing.
Initial analyses suggested that a number of work stressors were correlated with the well-being measures. These are shown in Table 1. These suggest that management support and receiving feedback and recognition may be particularly important in this sample.

Table 1: Significant Correlations between work related variables and outcome variables.

<table>
<thead>
<tr>
<th></th>
<th>Anxiety / contentment</th>
<th>Depression / enthusiasm</th>
<th>Symptoms</th>
<th>Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing control</td>
<td>.11*</td>
<td>.29***</td>
<td>.28***</td>
<td></td>
</tr>
<tr>
<td>Method control</td>
<td>.14**</td>
<td>.25***</td>
<td>.25***</td>
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<td>Monitoring demand</td>
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<td>-.14**</td>
<td>-.32***</td>
<td></td>
</tr>
<tr>
<td>Unpredictable &amp; changeable demand</td>
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<td>.72***</td>
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<tr>
<td>Dealing with difficult customers</td>
<td>-.20***</td>
<td>-.20***</td>
<td>.17***</td>
<td>-.27***</td>
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<tr>
<td>Conflicts with colleagues</td>
<td>-.13*</td>
<td>-.18**</td>
<td>.12*</td>
<td>-.20***</td>
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<td>-.20***</td>
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<td>Colleague support</td>
<td></td>
<td></td>
<td></td>
<td>.16**</td>
</tr>
</tbody>
</table>

Testing Karasek's model
A series of 8 multiple regression analyses were conducted to test the Job strain and Iso-strain models for the four well-being measures and for men and women separately. At the first step the two demand and control variables were added as a block and at the second step managerial support was added. These are summarised in Table 2, which shows the R² values for the regressions. This shows that the Job Strain Model predicted between 13% and 27% of the variance dependent on the well-being measure in question. The Iso-strain model increased this figure substantially, particularly in the case of job satisfaction.

Table 2. Extent to which Karasek’s model predicts outcome measures for men and women

R² for men only

<table>
<thead>
<tr>
<th></th>
<th>Anxiety / Contentment</th>
<th>Depression / Enthusiasm</th>
<th>Symptoms</th>
<th>Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand and control</td>
<td>.13</td>
<td>.21</td>
<td>.6</td>
<td>.27</td>
</tr>
<tr>
<td>Adding in Support (from management)</td>
<td>.19</td>
<td>.37</td>
<td>.11</td>
<td>.53</td>
</tr>
</tbody>
</table>

R² for women only

<table>
<thead>
<tr>
<th></th>
<th>Anxiety / Contentment</th>
<th>Depression / Enthusiasm</th>
<th>Symptoms</th>
<th>Job Satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand and control</td>
<td>.8</td>
<td>.8</td>
<td>.4</td>
<td>.27</td>
</tr>
<tr>
<td>Adding in Support (from management)</td>
<td>.17</td>
<td>.31</td>
<td>.7</td>
<td>.65</td>
</tr>
</tbody>
</table>

Exploratory analyses were conducted to test for multiplicative interactions between each of the demand and control variables. These were added to multiple regressions at a third step. Tests for three-way interactions were conducted by adding three-way interaction terms for demand, control and support variables.

There was very little evidence of interactive effects. However, there was evidence of a two-way interactive effect predicting symptoms in men. Here an interaction between method control and unpredictable and changeable demands accounted for an additional 3% of variance. There was also evidence of a three-way interaction (including supports) for job satisfaction in women. The interaction between managerial support, monitoring demand and method control accounts for an additional 2% of variance.

The role of conscientiousness in Karasek's model.
To investigate the effect of conscientiousness, a series of exploratory analyses were conducted in which conscientiousness was added to the model. Conscientiousness seldom has a main effect on the outcome variables. However, several two-way interactions between demand/control variables and conscientiousness were found e.g. a high level of demand coupled with high level of conscientiousness is related to higher anxiety in men. Furthermore, high
level of timing control coupled with high conscientiousness in men was related to lower reports of symptoms. This latter interaction is plotted in Figure 1.

Figure 1. Plot of effects of timing control on symptoms at different levels of conscientiousness

Adding job specific variables.

A final series of multiple regression analyses were conducted adding job specific variables. For practical reasons, interaction terms were omitted from these analyses. For all outcome variables with the exception of symptoms these added significantly to the outcomes. As an example, the regression analysis for depression is shown in Table 3. This shows that additional variables (such as feedback and recognition) add significantly to the variance explained and are more important in the final model than the core Job Strain variables.

Table 3. Multiple regression Adding job specific variables predicting depression / enthusiasm

<table>
<thead>
<tr>
<th></th>
<th>Beta at step 1</th>
<th>Beta at step 2</th>
<th>R²</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
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<tr>
<td>Monitoring demand</td>
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<td>.04</td>
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</tr>
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<td>Method control</td>
<td>.09</td>
<td>.05</td>
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<tr>
<td>Timing control</td>
<td>.17**</td>
<td>.14*</td>
<td></td>
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<td>Unpredictable/changeable demand</td>
<td>-.03</td>
<td>.004</td>
<td></td>
</tr>
<tr>
<td>Managerial support</td>
<td>.47***</td>
<td>.38***</td>
<td>.32</td>
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<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedback and recognition</td>
<td>.22***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dealing with difficult customers</td>
<td>-.16**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical demands</td>
<td>.16**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflicts with colleagues</td>
<td>-.10</td>
<td></td>
<td>.38</td>
</tr>
</tbody>
</table>

Discussion

The study identifies a range of predictors of well-being outcomes. While demand and control variables based on Karasek's model, are shown to be important, substantial additional variance in psychological well-being is added by the inclusion of additional stressors relevant to the type of work conducted by the organisation. While only some examples of results could be given here, the analyses suggest that a lack of feedback and recognition, the difficulty of dealing with difficult customers and the physical demands of the job are particularly important. For this type of work, interventions focusing on these factors may be more useful than those focussing purely on demand and control. The study also suggested that the role of conscientiousness in the stressor-strain relationship is worthy of further research. Finally, the study found some support for the interactive relationship between stressors and strains. This is consistent with Wall and Jackson (1996).

The research clearly has some limitations. The study is cross-sectional and based on self-report measures with the associated problems related to determining causation. Furthermore, there may be problems due to common methods that potentially inflate correlations. However, efforts were made to measure stressors in ways that were devoid of emotional content and with as little overlap as possible with strain measures. Further tests of the model nevertheless would benefit from more objective measures and follow-up over time. A further problem relates to the conscientiousness measure. This was considerably skewed suggesting a, perhaps inevitable, tendency for people to report high levels of conscientiousness. Obtaining accurate self-reports of conscientiousness when studies are conducted in an occupational
setting is likely to be problematic. However, the study suggests this may be an important variable in this context. The development of less transparent measures of conscientiousness would aid research in this area.

Overall, the research does suggest that Karasek's model does predict significant variance and that the use of focused variables may help to identify more specific effects of different types of control. The inclusion of additional variables relevant to specific types of organisation and industries may also be essential to provide a clear framework action.

References


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Learning from near-accidents

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2 Change@Work, Innovation&Development@Work, Univa, Lund University, Sweden
3 Change@Work, Department of Design Sciences, Lund University, Sweden
4 Change@Work, Univa, Department of Design Sciences, Lund University, Sweden

### Introduction

Usually small and medium sized enterprises (SME) devote most of their resources to manufacturing products and offering service to customers and people outside the companies. They lack time, financial and staff resources to analyze internal conditions of importance for health and safety of the employees such as the organizational and working environment in general, and risk factors and hazards in particular. Due to lack of competence and information concerning these aspects the awareness about dangerous working conditions is low in many SMEs and few SMEs try to prevent accidents by making use of incident reporting systems. By reporting near-accidents preventive measures can be taken before someone has to meet with a serious accident. This in their turn will probably be accompanied by better quality, economy, productivity, and work environment due to safer workplaces stimulating the employees to perform at their best (Informationsgruppen AB, 1995).

To study these aspects, a joint project was started last year between Austria and Sweden supported by the European Agency for Safety and Health at Work. The aim of the project is to increase the awareness about job hazards by calling attention to incidents, analyzing the conditions preceding them and reporting about them to SMEs in Europe. In Sweden five SMEs take part in the project, three in the metal industry, one safety equipment producer, and one airline company. All companies are selected in collaboration with the work environment inspectorate as examples of SMEs successfully working with safety issues and thereby hopefully stimulating other SMEs to focus upon job hazards and start developing incident reporting systems. A questionnaire covering attitudes to learning from near-accidents, the weekly amount of time devoted to working in and talking about hazardous job situation (BS 8800:1996, 1996), and technical oriented, organizational oriented, and individual oriented measures taken to prevent accidents has been distributed to all employees in the companies.

The airline company is of special interest to investigate more thoroughly as it is certified according to ISO 9001 and ISO 14001 and have a well worked-out incident reporting system and yet get very few if any incidents reported. Three occupational categories with tasks varying in importance for the flight security – the flight crew, the maintenance personnel and the administrative personnel – have been analyzed with respect to their attitude to incidents, the time they devote to different safety aspects and tasks, accident preventive measures taken by them and whether these meet the demands of the respondents.

The question at issue for this study to explore is the overall picture deriving within those companies who learn from near-accidents. By being aware of incidents, reporting them and spreading them through a well established information and communication network both within and between companies the authors seek to find out whether the companies who do this, have a higher awareness of learning from near-accidents and work in companies who have high safety concern divided over the three areas of technical oriented, person oriented, and organizational oriented aspects.

### Method

**Participants**

The participants in this study consist of all employees in the five Swedish companies. The questionnaire was delivered to each employee within the companies according to an employment list. A total of 502 questionnaires were sent out of which 271 were returned, corresponding to a response rate of 54 %. The participants were divided into different subgroups. The number of distributed and returned questionnaires, and the response rate are shown with respect to the number of employees in table 1, certificates in table 2, and gender in table 3.

<table>
<thead>
<tr>
<th>Questionnaire data</th>
<th>1-49 employees</th>
<th>50-99 employees</th>
<th>100-250 employees</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed</td>
<td>21</td>
<td>135</td>
<td>346</td>
<td>502</td>
</tr>
<tr>
<td>Returned</td>
<td>12</td>
<td>73</td>
<td>186</td>
<td>271</td>
</tr>
<tr>
<td>Response rate (%)</td>
<td>57</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
</tbody>
</table>

Table 2. Number of distributed and returned questionnaires, and response rate with respect to certificates in the studied companies.
standards, t(269)=5.178, p<0.001, as well as the organizational oriented safety aspects, t (269)=5.406, p<0.001. Further
showed several significant results. The transportation company had higher means for the person oriented safety
questionnaire itself, the procedure following it and its purpose. The poster was put up on company notice boards and
week before the distribution of the questionnaire an information poster was sent to the companies concerning the
The project group decided to perform a quantitative study with the questionnaire “Learning from near-accidents”. A

Due to distribution reasons the data was analyzed by one-way instead of factorial ANOVA in order to study the effects
given two weeks to answer and return the questionnaires. The envelopes were then distributed to all employees via the internal postal service. The employees were
the companies, techni cal oriented (268)=2.216, p<0.05 and person oriented (268)=2.148, p<0.05.

The only result that indicates a higher awareness to learn from near-accidents was gender related. This
difference was significant. Men scored higher (z=0.066) than women (z=-0.319) in this respect (t=2.44, p<0.05). Men
also believed more than women that the technical oriented and the person oriented safety aspects should be improved in

Concerning the number of employees in the companies some differences were found concerning where the
employees think that the company places its focus of safety. Companies with 50-99 employees scored higher than
smaller and bigger companies on both person oriented and organizational oriented aspects, F person oriented (2;268) =4.619,
p<0.05 respectively F organizational oriented (2;268)=4.509, p<0.05.

When it comes to certificates the company with three certificates had higher mean than companies with less
certificates, t(209)=2.088, p<0.05, showing that they had a higher safety awareness concerning the organizational aspect.

The t-tests performed to study differences between the transportation branch and the mechanical industry showed several significant results. The transportation company had higher means for the person oriented safety standards, t(269)=5.178, p<0.001, as well as the organizational oriented safety aspects, t(269)=5.406, p<0.001. Further
more, the transportation company had the lowest means in all areas, technical oriented t(269)=-1.977, p<0.05, person

### Results

Table 3. Number of distributed and returned questionnaires, and response rate with respect to gender in the studied companies.

<table>
<thead>
<tr>
<th>Questionnaire data</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributed</td>
<td>400</td>
<td>102</td>
<td>502</td>
</tr>
<tr>
<td>Returned</td>
<td>222</td>
<td>48</td>
<td>270</td>
</tr>
<tr>
<td>Response rate (%)</td>
<td>56</td>
<td>47</td>
<td>54</td>
</tr>
</tbody>
</table>

Table 4. Reliability test of the questionnaire “Learning from near-accidents”.

<table>
<thead>
<tr>
<th>Question numbers</th>
<th>Area of focus for questions</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1.1 – 1.12</td>
<td>Learning from near-accidents</td>
<td>0.89</td>
</tr>
<tr>
<td>Question 4.1 – 4.12</td>
<td>Time per week devoted to safety issues</td>
<td>0.86</td>
</tr>
<tr>
<td>Question 5.1A – 5.18A</td>
<td>Technical/person/organizational oriented focus on safety</td>
<td>0.94</td>
</tr>
<tr>
<td>Question 5.1B – 5.18B</td>
<td>Attitudes towards the sufficiency of question 5.1A – 5.18A</td>
<td>0.96</td>
</tr>
</tbody>
</table>

Material

A questionnaire, learning from near-accident, developed by the Austrian partners, Geissler and Geissler-Gruber and translated into Swedish was used to scientifically test our hypotheses.

Cronbach’s alpha, was calculated to make sure that the questionnaire was consistent and reliable. According to Aron & Aron (1999), a psychological test for scientific use should have a reliability of at least 0.7, preferably closer to 0.9 if a test is standardized, to be considered usable. The results of the reliability test are shown in table 4.

### Procedure

The study started with meetings with each of the companies. A contact person within each company was established. Under these meetings information was given concerning safety related areas. Deeper information was given concerning communication, leadership, decision making, and incident reporting. The assignment was given the project group to examine the attitude towards learning from near-accidents as well as the organizational oriented, technical oriented, and the person oriented aspect of safety culture.

The project group decided to perform a quantitative study with the questionnaire “Learning from near-accidents”. A week before the distribution of the questionnaire an information poster was sent to the companies concerning the questionnaire itself, the procedure following it and its purpose. The poster was put up on company notice boards and other places within the companies. In one company due to its internal structure an e-mail was sent to all employees. All questionnaires were coded and put in a sealed envelope with the name of the employees to protect the anonymity of the participants. The envelopes were then distributed to all employees via the internal postal service. The employees were given two weeks to answer and return the questionnaires.

Due to distribution reasons the data was analyzed by one-way instead of factorial ANOVA in order to study the effects of the numbers of employees, certificates, and gender on attitude towards learning from near-accidents as well as where the company places its focus of safety: organizational, technical, or person oriented.

The only result that indicates a higher awareness to learn from near-accidents was gender related. This difference was significant. Men scored higher (z=0.066) than women (z=-0.319) in this respect (t=2.44, p<0.05). Men also believed more than women that the technical oriented and the person oriented safety aspects should be improved in the companies, t technical oriented (268)=2.216, p<0.05 and t person oriented (268)=2.148, p<0.05.

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<table>
<thead>
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<td>Returned</td>
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<td>154</td>
<td>105</td>
<td>271</td>
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<th>FEMALE</th>
<th>TOTAL</th>
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</thead>
<tbody>
<tr>
<td>Distributed</td>
<td>400</td>
<td>102</td>
<td>502</td>
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<tr>
<td>Returned</td>
<td>222</td>
<td>48</td>
<td>270</td>
</tr>
<tr>
<td>Response rate (%)</td>
<td>56</td>
<td>47</td>
<td>54</td>
</tr>
</tbody>
</table>
of lower safety culture, where the employees do not care that much any more to mobilize the strength to demand higher safety. This shows that the transportation branch had the most highly developed safety culture. The analysis of the results in this study showed that there was a significant statistical difference between the genders attitude towards learning from near-accidents. According to these results men believe more than women that information surrounding near-accidents can help them to prevent any future accidents. Men might use the information from near-accidents, transform it into knowledge and spread the information to some more extent than women do according to this study. The other gender related result showed that men have greater demands on the surrounding environment when it comes to safety. Both technical oriented and person oriented safety aspects showed significant differences between men and women in terms of a lower satisfaction reported from the men. It could be that most of the men in this study work in the workshop and that most of the women in this study work in the administration department. If this difference is big enough, that can explain the greater concern from the men who derive from a working situation containing much more incidents as well as other hazardous situations.

According to the one-way ANOVA performed to examine differences between the number of employees the results turned out to show a higher awareness in the middle sized companies, 50-99 employees, than the smaller, 1-49 employees, and the bigger, 100-249 employees, companies. Its seems reasonable to assume that the middle sized companies are big enough to give resources to technically safe tools, machines and safety procedures (e.g. incident reporting system), at the same time as they create a safety culture on the basis that the employees as well as the company are together responsible for the overall safety. Parallel to this, the company size is too small for the employees to loose sight of their own responsibility and still each individual take a central role for the company safety.

Every branch is today encouraged to participate in the work for better environment, quality, and safer work situations. In each of these three areas certificates can be held as evidence in achieved standards. In this study one company is holding all three certificates in contrast to the other four companies. A significant result between our companies was that the company holding three certificates had a higher awareness when it comes to organizational safety. Interesting and worthy to mention is that the employees in this company showed a tendency to have higher demands on safety at the same time as they considered the available information having the highest organizational safety. This could mean that this company is working in the most hazardous business, giving the dilemma that even though they are the safest working company, they still have the most hazardous work place. This conclusion is not very likely through. Since four of the companies are working in the same area, there is no evidence that one sub branch area is more hazardous than the other. What is more likely to conclude is that the company has received a higher awareness concerning organizational safety. But at the same time as the organizational safety have increased and the work combined with the certificates has proceeded, the knowledge about safety among the employees have also increased, giving the situation that the real safety as well as the demands on higher safety goes hand in hand to higher and better results.

The five companies analyzed in this study have another interesting area to examine. The multitude is not large but one of the companies belongs to the transportation branch when the other four belong to the manufacturing industry. The company belonging to the transportation branch is in fact an air carrier company. Knowing that this specific branch are very much regulated by domestic government rules as well as international agency rules the authors believed that this company would show higher results concerning the different safety aspects. The results in this study shows that air carriers might have both a better understanding concerning person oriented safety as well as safety aspects building on organizational factors. This together gives us a picture of a company in which the employees takes a significant higher responsibility towards safety as well does the company. Could this be the safest company examined in this study? Without doubt it could very much be that way. Airline companies are today in many aspects leading companies and a star to follow to all-round safer working organizations. They have regulations, procedures, and a historical culture working in the frontline for safer operations. Many branches have a lot to learn from the airline companies. Their training methods and checklists have prevented many accidents to today’s date. Information should not be held within the companies, let researchers be part of developing new safer methods within the airline companies, let us work together and learn together, and let us spread this information so that all can take part in working safe. Accidents are very expensive in our society, and as long as money talks, let us make safety cheaper. This new won ground of knowledge that airline companies and researcher gain together must also be spread to other branches. There is no such thing as monopoly on being a safe branch.

Interesting or maybe alarming for this study is that the airline company showed significant lower results concerning the demands the employees have on their safety situation. In this case the airline company is maybe the safest company, but it also seems like all the employees are satisfied with the situation. Being satisfied can be the result of lower safety culture, where the employees do not care that much any more to mobilize the strength to demand higher safety. Just because they are safe, do not mean that they can or should become safer. Maybe all this is a result of a bad regulation system. Governments around the world put up a heavy worked administrative system that restricts the companies and its employees. The question is: how much of all the regulations that the companies and its employees must follow is practicable and how much is just for showing? What makes the employees in the airline company in this study show tendencies of lower safety culture? Perhaps it is time to act now, nobody knows for how long the timeslot will be open.

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References
Can improved communication skill in a changing organization prevent negative health effects – a prospective controlled intervention study of the effect on psychosocial work environment and subjective health

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2 Landstingshälsan Halland, Halmstad, Sweden

Introduction
During the last decade the working life in Sweden, as well as in many other countries, has been characterized by organizational changes in an accelerating tempo, and associated with that, an increased stress in working life. Over the last years there has been a rapidly increasing rate of sick-leave due to fatigue, burn-out and similar diagnoses. This increase has been especially marked among women within the medical services. Emotional load and value conflict between one’s own expectations and job demands has been suggested to be one source of negative health effects in human service jobs (Schaufeli and Enzman 1998), and social support has been suggested to buffer negative effects on well-being from a high work load (e.g. House 1981, Johnson 1986).

There is a need for further evaluation of worksite oriented interventions on various levels and kinds, with the purpose of preventing negative health effects, sick leaves and exclusion of people from the labour market. A number of reviews of interventions conclude that interventions seem to have a good effect, but that the studies often have various shortcomings, related to measurement methods, design, time perspective for evaluation, and that few have health effects as outcome parameters (e.g. Eriksen et al. 2000, Burke and Richardsen 2000, Cox et al. 2000).

The present study evaluates prospectively the effects of a structured intervention aiming to improve the verbal communication skill in a work group, with the purpose of increasing the social support by building greater trust within the group and thus facilitate coping with emotional load. A secondary effect was supposed to be an improved demand and control balance due to increased co-operation within the group.

The intervention took place in a nursing ward of a hospital clinic, an organization presently undergoing change. This involved a change of management for the whole clinic and the appointment of a new supervisor for the nursing staff who was responsible for initiating the intervention as part of the change process. The intervention involved new leadership style, work schedules and a considerably greater number of staff in the longer term.

Method
Design
The intervention was performed in one nursing ward, while a similar ward at the same hospital, also with a new supervisor, served as a control group. A baseline measure was taken in both wards about one month before the intervention started, and a follow-up measure, about six months after the baseline measure, approximately two months after completion of the intervention. Verbal feedback of results was given to supervisors and contact persons of the staff following each of the measurements.

Intervention method
The intervention method “Dialogging” is a structured method for improving communication skills and co-operation. Its purpose is not conflict resolution, but rather development of the dialogue skill in basically well functioning work groups. Serious conflicts within the group or in relation to supervisors are contra-indicating for using the method. It is performed in groups of about five to eight participants. In the present study each group participated for two days, with about two month interval.

To give a concrete description of the method, Dialogging is a game played in teams, using a game board on which the players move his/her counter after throwing a dice. Where the counter stops, the player draws a card with an expression about the work environment (e.g. “We often talk behind each others back”). Within a given time the player is supposed to, in a sincere way, give concrete examples from the work group illustrating his/her opinion about the expression on the card. During the game, each player also acts as the leader of an open and frank discussion of the expressions and examples given, which are supposed to be the object of exploration. The game also includes rules about listening to each other attentively without interrupting. The game leader gives points to the teams according to their ability to communicate about the given expressions.

Subjects
All staff at the ‘intervention’ nursing ward participated in the Dialogging intervention and were invited to participate in the measurements. The control group was invited to participate only in the measurements. At the first measurement, 32/38 (84%) of the employed subjects in the intervention group and 34/49 (69%) in the control group, responded to the questionnaires. At follow-up there was a 73% participation rate in the intervention group and 60% in the control group. However, due to turnover and drop-out for other reasons, 63% of the baseline respondents from the intervention group and 65% from the control group participated at the follow-up.

In addition, an external reference group, which two years prior had responded to a public health survey administered by the Department of Community Medicine, University Hospital, Malmö, was used as a comparison group. From this
group (n=13604) that had responded to some of the measures used in the present study, a subgroup was selected (n=1402), matched by gender, age strata and socioeconomic index.

Measurement methods
The baseline measure included a greater number of measures than will be reported here, and the follow-up a sample of the baseline measures.

Job Content Questionnaire (JCQ) (Karasek & Theorell, 1990) – 29 items measuring job demands, control (with the subscales decision authority and skill discretion), support (with the subscales support from supervisors and colleagues), and job insecurity.

Self-rated health (SRH) (Bjorner et al., 1996) – one item assessing the subject’s present health, both physically and mentally, with endpoints ranging from “worst possible” to “best possible” on a seven-point scale, where a higher score indicates a better health.

General Health Questionnaire (GHQ-12) (Goldberg & Williams, 1988) - measures changes in subjective well-being during the last weeks, by 12 items, responded to on a four-point scale, where a higher score indicates a poorer well-being.

Job satisfaction (from the QPS Nordic) (Lindström et al., 1997) – comprises 10 individual questions concerning satisfaction with various aspects of the job, and with ability to maintain good relationships with colleagues. The questions are responded to on a five-point scale, where a higher score indicates a higher degree of satisfaction.

Statistical analyses
For the subjects who participated at both measurements, changes were analysed with General Linear Modeling (GLM) Repeated Measures. For cross-sectional analyses at each measurement, respectively, GLM ANOVA was used, with post hoc comparisons on the external reference group, using Dunnett’s test. Data were analyzed with SPSS 11.0 for Windows.

Results
In the cross-sectional analyses (Table 1) of the first measure (M1) both groups reported poorer self-rated health (SRH) than the reference group (for both groups p<.01), and in the intervention group, a poorer GHQ score (p<.01). Both groups also had higher score on job demands and job strain (for the intervention group, a significance level of p<.001 was obtained, and for the control group a significance level p<.05 for both variables).

At the second measure (M2) none of the groups any longer differed from the referent group on neither SRH nor GHQ-12. The control group still had increased scores on job demands and job strain, while the intervention group now was comparable to the referent group in theses variables.

In the repeated measures analyses (Table 2) there was a between-groups difference on GHQ-12, where the intervention group scored poorer than the control group at both occasions (p=.008), although both groups improved to a near significant level (p=.06). Following univariate analysis of support from supervisors a significant change (p=.04) was noted. This support changed in differing directions for the two groups, with a significant group interaction term (p=.004). The intervention group reported improved support from supervisors and the control group, deteriorated support, resulting in a significant group difference (p<.001). For the QPS question on satisfaction with ability to maintain good relations with colleagues, there was an improvement for both groups as indicated by the univariate analysis (p=.03), indicating however, no group interaction, in spite of the fact that control group scored slightly higher at both occasions (p=.046).

Methodological reflections
The two ways of analyzing data might call for some methodological reflections concerning their interpretation. The repeated measures analyses could be considered as the optimal means of analysis, since it shows the actual changes within the same individuals between two measures. It would, in that sense be regarded as the most “true” measure of change. However, since we have no control over realities such as labour turnover and other reasons for drop-out, repeated measures analysis will, over time and further measurement, will lead to a gradual decrease in the number of subjects representing the worksite, and a possible selection bias of subjects with higher staying power. The other way of analyzing data which was applied in the present study use all the data being available at the two occasions, respectively, and compares the scores of each of the examined groups with external reference levels. These results rather indicate how the subjective well-being and psychosocial work environment are perceived across nursing wards at each occasion. Given that there is no systematic selection bias of participants, and a reasonable participation rate, these analyses might well be a reflection of organizational change.

Discussion
In the present study the results from the two ways of analyzing data do not contradict each other, but rather converge concerning subjective well-being and health and support from supervisors. However, the cross-sectional analyses indicate improvements in job demands and job strain in the intervention group which are not detected in the repeated measures analyses. These improvements make the intervention group comparable to the external reference group and could in that sense be regarded as a normalization of psychosocial work environment.

The diverging change in support from supervisors in the two groups deserves comment. The improvement in the intervention group is a favourable change to be expected from the intervention. There was, however, no expectation of any deterioration in the control group, especially not such a remarkable one as was seen. However, the most plausible explanation for this is that the results reflect a rather unclear dissatisfaction with leadership at the ward. This might be due
to the fact that the second measurement was performed only a few weeks after the supervisor had left the job on long-term sick-leave, and was replaced by a substitute supervisor.

Both groups also reported an improved ability to maintain good relations with colleagues. Such a change was mainly expected to appear in the intervention group. That the latter, as well as subjective well-being, also improved in the control group cannot be explained by any other obvious change that occurred, but might rather be the result of the emphasis paid to the psychosocial work environment, well-being and health, through participating in the study and feedback of results. According to the previously cited review of Cox et al. (2000), few occupational stress intervention studies which have used control groups, improvements across both intervention and control groups have been found.

The main expectation of possible effects of the Dialogging intervention was an improvement in communication and dialogue skills, i.e. more direct and verbal communication, and more listening to each other. This in turn, implied greater trust and emotional comfort within the work group and toward the supervisor. A secondary effect of the improved communication was a reduced demand-control imbalance due to increased cooperation and ability to plan and perform work tasks in a more efficient way. Such a change was seen in the intervention group, but not in the control group. The reduced demand-control imbalance was dependent on a reduced demand level since the control level did not change. It may also be noted that the control level of both groups were comparable to the level of the external reference group from the beginning.

Can we then conclude that these changes were effects of the specific intervention? Since other changes were implemented in the intervention group at the time interval between the two measurements, such as change of schedules, an increased number of weekends, and a slightly increased staff during weekends, the specific effects of these changes may not be quite distinguishable. On the other hand, these changes may not be independent of each other. For example, according to informal reports from the supervisor, there had been an initial resistance to the schedule change which had been resolved after the communication and cooperation intervention, which in turn, was attributed to increased trust and openness in communication.

Since the aim of the study was to evaluate if the intervention could prevent negative health effects, one must exercise caution in interpreting the present results because of the short time interval from intervention to follow-up. The present improvement in both the intervention and the control groups, may not necessarily continue to persist in the same way for both wards. However, another follow-up, using a larger sample size than was used at baseline, is planned one year after the first measurement.

References


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Table 1. Two cross-sectional analyses of well-being and psychosocial work environment in subjects participating at each measurement, respectively, compared to an external reference group.

<table>
<thead>
<tr>
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<th>Intervention group</th>
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<th>Intervention group</th>
<th>Control group</th>
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<th>M2</th>
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<td>4.55(^a) 1.06</td>
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<td>5.11 1.09</td>
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<td>1.85 0.43</td>
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<td>.05</td>
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<td>2.89(^c) 0.30</td>
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<td>.007</td>
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<td>.64</td>
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<td>Support</td>
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GLM ANOVA used for analyses. Post hoc p-values for each group at M1 and M2, respectively, when compared to the referents with Dunnett’s test, indicated as letters after the mean value for the variable significantly deviating. a=p<.05, b=p<.01, c=p<.001.

Table 2. Repeated measures analysis of well-being and psychosocial work environment in subjects participating in both measurements.

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<td></td>
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<td>M2</td>
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<td></td>
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<td>supervisors</td>
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<td>QPS relations</td>
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GLM repeated measures used for analyses.
Interpersonal conflict at work: do different sources lead to different outcomes?

G.KINMAN\(^1\) and F.JONES\(^2\)
1 Department of Psychology, University of Luton, United Kingdom
2 Department of Psychology, University of Leeds, United Kingdom

Introduction
Research suggests that interpersonal conflict in the workplace is commonplace and a source of considerable strain for employees. A diary study by Bolger et al (1989) found conflict at work to be the most distressing type of workplace event. It has been associated with psychiatric morbidity, depersonalisation, cardiovascular reactivity, and somatic symptomatology (Appelberg, 1996; Brondolo et al, 1996; Romanov et al, 1996; Spector & Jex, 1998; Frone, 2000). Some studies also suggest that negative social interactions in the workplace can have a negative impact on family relationships (e.g. Repetti & Wood, 1997). Interpersonal conflict at work has also been related to more organisationally-relevant psychological outcomes, such as job dissatisfaction, turnover, impaired productivity and work disability (Richardsen et al, 1992; Spratlen, 1995; Frone, 2000). Gender differences have also been noted but, as yet, research is limited. There is evidence that female workers might find conflict at work more stressful than their male counterparts (Narayanan et al, 1999), and male workers are more likely to experience conflict with their supervisors than females (Tezar, 1996).

In comparison with other workplace stressors, such as lack of job control and role overload, little research has focused directly on interpersonal conflict at work. Much of the research that has been conducted is limited, however, as global measures of conflict have been utilised. These measures tend to focus on the frequency of arguments and rudeness experienced in the workplace and not ascertain with whom the conflict occurred (e.g. Spector & Jex, 1998). Depending on the nature of the work, employees interact on a day-to-day basis with individuals from different functional domains, for example: line managers, senior managers, colleagues, students, patients or customers. As conflict with a supervisor is likely to be a different experience to friction with a customer, it could be argued that these different forms of conflict might have a different impact on the individual. With the exception of Frone (2000), who examined the outcomes of conflict with supervisors and co-workers in a sample of young adults (aged 16-19 who worked part-time only) this proposition does not seem to have been examined. This study aimed to explore relationships between three different forms of interpersonal conflict (with supervisors/managers, colleagues and customers) and a range of organisationally and personally relevant outcomes in a more heterogenous working group. Gender differences in the experience and correlates of conflict at work were also assessed.

Method
Three hundred and twenty four participants from different functions within a service organisation completed a series of questionnaires. The sample was 61% male, and 81% were 44 years and under. The questionnaires assessed:

- Background information (e.g. age, gender, job title, length of time in present job, turnover)
- Conflict with managers/supervisors (7 items, alpha = .77)
- Conflict with customers (2 items, alpha = .90)
- Conflict with colleagues (5 items, alpha = .73)
- Organisational commitment (6 items, alpha = .62)
- Work/home spill-over (3 items, alpha = .77)
- Intrinsic and extrinsic job satisfaction: Warr, Cook & Wall, 1979 (15 items, alpha = 0.90)
- Context-free psychological well-being: Goldberg, 1978 (12 items, alpha = .90)
- Job-related mood: Warr (1990) (anxiety-contentment, 6 items, alpha = .85 and depression/enthusiasm = 6 items, alpha = .82)
- Somatic symptoms: Spector & Jex, 1998 (19 items, alpha = .78)

Results

Zero-order correlations between conflict, satisfaction, commitment and turnover

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Zero-order correlations between conflict, health, mood and work-home spillover

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<td>5. Job depression-enthusiasm</td>
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</table>

Gender differences

On average, females reported more conflict with customers than males (means = 7.54 [2.38] and 4.93 [2.74] t = -8.79, df = 320, p<0.001). Male respondents perceived more conflict with colleagues (means = 10.44 [3.15] and 9.23 [2.86] t = 3.51, df = 323, p <0.01). No gender differences were found in levels of conflict with supervisors/managers. Significant relationships were found between perceived conflict with managers and colleagues and all outcome variables for both males and females. For men, however, no relationship was observed between conflict with customers and work-home spillover, but for women there was a positive association (r = .26, p<0.01). Although men perceived a higher degree of conflict with colleagues than women, this was not associated with any outcome variable. For women, on the other hand, friction with colleagues was significantly correlated with all outcome variables with the exception of somatic symptoms.

Multiple regression of conflict at work on outcome variables

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<td>.17*</td>
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</tr>
<tr>
<td>Somatic symptoms</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Conflict with customers</td>
<td>.03</td>
<td>9.09*</td>
<td>.17*</td>
<td></td>
</tr>
<tr>
<td>Conflict with managers</td>
<td>.04</td>
<td>6.67*</td>
<td>.12*</td>
<td></td>
</tr>
<tr>
<td>Intrinsic job satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict with managers</td>
<td>.37</td>
<td>184.13*</td>
<td>-.60*</td>
<td></td>
</tr>
<tr>
<td>Conflict with customers</td>
<td>.38</td>
<td>98.78*</td>
<td>-.13*</td>
<td></td>
</tr>
<tr>
<td>Conflict with colleagues</td>
<td>.40</td>
<td>69.87*</td>
<td>-.13*</td>
<td></td>
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<tr>
<td>Extrinsic job satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict with managers</td>
<td>.46</td>
<td>276.80*</td>
<td>-.68*</td>
<td></td>
</tr>
<tr>
<td>Conflict with customers</td>
<td>.48</td>
<td>148.37*</td>
<td>-.14*</td>
<td></td>
</tr>
<tr>
<td>Conflict with colleagues</td>
<td>.50</td>
<td>104.18*</td>
<td>-.12*</td>
<td></td>
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<tr>
<td>Job commitment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict with managers</td>
<td>.37</td>
<td>192.48*</td>
<td>-.61*</td>
<td></td>
</tr>
<tr>
<td>Retention</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Conflict with managers</td>
<td>.11</td>
<td>39.62*</td>
<td>-.33*</td>
<td></td>
</tr>
<tr>
<td>Conflict with customers</td>
<td>.13</td>
<td>.02</td>
<td>22.51*</td>
<td>-.12*</td>
</tr>
</tbody>
</table>

As suggested by Kerlinger & Pedhazer (1973) predictor variables were considered to be those that contributed a minimum of 1% to the variance (R² change) and were significant at the .05 level or greater.

As can be seen above, conflict with managers was the most significant predictor of all outcome variables; conflict with customers and colleagues contributed little to the variance. When the occupational groups who had most contact with
customers (i.e. Sales and Customer Service) were analysed separately, no significant difference in these findings were observed, apart from conflict with customers explaining slightly more variance in job satisfaction (4% each for intrinsic and extrinsic satisfaction).

Discussion and conclusion
In a sample of young workers, Frone (2000) found that conflict with supervisors predicted organisationally-relevant psychological outcomes (such as job satisfaction) whereas conflict with co-workers was associated with more personally-relevant outcomes (such as low self esteem and depression). The present study has extended this work by examining relationships between three forms of interpersonal conflict at work and a wider range of variables in a more heterogenous working group. Unlike Frone, the present study found interpersonal conflict with managers to be the most significant predictor of all outcome variables, with the exception of somatic symptoms. Interpersonal conflict with customers tended to be a secondary predictor, whereas conflict with colleagues barely achieved significance for any outcome variable operationalised.

Unlike Tezer (1996) the present study found no gender differences in the extent of conflict with supervisors and managers. The argument made by Narayanan et al. (1999) that female workers are likely to find interpersonal conflict at work more stressful than males was partially supported. On average, stronger relationships were found for women between conflict at work and job-related anxiety (females $r=.18$, $p<0.01$, males n.s.), but not job-related depression and psychological distress. Some further gender differences were noted. Females reported more conflict with customers than males. However, female respondents were more likely to be employed in ‘front-line’ service jobs with higher levels of customer contact. Although males perceived more conflict with colleagues than females this was not significantly related to any outcome variable. Women had particularly strong relationships between: a) conflict with managers and colleagues and work-home spillover; b) conflict with customers and colleagues and job satisfaction; and c: conflict with colleagues and work-related mood.

Future research should examine the specific types of conflict experienced at work (e.g. goal-, personality- or workload-related), the behavioural responses individuals use with colleagues, customers and line managers, and how conflict management styles might impact on employee health and satisfaction. Studies might also focus on female workers in particular, as the results of the present research suggests that they might have more negative experiences of interpersonal conflict. Additionally, the relationships between the three different forms of interpersonal conflict and work-home spillover should be further examined.

References
Can a psychological assessment of lowered work capacity be empowering?

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Finnish Institute of Occupational Health, Department of Psychology

Introduction
The psychological assessment of lowered capability to work is needed to chart possible health-related problems at work. The assessment of work capacity borders many life domains: health, work, training, and conflicts at work. The motivational context defines the problems that must be solved, and the choice of challenges in the future. Individual motivation can be conceptualized in terms of self-articulated personal goals (Sheldon, Kasser, Smith & Share, 2002, Nurmi & Salmela-Aro, 2002).

According to Finn (1997), clients have different goals due to basic human motives of self-verification, self-enhancement, self-efficacy or self-transcendence during an assessment process. These goals must be considered carefully in the assessment procedure in order to promote well-being, not to harm it. Therapeutic assessment resorts to tests and a collaborative assessment method to help clients reconceptualize their situation and move towards increasing their well-being.

Method
In the period 2000-2001, occupational health psychologists at the outpatient clinic of the Finnish Institute of Occupational Health assessed 143 persons with occupational diseases or problems in their work ability. The most frequently used tests were WAIS-R, Rorschach CS and Ways of Coping questionnaire. The psychologists met the client twice (3-4 hours/appointment) and the client had the opportunity to take up one feedback session.

The initial need for the assessment was usually identified by the employer or the health insurance agency. Some employees were sent against their will. Applying the principles of therapeutic assessment, the psychologist asked the client to think over what kind of new information about themselves and the world they hoped to get during the assessment (Finn, 1997). Many of the individual clients were unable to formulate questions to ask during the psychological assessment. We decided to examine the issue of the “client’s own questions” in more detail in order to develop the assessment process, i.e. to chart how they were prepared to benefit from the sessions.

We wrote the questions down in the client report. The data of this study contain extracts of the report. Reports for which the client's permission was not obtained, or with some information missing, were not included. The total number of clients was 121, of whom 64 had their own question and 57 did not. The two groups (own question/ no own question) were first compared to each other in some variables (the referring agency, age, gender and voluntariness).

The questions were classified into the goal contents found in the data: health, work, re-training, conflicts at work, life situation and self-awareness. Comparisons within the “own question” group were made in the variables: the purpose of the assessment (work ability, occupational disease, differential diagnosis), gender, work status upon arrival to the assessment (at work / sick leave / rehabilitation leave / unemployed), medical diagnosis, and the decision on person's work ability. One case illustrating the significance of the emerging questions during the process is presented.

Results
Comparison between the "own question"/ "no own question" groups
The greatest differences in favour of posing one's own question according to the referring agency were in the group which was sent by the occupational health care units (22/37 had their own question) compared to the group sent by the Social Insurance Institution and the insurance companies.

There were also demographic differences between “own question” groups and “no own question” groups. The age group of 45-55-year-olds had more questions (89/117) than other age groups. 53% of the men had their own question, while 47% did not. Among women the corresponding figures were 62% and 38%. In the group which came voluntarily to the assessment, 30/49 had their own question, and of those who came against their will, only 4/10.

In conclusion middle-aged women referred by the occupational health services and those who came voluntarily had formulated their own questions for the assessment more often than the other clients.

Comparison within the ”own question group”
According to the purpose of the assessment, 85% of the clients in the work ability assessment had their own questions, and only 15% in the occupational disease group. Those who were on sick leave (at most 300 days) most often had questions of their own (41%) compared to those who were at work or in the other groups. Among the diagnosis groups, clients suffering from mental health disorders most often had questions (54%) compared to the other illness groups. Those who were assessed to be able to work or who went to sick leave had most often formulated their own questions during the assessment process.

The clients who had thought of a question to ask in the sessions (n=64/121) posed question on three main domains: health, work, and re-training. Other frequently asked questions included conflicts at work, problematic life situations’ and self-awareness (Table 1).
Table 1. The domains of the clients’ own questions for the psychological assessment (n= 64)

<table>
<thead>
<tr>
<th>Domain of client’s questions</th>
<th>Goal represented</th>
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</thead>
<tbody>
<tr>
<td>Questions about health</td>
<td>To maintain a stable and coherent sense of self</td>
</tr>
<tr>
<td>Questions about work and the life situation</td>
<td>To develop more mastery over the world</td>
</tr>
<tr>
<td>Questions about re-training and self-awareness</td>
<td>To find meaning in our lives</td>
</tr>
<tr>
<td>Questions about conflicts at work</td>
<td>To grow and strive creatively</td>
</tr>
<tr>
<td>Self-awareness</td>
<td>To think well of ourselves</td>
</tr>
<tr>
<td></td>
<td>To be respected by important others</td>
</tr>
</tbody>
</table>

The profile of the questions posed by the 64 clients reflects a wide scope of problems in the area of work and health.

This study focused on one phase and one issue in the psychological assessment. It has aroused discussion among the occupational health psychologists. Lowered work capacity is a critical context for building a reflective interaction between the occupational health psychologist and his/her client. The assessment needs to be sensitive to the effects of the referral process, gender issues, and the type of the symptoms. When the fact that a half of the clients could not formulate a question of their own is considered as a guarded attitude, the practising psychologist could go 'back to basics'. Considering Steven Finn’s remarks on the goals of clients, the classification of individual motivational context revealed the kind of connections that the clients’ questions had to these goals. (Table 2).

Table 2. The clients goals operating in the psychological assessment with different problem foci of work capacity

<table>
<thead>
<tr>
<th>Domain of client’s questions</th>
<th>Goal represented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions about health</td>
<td>To maintain a stable and coherent sense of self</td>
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<td>Questions about work and the life situation</td>
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<td>Self-awareness</td>
<td>To think well of ourselves</td>
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<td>To be respected by important others</td>
</tr>
</tbody>
</table>

The search for one's own question during the assessment can sometimes change the question and cause a dramatic result. An example of this process can be illustrated by the case study presented below.

Case study: The changing question
The manager of a family company had suffered from neurological speech problems for a couple of years, and had undergone several medical examinations. His unclear articulation from time to time seemed to be resistant to the interventions. Trying to formulate his own questions, the client suddenly stopped and found a meaningful question. Perhaps his speech problem originated from his discretion to his brother? The brother is a co-owner in the company. He would have been fired a long time ago, had he not been a brother. - The domain and the strategy of managing the problem changed as the focus of the question changed.

Further, some of the clients did not in live in a secure economic situation due to the the problems at work. Perhaps that is why they cannot form a short-term personal goal, i.e. their own question in the assessment situation.

References

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The influence of management in the health and safety of workers in lumber industry in the Amazon region

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Introduction

The health and safety of workers in the lumber industry in the Amazon Region is not only influenced by factors related to the productive process and management of work, but also by the way that health and safety programmes are transmitted to these workers. Despite current organisational changes in the world of work, the difference between who plans and who executes still exists in the lumber industry. In relation to health and safety of workers of selected lumber industries, there exist two groups, one who elaborates the programmes of occupational health and another who carries them out. The latter group is failing to achieve the goals set by the former. When asked about their participation on the health programmes carried out by the companies, the majority of workers reported that they had not been informed about these programmes.

This paper identifies some management factors that interfere with the health and safety of the workers in the lumber sector. This study involved lumber companies in Belém (Pará), north of Brazil, selected because they have a minimum of 20 employees. The study shows that because of the lack of good education, the majority of workers attribute the accident to a “fatality” and not to poor programmes and training in occupational health. The method used was field research via interviews, involving production workers and management personnel who had some role in the safety and health programmes.

The absence of the workers from the design of the occupational health programmes creates a situation where they are not familiar with the programmes, and therefore they avoid taking part in activities such as lectures and training. In turn, the managers, believing they have discharged their legal obligations, look at these programmes as something which does not affect the workers and the company.

The risks and health control programmes have the objective of changing worker behaviour and consequently the reduction of accidents and occupational illnesses. However, managers in the lumber industry are much more worried about the results than the means to achieve these objectives. Thus, even with the adoption of safety in the work and occupational health programmes, accidents continue to happen because factors such as participation and involvement are not well considered. Consequently, the existence of these programmes does not guarantee their effectiveness and therefore does not guarantee a safe and healthy work environment.

Method

The method used was descriptive and quantitative, with data obtained through an interview supported by three questionnaires designed for data company, management group and direct production group. The employees interviewed had been working in the company for, at the very least, two years and six months. Interviewing those who had spent little time in the company was avoided because they were afraid to lose their jobs and they would not portray the reality of the work environment.

The companies were chosen randomly among those with at least 20 workers because, according to Brazilian law, companies with more than 20 workers have the obligation to have an Internal Commission for Accident Prevention (CIPA). The existence of the CIPA reduces the probability of errors in research because they are obliged to register all the occurrences related to safety and health in the company, while this does not occur in companies with fewer workers. Thus, 1019 workers from 10 companies were interviewed.

The interviews had the same questions in order to compare the answers from both groups: management and production workers. Thus, we had a view from both groups about factors related to the management of occupational safety and health. The next section describes some of the findings.

Results

Satisfaction with work
Both groups were not satisfied with their work. The number of “very satisfied” answers (management) and “partially satisfied” (production) are almost the same in the groups. Management did not specify the reasons for their partial satisfaction but production workers complained about low salaries and doing tasks not related to their contract.

Safety priority
More than 80% of interviewees found that safety of the work is a priority in the company. However, around 80% of production workers still think that the company never gives priority to problems related to health and safety, or even perceives this priority. Moreover, certain priorities are established by management pressure or legal necessities without considering the operating conditions of the company. In this way, occupational safety programmes are prevented from being an instrument that adds value to work, people and products, and become instead a document without importance to the company.
Management staff did not know of this program. This may be due to the fact that, in general, these programs place more emphasis on medical examination than on promoting health in the work environment. Moreover, many consultants who organise these programmes are unaware of a company's routine periodic worker examinations, vaccines and epidemiological controls. 89.5% of production workers and 51.4% of management group said they had never heard about Environmental Risk Prevention Programs (PPRA), which are, under Brazilian law, obligatory programmes. The percentage of managers unaware of this program was 45.98%. Workers were even more unfamiliar with Medical Control Programs for Occupational Health (PCMSO), which seek to prevent diseases through periodic worker examinations, vaccines and epidemiological controls. 89.5% of production workers and 51.4% of management group had not been consulted in relation to occupational health programs. The lack of worker consultation causes unfamiliarity with the program activities, and this is related to the self-confidence that production workers have about safety. Even without any kind of training, most of them think that they know how to work safely. This is a dangerous situation because it generates a false idea of safety. 25.7% of the management group said they knew “all” their workstation risks, while 27.6% of the production workers reported knowing the “majority”.

The management group is informed via the resulting documents. It was clear that the employees resented not knowing what subjects are discussed during these meetings. Some workers are informed about the results of the meeting through friends who take part in the CIPA. They are not informed because the lack of communication, more than half of the workers did not know what subjects are discussed during these meetings. Some workers are informed about the results of the meeting through friends who take part in the CIPA. The management group is informed via the resulting documents. It was clear that the employees resented not having knowledge about the topics discussed in the CIPA meeting.

The majority of production workers were unaware of occupational health programs. About 86.8% of these workers said that they had never heard about Environmental Risk Prevention Programs (PPRA), which are, under Brazilian law, obligatory programmes. The percentage of managers unaware of this program was 45.98%. Workers were even more unfamiliar with Medical Control Programs for Occupational Health (PCMSO), which seek to prevent diseases through periodic worker examinations, vaccines and epidemiological controls. 89.5% of production workers and 51.4% of management group did not know of this program. This may be due to the fact that, in general, these programs place more emphasis on medical examination than on promoting health in work environment.

Training

The CIPA has the legal obligation to offer safety training for its members. However, in general this training presents a generic approach, not considering the specific risks for each workstation and ignoring secondary exposition. In the lumber industry, the consequences of secondary exposition can be worse than primary because of the lack of control for the secondary group. Besides, most of the time, the trainer is an employee without proper methods of knowledge and leadership, and with obsolete knowledge. This situation leads to employees seeing an accident as an isolated event, without considering the organisational problems that contribute to the accident’s occurrence.

Safety rules

Around 21% of those interviewed reported knowing “all” the safety rules of the company, 62% reported knowing “some”, and the remaining group said they did not know any safety rules. In theory, the management group has easier access to the safety rules than production workers. However, the percentages that report not being aware of the safety rules are the same for both groups. A detailed analysis led us to conclude that the management is unaware of these rules because most of them are covered by health programs elaborated by consultants and not by the employees of the company.

Meetings

Brazilian legislation states that the Internal Commission for Accident Prevention must schedule periodic meetings in order to encourage identification, elimination and control of safety and health problems in the workplace. However, because the lack of communication, more than half of the workers did not know what subjects are discussed during these meetings. Some workers are informed about the results of the meeting through friends who take part in the CIPA. The management group is informed via the resulting documents. It was clear that the employees resented not having knowledge about the topics discussed in the CIPA meeting.

Occupational health programs

The data shows that 98.7% of production workers and 80% of the management group had not been consulted in relation to occupational health programs. The lack of worker consultation causes unfamiliarity with the program activities, and generates lack of engagement with them. The result is supported by the difficulty that certain companies experience when trying to motivate employees to participate in safety and health training and lectures. Companies are unaware that occupational health programmes have guaranteed effectiveness when elaborated in a participative, not centralised, way. Moreover, many consultants who organise these programmes are unaware of a company’s routine.

Company risks

Among production workers, 26.3% reported knowing “all” the risks of the company, 42.1% the “majority”, and 31.6% “none”. In relation to management, 25.7% knew “all” the risks, 68.6% the “majority”, and only 5.7% “none”. It is clear that the management group knows more about the company’s risks. This is because the majority of the management group belongs to CIPA and has the chance to know all sectors of the company, while the production group spends all their time of the day at the same workstation.

Workstation risks

With regard to workstation risks, the results were the reverse. For production workers, 68.4% knew “all” the risks of their work position, while for management 68.6% reported knowing the “majority” of risks in their own work position. This is related to the self-confidence that production workers have about safety. Even without any kind of training, most of them think that they know how to work safely. This is a dangerous situation because it generates a false idea of safety. 25.7% of the management group said they knew “all” their workstation risks, while 27.6% of the production workers reported knowing the “majority”.

Educational level

A high percentage of workers had only five years’ schooling, and only 4.8% of participants were currently studying. Also five workers had never studied and only knew how to write their names. Two of these five were members of the CIPA, that is, the commission composed by representatives of employees and employers which aims to establish and improve actions for preventing accidents at work.

Excluding package classifiers, there was no relation between the degree of education and the activities in most of the lumber industry. A package classifier needs to have mathematical skills to setup the machine’s requirements for wood packaging. Therefore, all of the interviewed professionals in this task finished their studies as medium level technicians, which corresponds to seven or eight years of formal education.
Health problems
The majority of production workers (91.8%) and management (94.4%) reported having no health problems as a consequence of the work activities. Production workers who associated health problems with work activities (8.2%) complained about fatigue, kidney pain and allergies. For management staff (2.8%), problems related to back pain, ulcers and allergies. When asked about medical treatment, both groups said that they had sought medical help, but the symptoms did not disappear. It is evident that the workers do not associate workstation risks with health problems. There were common statements such as “I’m already accustomed to this pain” or “I always had allergy” without linking the disease to the work environment.

Personal Protective Equipment
All the companies in the study supply personal protection equipment (PPE) for their workers. However, with exception of workers in the CIPA, management does not have PPE. Most of them go to the manufacturing area without protection, and some of them use the protection intended for visitors. For some companies, replacement of PPE is not immediate because they make their replacements periodically. Thus, if the equipment is damaged before the estimated time, the employee will work without the protection. Moreover, according to the CIPA, sectors considered dangerous to the company have priority in case of problems with the PPE.

Discussion
It was observed that the management group, in most cases, has an incorrect vision about safety and health. For some of them, including production workers, the company is safe if there have been no recent accidents. The illnesses resulting from exposition to risks are unknown, with the exception of deafness, which is more evident in the lumber industry.

In this industry, management is not prepared to organize, plan and control activities to promote health in the workplace. Sometimes safety procedures are not observed by workers because of the lack of training or the poor educational level. Besides, most of those procedures are designed without the participation of the workers.

The occupational health programmes that are compulsory for every company, such as PPRA and PCMSO, are implemented for legal reasons, rather than for health promotion. Their main concern is not the content or the effectiveness of the programme, but the existence of relevant documentation. This is evident from the fact that most companies have both programmes, but they are not known by the majority of the workers, even by the CIPA members.

The main concern for the coordinators of occupational health programmes is the accident statistics, rather than the individual aspects of the workers. Most managers are proud of the statistics showing that accidents numbers are decreasing, but they forget to analyse the health and social aspects that contribute to the behaviour changes in the work environment.

The research suggested some factors concerning management that contribute to the accidents and health problems in the lumber industry. Accidents may be caused by factors related to the management that have to be improved, such as: training, communication systems, safety rules, health programme management and participation, and risks in the workplace, besides others. Managers in the lumber industry must be aware that the existence of occupational health programmes, as well as the compliance with legislation, is not a guarantee that the workers are safe, nor that there is no occupational illness in the work environment.

References
Coping with change during a hospital merger

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2 Institute of Health Care Administration and Economics, Kuopio University, Finland

Introduction

Mergers are characterized by top-down planning and the discontinuity of organizational culture and practices. The management perspective in mergers is at the macro level, it is distant and global, and the main actor in the transition is often the decision maker of the change process (Weick and Quinn 1999).

At the beginning of the year 2000, a new merged hospital organization started functioning in the Helsinki region in Finland after a very short planning period. Altogether 18,000 employees were working in this new organization. Personnel came from three hospitals, a university hospital, a city hospital, and a county hospital (Fig. 1). This paper describes how the change process was perceived by the entire personnel, the various occupational groups, and especially according to the original organization from which the employees came. Also the association of the changes reported by individual employees with the psychosocial factors of work and well-being was analyzed.

The main emphasis here is on the results from the first study round just after the merger, and some preliminary data are presented from the second study round, two years later in 2002.

![Diagram](chart.png)

Figure 1. Old and new hospital organization

Method

A questionnaire survey of all employees was conducted twice. Four months after the merger, a postal questionnaire was sent to 15,900 employees, of whom 9,241 returned the questionnaire (58%). Of these, 89% were women and 11% men. Two years after, the second questionnaire was sent to 19,682 employees, of whom 9,178 returned it (47%). 88% of respondents were women and 12% men.

In this paper attention is paid to the whole group, but especially to the five larger occupational groups from the survey. 52% were qualified nurses, 15% were other health care personnel, 9% were qualified nurses in supervisory positions, 11% were physicians, and 13% were administrative and office personnel.

The questionnaire included questions about the perceived changes, transition process, especially about informing, participation and training, and the psychosocial factors at work, as well as general well-being (Table 1).
Table 1. Content of the questionnaire survey in 2000 and 2002

<table>
<thead>
<tr>
<th>Structural and functional changes</th>
<th>Implementation of changes</th>
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<td></td>
<td>• ideal change process</td>
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<td>• planning</td>
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<td>• informing</td>
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<td></td>
<td>• participation</td>
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<td>Job Content Questionnaire (Karasek 1985)</td>
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<td>• job control</td>
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<td>• job discretion</td>
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<td>• time pressure</td>
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<td></td>
<td>Team Climate Inventory (Andersson &amp; West 1994)</td>
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<td></td>
<td>• participation</td>
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<td>• support for innovation</td>
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<td>• vision</td>
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<td>• task orientation</td>
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<td>Job Diagnostic Survey (Hackmann &amp; Oldham 1975)</td>
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<td></td>
<td>• satisfaction with job security</td>
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<td>• pay</td>
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<td>• social relations</td>
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<td>• management practices</td>
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<td></td>
<td>• interactional justice</td>
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<td></td>
<td>• formal procedures</td>
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<td></td>
<td>General Health Questionnaire (Banks et al. 1980)</td>
</tr>
</tbody>
</table>

Results

In survey one, 56% of personnel reported at least one type of change. In general, 34% of the personnel saw the changes as being comprehensive or notable. The changes were perceived negatively by 25%. The main changes reported after the merger were new data systems (28%), new competence demands (24%), new work practices (24%), the closest supervisor was new (20%) and new kinds of patients (15%). The changes continued after the merger. At the second study round in spring 2002, the employees still reported changes quite frequently after the first study round. Most often changes were reported in competence demands (43%), in work practices (39%) and in data systems (34%). The closest supervisor of 39% of the respondents had changed.

Table 2. The change process and transition as seen according to the original organizations in 2000

<table>
<thead>
<tr>
<th></th>
<th>University hospital</th>
<th>City hospital</th>
<th>County hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Sd</td>
<td>mean</td>
</tr>
<tr>
<td>Ideal process</td>
<td>2.7</td>
<td>0.6</td>
<td>2.5</td>
</tr>
<tr>
<td>Informing</td>
<td>2.8</td>
<td>0.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Planning</td>
<td>2.3</td>
<td>0.6</td>
<td>2.1</td>
</tr>
<tr>
<td>Participation</td>
<td>2.5</td>
<td>0.8</td>
<td>2.4</td>
</tr>
</tbody>
</table>

The change process and transition were evaluated most negatively in 2000 by those coming from the city hospital, and most positively by those coming from the county hospitals (Table 2).
Table 3. Mean number of changes, amount and quality of changes by occupational groups

<table>
<thead>
<tr>
<th></th>
<th>Mean number of changes</th>
<th>Perception of total changes, comprehensive %</th>
<th>Quality of total change, negative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>1.4</td>
<td>40</td>
<td>28</td>
</tr>
<tr>
<td>Qualified nurses in a supervisory position</td>
<td>1.6</td>
<td>44</td>
<td>30</td>
</tr>
<tr>
<td>Other qualified nurses</td>
<td>1.3</td>
<td>33</td>
<td>24</td>
</tr>
<tr>
<td>Other health care personnel</td>
<td>1.4</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td>Administrative and office person nel</td>
<td>1.8</td>
<td>40</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>1.4</td>
<td>35</td>
<td>25</td>
</tr>
</tbody>
</table>

Also various occupational groups differed in their perception of the merger. The most comprehensive changes were reported by qualified nurses in a supervisory position, and by office and administrative personnel. Qualified nurses in a supervisory position generally saw the changes more negatively than the other health care personnel (Table 3).

Of the various occupational groups, the other health care personnel evaluated that the change process had been carried out most ideally. Qualified nurses saw the informing and participation most negatively, and physicians saw the planning most negatively. Planning was perceived worst by the office and administrative personnel.

In the merger, top management was responsible for the implementation, and the problems that arose after the transition were solved case by case. Only a general system of information communication and feedback was built. Some information meetings were organized, and the internal newsletter included information on plans and decisions. No special training was planned for employees. The failures that occurred during and after the transition were seen by the personnel as being caused by the top management. The implementation was strongly criticized by personnel.

The total number of changes in 2000 was related statistically slightly significantly to low job control, unclear goals, low growth need, and poor leadership behaviour. The comprehensiveness of the changes was related especially to poor management of the whole new organization, low organizational justice, and high time pressure. Lack of well-being, as measured by the General health Questionnaire (GHQ), was related to all changes, and also to their comprehensiveness and poor quality (Table 4).

Table 4. Relationship of the perception of changes to psychosocial factors and well-being in 2000

<table>
<thead>
<tr>
<th>Great number of changes</th>
<th>The comprehensiveness of change</th>
<th>The negative quality of changes</th>
<th>Low well-being measured by GHQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>low job control</td>
<td>poor management of the whole organization</td>
<td>poor management of the whole organization</td>
<td>all the changes reported</td>
</tr>
<tr>
<td>unclear goals</td>
<td>low organizational justice</td>
<td>low justice of formal procedures</td>
<td>the comprehensiveness of the changes</td>
</tr>
<tr>
<td>low satisfaction with personal development</td>
<td>time pressure, haste</td>
<td>low personal growth need</td>
<td>negative quality of the changes</td>
</tr>
<tr>
<td>poor leadership behavior</td>
<td></td>
<td>low level of participation</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions

In mergers, the general temporal and local context of the total change should be thoroughly considered. In the hospital merger studied, changes were most frequent among former city hospital personnel, who had to leave their own organization and work practices and adopt the ones of the biggest partner in the merger. The overall change was especially negatively seen by this partner, and also the changes were perceived to be most comprehensive. When looking at the various occupational groups, most changes had occurred among the administrative and office personnel. The number of total changes related negatively to job control and goal clarity in whole study group. All measures of change related to poor well-being. Especially the perceived poor quality of the changes was also highly related to negative
perceptions of the management's behaviour. The process itself cannot be fully preplanned because of the turbulence inside and outside the organization. But more support from the management, as well as joint discussion forums and ad hoc support action should be available for the personnel. In the evaluation of the merger, detailed process documentation is necessary during the process, because the change in structures, management, work organization and work content continues after the formal merger time point. The employees have to cope with the quite continuous change.

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Values and Motivation at Work

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Introduction
This research project aims at understanding the values and ways of experiencing the environment that influence motivation at work among employees in client-related and not client-related jobs. There is a possibility that current findings about the relationship between values and motivation might also be reversed.

Background
In Swedish local communities and in the public sector there is a challenge to provide different sectors with manpower. Important questions are: How can local communities and the public sector be seen as employers of choice? How can people be motivated to work in the local communities and the public sector? The local communities in Sweden will have to employ in all 600,000 persons until 2008 to be able to fulfil their obligations. In Sweden the local communities are responsible for services such as education, child-care, some medical care, geriatric care, the social security system, etc. (Svenska kommunförbundet, 1998). In 1999 the Association of Swedish Local Communities, SVEKOM, started a project called Issues of Strategic Employment. This project aimed at finding ways to increase the attractiveness of the local communities as employers. Thirty-four local communities participated in the project (Ericsson, 2001), some of which wanted to co-operate with researchers of the proposed study. Managers of organisations within the local community found providing geriatric wards with manpower as an essential problem, which needed solving.

A Theoretic Model
Those who are in jobs which involve a high amount of interaction with people (medical care, education and manufacturing) seem to be more satisfied with their jobs than individuals who have other types of jobs. For example jobs in which the main tasks are to satisfy the needs of others are called client-related jobs (Gallie & White, 1993). It is reported that role ambiguity in a job is directly related to satisfaction of the worker performing that job (Robertson, 1990), and an important factor influencing overall job satisfaction (Bent & Freathy, 1997). The motivation that develops in the interactions with clients (Gallie & White, 1993) is, in this report, called client-related motivation. There is a possibility that client-related motivation is related to intrinsic motivation. In this hypothesis individuals are said to strive for personal and organisational development which leads to learning new things and engaging in fulfilling their tasks. Alternatively, extrinsically motivated individuals are driven by external factors like payment and social confirmation (Deci & Ryan, 1985). Individuals working in client-related professions are motivated by the clients (Gallie & White, 1993) and are not primarily extrinsically motivated. The kind of motivation described by Gallie and White (1993) refers to intrinsic motivation. In essence, it is possible that individuals who are intrinsically motivated to have a tendency to be motivated by the relations to clients.

The way individuals perceive their experiences might influence the values they hold about human interactions. A theoretical model was constructed by Hershkowitz (1980) aimed at studying and explaining how people interact with other persons and things in their environment. It is postulated that there might be a relationship between the ways in which people interact with their environment and the occurrence of extrinsic or intrinsic motivation. The hypothesis in this research project is that motivation is transformed into action via the way people interact with their environment. The values are formed by the relationship between motivation and the way of interacting with the environment. In effect, people form values by adjusting their motivation in their interactions with others. This hypothesis suggests that individuals motivated by extrinsic factors communicate with their environment in an impersonal way. Their values reflect their pre-conventional or conventional moral levels (Kohlberg, 1984). Individuals motivated by intrinsic factors tend to communicate with their environment in a more personal way.

Their interactions are influenced by a will to come to a mutual understanding with others and concern about common agreements, allowing their values to develop to a post-conventional moral level (Kohlberg, 1984). Kohlberg separates collectivist moral reasoning from individualistic moral reasoning. If people base their moral reasoning on the relationships between individuals, where the relationship consists of mutual exchange, they are reasoning on an individualistic level. If people, on the other hand, base their reasoning on the relationships within groups or society in total, where the relationships consist of agreements, they are reasoning on a collectivist level.

Our theoretical model presumes a positive relationship between intrinsic motivation and client-related motivation and a negative relationship between extrinsic motivation and client-related motivation. There is also a presumed relationship between ways of interacting with the environment and extrinsic, intrinsic and client-related motivation. Individuals who interact with the environment on an individualistic level should, according to the theoretical model, tend to be extrinsically motivated and reason morally on an individualistic level whereas individuals who interact on a personal level tend to be intrinsically motivated and have a high degree of client-related motivation.

The theoretical model will be tested during June-December 2002, in the public sector in Sweden. Motivation, ways of interacting and values of employees in client-related, technical and administrative jobs will be studied. Most of the employees in the client-related jobs are working within geriatric care. Two methods will be used in the study. Motivation, ways of interacting and values will be measured by a questionnaire. The respondents will also be given the opportunity to freely describe their situation, the experienced meaning of working and how they interact with others.
while at work. A phenomenological method will be used for analysing the descriptions. This report presents the results from a pilot-study carried out in June 2002 based on the questionnaire and the theoretical model and the theories described above.

Method

The questionnaire consists of seven scales. The scales were 1) Extrinsic motivation, 2) Intrinsic motivation, 3) Client-related motivation, 4) Willingness to take responsibility in the job, 5) Willingness to get an understanding of the total organisation, 6) Opinions about how an organisation should be constituted, 7) Ways of interacting with the environment. The items in the scales of extrinsic and intrinsic motivation are based on the theory of Deci and Ryan (1985). The items in the scale of client-related motivation are based on the studies made by Gallie and White (1993). The items in the fourth, fifth and sixth scales are based on the theory of moral development developed by Kohlberg. The items in the scale of interacting with the environment are based on Hershkowitz's theory. The questionnaire consists of totally 116 questions. The extrinsic and intrinsic motivation scales are divided into three subscales. The subscales of extrinsic motivation are: motivation by payment, motivation by confirmation of social status, and motivation by something lying outside the job.

The last scale is concerned with the way an individual may be unmotivated to do their job. Where work is seen as an essential for the individual’s overall satisfaction. The sub-scales of intrinsic motivation are: a flow, engagement, and striving for personal and organisational development.

Procedure

The questionnaire was sent to a district municipality, where they were equally distributed to 60 employees in two sectors: geriatric care and the administration of the municipality. Thirty employees answered the questionnaire, 14 in the geriatric care, 13 in the administration and three unspecified.

Results

The number of reliable items and Crohnbach's alpha for each of the scales are presented in table one. These results illustrate that the three sub-scales of extrinsic motivation are reliable. The reliability of the motivation sub-scale was increased by excluding 10 out of 13 items on the basis of the social status of participants. Further, one out of 10 items relevant to the engagement sub-scale, two out of 10 items from the striving for development sub-scale, one out of 10 items from the ‘willingness to take responsibility in the job’ sub-scale, and eight out of 12 items of the ‘willingness to get an understanding of the total organisation’ were removed, and the sub-scale for ‘flow’ was reconstructed in order to increase the reliability of the measures. No items were excluded from the scale of client-related motivation. It was found that the scale of opinions referring to how an organisation should be constituted, was not reliable.

The scale of extrinsic motivation has a reliability of Crohnbach's alpha .87. Intrinsic motivation has a reliability of Crohnbach's alpha .78. The seventh scale, ways of interacting with the environment, was not considered to be reliable as Crohnbach's alpha below .70.
<table>
<thead>
<tr>
<th>Scale 1:</th>
<th>Extrinsic motivation</th>
<th>Number of reliable items</th>
<th>Crohnbach Alfa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subscales of Extrinsic motivation:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motivation by payment</td>
<td>10</td>
<td>.80</td>
</tr>
<tr>
<td></td>
<td>Motivation by something lying outside the job</td>
<td>11</td>
<td>.83</td>
</tr>
<tr>
<td></td>
<td>Motivation by confirmation of social status</td>
<td>3</td>
<td>.74</td>
</tr>
</tbody>
</table>

| Scale 2: | Intrinsic motivation | | |
|---------|----------------------| | |
| Subscales of Intrinsic motivation: | | | |
| | Flow | 4 | .74 |
| | Engagement | 9 | .70 |
| | Striving for personal and organisational development | 8 | .72 |

| Scale 3: | Client-related motivation | | |
|---------|---------------------------| | |
| | Willingness to take responsibility in the job | 9 | .72 |
| Scale 4: | Willingness to get an understanding of the total organisation | | |
| | Opinion about organisations | 4 | .75 |

| Scale 5: | Willingness to get an understanding of the total organisation | | |
|---------|---------------------------| | |
| | Opinion about organisations | | .55 |

A preliminary analysis of the relations of the scales, based on Pearson's correlation, indicate some significant connections. An advanced analysis will be performed by a LISREL path analysis in the further steps of the study. The subscale of motivation by payment correlated positively, .58, with the subscale of motivation by confirmation of social status. The subscale of something outside the job correlated positively with the subscale of motivation by payment, .39 and the subscale of motivation by confirmation of social status, .42. There was a negative correlation of -.43 between motivation by payment and the subscale of engagement. There was a positive correlation of .38 between engagement and striving for development. There were also positive correlations between engagement and striving for development, on one hand, and client-related motivation on the other hand of .69 respectively .44. Between the scale of willingness to take responsibility in the job and client-related motivation there was a positive correlation of .39. The scale of willingness to get an understanding of the total organisation correlated positively with the subscale of engagement, .39, and the scale of client-related motivation, .42. There was no significant correlation between client-related motivation and client-related jobs.

**Conclusions**

The questionnaire is considered useful for further use if the scale of opinions about organizations is excluded and if the scale of ways of interacting with the environment is redesigned.

The positive correlations between three of the subscales of extrinsic motivation indicates a relationship between striving for something outside the job, recognition from the managers and motivation through pay. The differences between the subscales in the scale of extrinsic motivation are rather small, and it is suggested that these scales should not be considered as separate measures in future analysis using the questionnaire. This extends to the intrinsic motivation scale. The negative correlation between motivation through pay and engagement illustrates that there is a reversed relationship between an individual's concern for the job and their pay, which is the ultimate outcome of the job. The positive correlation between engagement and striving for development indicates a relationship between...
focusing on the job and a striving to increase competence to progress in a job. The correlations between these scales and client-related motivation give a hint of the relationship between a will to satisfy others needs and intrinsic motivation of the individual. The findings of the relationship between intrinsic motivation and client-related motivation is to some extent in line with studies about achievement among middle school students made by Wentzel (1994), which suggests that there is a relationship between achievement, social responsibility and striving to learn new things.

Henceforth, the theoretical model put forward by the authors has been confirmed in some respect. Findings illustrated that there is an expected relationship between engagement and client-related motivation. In addition there is an expected relationship between intrinsic motivation in total and client-related motivation. This indicates that both satisfaction with the job and satisfaction through helping others are related to overall worker motivation. The relationship between client-related motivation and responsibility scale is in accordance with results in studies by Wentzel (1994). If people have a high degree of client-related motivation, they are also willing to take responsibility for their co-workers and for the organization. There is a problem concerning the scale of client-related motivation and the scale of responsibility. The questions in the scale of responsibility concern the relationships between the co-workers. In the scale of client-related motivation the questions concern relationships between people in general but it seems as if respondents have interpreted the questions as including relationships between co-workers. The questions in the scale of client-related motivation also focus upon helping people with practical problems and socializing with lonely people. Therefore the scale might be valid for client-related interactions in medical care in general, and particularly relevant to geriatric care.

References

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Occupational Identity and Workers’ Mental Health

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Introduction

Extensive research on workers’ mental health has not yet adequately addressed the issues of occupational identity and its possible contribution to the individual’s sense of well-being and affective health. However, theoretical models of the effects of work on mental health have frequently suggested that the nature and strength of occupational identification can have considerable effects on many aspects of mental health (e.g., Herzberg, 1966; Neff, 1985; Warr, 1987). A person’s perception of oneself as a worker can be particularly important as a major factor of his or her mental health in cultures emphasizing work centrality among multiple life roles (Herr, 1989; Neff, 1968). On the one hand, the meaning of work is a derivative of the individual sense of identity, which implies that the effects of work on psychosocial functioning should be mediated and controlled by the corresponding identity domain and identity in general. Indeed, analyses of the effects of employment status, work tasks and environment, and job satisfaction have often suggested that perception of work can be a more important factor of mental health than characteristics of work as such and that the effects of work can be explained from the perspective of identity development (E.g., Buunk & Janssen, 1992; Carr, 1997; Ezzy, 1993). On the other hand, a strong sense of identity is seen as a powerful protective factor of mental health, whereas identity confusion is considered a threat to well-being and adjustment (Baumeister & Muraven, 1996; Thoits, 1999). Because occupational identity represents the central component of identity in general (Erikson, 1968; Skorikov & Vondracek, 1998, Vondracek, 1985), the positive effects of identity formation can be attributed to a large extent to the domain of occupational identity.

Occupational identity is a complex concept, which has not received sufficient theoretical attention. At the most general level, it can be described in terms of identity strength and contents. The strength of occupational identity incorporates clarity, consistency, differentiation, and stability of occupational commitments, often referred to as “Vocational Identity” (Holland, Gottfredson, & Power, 1980). Unfortunately, there is little consistency in regards to what constitutes the contents of occupational identity. Generally, identity is seen as a synthesis of one’s ideals, goals, behavior, and social norms (Erikson, 1968). From this perspective, occupational identity can be described in terms of general orientations toward work, frequently conceptualized as Job, Career, and Calling orientations (Wrzeniewski, McCauley, Rozin, & Schwartz 1997). However, this widespread approach does not outline the classification parameters, and thus can be incomplete. A similar model can be constructed using a two-dimensional approach (Driver, 1987). Work orientation can be described in terms of the worker’s orientation toward extrinsic versus extrinsic aspects of work and in terms of focus on advancement versus stability. Within this approach, we identify four major orientations: Work as a Job (extrinsic, stability), Work as a Calling (intrinsic, stability), Work as a Social Ladder (extrinsic, advancement), and Work as Occupational Self-Actualization (intrinsic, advancement). Our theoretical model is similar to that described by Wrzeniewski et al (1997), whose concept of Career orientation is identical to our concept of a Social Ladder.

Selected research on constructs related to the concept of occupational identity, such as work attitudes, occupational commitment, and job involvement, suggests that these aspects of workers’ identities affect various aspects of mental health (e.g., Bloor & Brook 1993; Judge, Locke, Durham, & Kluger, 1998; Schiller 1998; Sweeney & Schill, 1998; Wiener, Muczyk, & Martin, 1992; Weiner, Yardy, & Muczyk, 1981; Wrzeniewski et al, 1997). However, many of the findings have been inconsistent, most likely, because there has been no adequate control over confounding variables. In research on occupational identity, the likely confounds are the objective characteristics of workers that can be correlated with both perceptions of work and mental health, such as age, education, income, and occupational status (Bamundo & Kopelman, 1980; George, 1992; Mckenzie & Campbell, 1987; Mookherjee, 1988). Another problem in research is lack of attention to the multivariate nature of mental health and relationships among its components (e.g., Compton, Smith, Cornish, & Qualls, 1996; Diener & Diener, 1995; Jex, Cventanovski, & Allen, 1994)

In this study, we conceptualize mental health, in accord with factor-analytic research on non-clinical populations, as a combination of two latent factors: Well-being, represented by life-satisfaction and self-esteem, and distress, represented by depression and anxiety. Whereas the number of indicators of mental health in general and their exact factor structure are being currently discussed, there is a common agreement among researchers on the components of the model used in this study and relationships among them (Compton et al, 1996)

Our hypothesis is that the strength and contents of occupational identity have effects on both of the major characteristics of mental health, well-being and distress. Thus, the goals of the study include: 1. Examine associations between occupational identity and mental health variables; 2. Develop, empirically test, and fit a multivariate model of the relationships between occupational identity and mental health while controlling for the effects of age, education, occupational status, and income and associations among mental health characteristics.
Method

Participants
The data for this study were collected from working adults in Hawaii. The participants volunteered to answer an anonymous survey comprised of demographic questions and standard scales measuring occupational characteristics and mental health and expressed their consent orally. The sample included 164 participants; 54% were male and 46% were female. The mean age was 37 with a range from 18 years to 70 years. The sample was ethnically diverse: It included subjects identifying themselves as Asian and Pacific Islanders (32%), Caucasian (21%), of mixed ethnicity (46%), and Hispanic (1%).

The levels of education ranged from high school diploma to a doctoral degree. 16% had a high school diploma, 7% had gone to vocational school, 23% had some college or community college experience, 13% had received an associate degree, 24% had graduated from a 4-year college with a bachelor’s degree, 13% attained a master’s degree, and 4% had a Ph.D. or an equivalent professional degree. Participants came from a variety of occupational backgrounds, such as manual labor (21%), clerical and administrative jobs (32%), business (12%), and professionals (35%). 79% were working full time and the remaining 21% were working part time or temporarily unemployed. 60% were married or living with a partner, 45% had children under 18, and 54% owned their own homes.

Instruments
The survey instrument was comprised of selected psychometric scales and demographic questions. Measures of mental health included Rosenberg’s Self-Esteem Scale (Rosenberg, 1965), the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), the Center for Epidemiological Studies Depression Scale (Radloff, 1977), and the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988). Educational level attained and occupational status were assessed through standard educational and occupational ranking scales, each based on a single question. The measures of occupational identity included the Vocational Identity scale of My Vocational Situation (Holland et al, 1980), a scale used to assess the clarity, strength, and stability of occupational commitments, and general orientations toward work, including work as a Calling, work as Social Ladder, and work as Self-Actualization. The latter were assessed through a prototype-identification method (Wrzeniewski et al, 1997). The study participants were asked to assess their resemblance with four prototypical workers, each representing a particular work orientation, on a Likert-type scale of 1 (not at all like me) to 4 (exactly like me). Data on various demographic and socio-economic characteristics were collected through self-reports. Extensive previous research on the scales used in this study has demonstrated that they possess acceptable psychometric characteristics.

Results
Correlations among variables are shown in Table 1. Mental health variables were moderately to strongly correlated with each other and—except anxiety—with occupational characteristics, particularly vocational identity. The later had correlations with life satisfaction (r=.48, p<.01), self-esteem (r=.40, p<.01), and depression (r=-.45, p<.01) as strong as those among the parameters of mental health studied. Both mental health and occupational identity characteristics appeared to be significantly correlated with age, education, occupational status, and, to a lesser extent, income. Occupational status and income were moderately correlated with education and age. In contrast, aspects of occupational identity were either independent or weakly correlated, except a moderate correlation between work as a calling and self-actualization.

Table 1. Correlations among variables.

<table>
<thead>
<tr>
<th></th>
<th>AGE</th>
<th>EDU</th>
<th>OCST</th>
<th>INC</th>
<th>SE</th>
<th>LS</th>
<th>ANX</th>
<th>DEP</th>
<th>VOCI</th>
<th>W1</th>
<th>W2</th>
<th>W3</th>
</tr>
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<tbody>
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<td>.33**</td>
<td>.22**</td>
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<tr>
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<td>.19*</td>
<td>.23**</td>
<td>.36**</td>
<td>.40**</td>
<td>.14</td>
<td>-.21**</td>
<td>.18*</td>
<td>.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>W3</td>
<td>-.29**</td>
<td>.07</td>
<td>-.05</td>
<td>-.05</td>
<td>-.09</td>
<td>-.17*</td>
<td>-.05</td>
<td>.11</td>
<td>-.21**</td>
<td>-.05</td>
<td>-.12</td>
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<td>.00</td>
<td>.25**</td>
<td>.29**</td>
<td>.15</td>
<td>.27**</td>
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<td>-.08</td>
<td>-.30**</td>
<td>.08</td>
<td>-.02</td>
<td>.40**</td>
<td>.17*</td>
</tr>
</tbody>
</table>

*p<.05, **p<0.01. EDU = Education; OCST = Occupational Status; INC = Income; SE = Self-Esteem; LS = Life Satisfaction; ANX = Anxiety; DEP = Depression; VOCI = Vocational Identity; W1 = Work as Job; W2 = Work as Calling; W3 = Work as Social Ladder; W4 = Work as Self-Actualization.
We used Structural Equations Modeling approach to path analysis to study multivariate relationships between mental health variables, occupational identity, and objective occupational and demographic characteristics. First, all the variables that were correlated with mental health were included in the system of equations equivalent to the multivariate regression model in order to test the significance of direct effects while controlling for the effects of other variables. Education, vocational identity, and work as a calling had direct effects on selected characteristics of mental health, including life satisfaction, self-esteem, and depression. A unique contribution of each of the three predictors of mental health was further confirmed using a backward elimination method. A stepwise multivariate regression was used to examine the effects of adding the remaining variables. Variables that did not have significant direct effects on mental health were then tested for possible indirect effects. Age and occupational status were found to have indirect effects on mental health as well as education—in addition to its direct effects. Variables that did not have independent, significant direct or indirect effects on mental health included income, work as a job, work as a social ladder, and work as a career. These variables were excluded from further analyses. Several models with the variables that had significant direct and indirect effects were then tested in order to examine the directionality of effects. None of the models based on the assumption that occupational identity is affected by mental health fit the data. Thus, our approach to modeling incorporated an assumption that mental health was influenced by occupational identity. The final, fitted model is shown in Figure 1.

Figure 1. Path diagram of the effects of occupational characteristics on mental health with LISREL 8 estimates

The final recursive model in Figure 1 includes significant effects only (p<.05). The estimates of the effects were based on a completely standardized LISREL solution through the Maximum Likelihood method of estimation. There were no significant correlations among the exogenous variables (age, education, and work as a calling). Thus, those were treated as independent predictors in the final model. The major, significant predictors of mental health were vocational identity, work as a calling, and education. Vocational identity had direct effects on life satisfaction ($\gamma=.32$), self-esteem ($\gamma=.35$), and depression ($\gamma=-.30$). Work as a calling had positive direct effects on life satisfaction ($\gamma=.20$), and self-esteem ($\gamma=.29$). Education had a positive direct effect on life satisfaction ($\gamma=.20$) and a negative effect on depression ($\gamma=-.17$). In addition to the direct effects, both occupational identity and education had indirect effects on selected characteristics of mental health. The indirect effects of occupational identity included: Work as a calling on life satisfaction through self-esteem ($\gamma=.08$), vocational identity on self-esteem through depression ($\gamma=.11$), and vocational identity on life satisfaction through self-esteem ($\gamma=.10$) and through depression and self-esteem ($\gamma=.03$). Education had many small indirect effects on mental health variables through occupational status, vocational identity, and depression. In contrast, age and occupational status had only indirect effects on mental health through vocational identity, whereas income did not have either direct or indirect effects on any of the mental health variables studied. Of all the significant predictors of mental health, vocational identity had the largest direct and total effects on life satisfaction, self-esteem, and anxiety. After controlling for the associations among mental health variables, no significant effects of occupational and demographic characteristics on anxiety were found. Therefore, anxiety was excluded from the final model. This model explains 43% of the variance for life satisfaction, 23% for self-esteem, and 37% for depression. The model fits the data extremely well, as evidenced by the goodness of fit statistics: $\chi^2=15.27$ (df=15, p=0.43), RMSEA<0.01 (p=0.89), GFI=0.98, AGFI=0.95.
Discussion

Generally, the results of this study confirm our hypothesis that occupational identity has an effect on mental health. Both vocational identity, a measure of the strength of occupational identity, and work orientation, representative of the contents of occupational identity were found to be correlated with the measures of mental health used. Further, using path analysis, we showed that both had effects on mental health over and above the effects of objective characteristics of the person’s occupational situation. Moreover, the effects of occupational identity were considerably stronger than those of education, occupational status, age, and income. Whereas a correlational study cannot provide conclusive evidence in support of the hypothesized direction of the effects in the relationships between occupational identity and mental health, structural equation modeling allows for comparing different causal models in terms of their goodness of fit. As opposed to models based on the assumption that the sense of identity can depend on mental health, our model, which is based on the assumption that mental health is affected by identity, fits the data extremely well. Thus, our findings provide empirical support for the theoretical notion of the importance of occupational identity as a factor of workers’ mental health.

Interestingly, the strength of identity appears to have a much larger effect on mental health than work orientation. Among the work orientations studied, only Work as a Calling had independent effects on mental health. Thus, in accord with previous research (Wrzeniewski et al., 1997), perception of one’s occupation as an essential component of his or her identity, i.e., calling, enhances satisfaction with life and oneself, whereas orientation toward occupational achievement and advancement does not. Neither work orientation affects distress. In contrast, Vocational Identity had strong independent effects on both well-being and distress, which implies that developing a strong sense of occupational identity is more important than the nature of occupational identification. This explanation is consistent with Erikson’s theoretical proposition that the major effect of identity on mental health is a negative effect of identity confusion. The above interpretation of the role of occupational identity is consistent with the mediating effects of Vocational Identity found in this study. Similar to previous research (e.g., Mookherjee, 1988), we found that age and occupational status are positively correlated with mental health, but they do not have direct, independent effects. Path analysis showed that their effects on well-being and distress are mediated by the strength of occupational identity. Vocational Identity had also partially mediated the effect of education, but its mediating role was weak compared to the direct effect of education. The later appears to be a positive factor of mental health regardless of its effect on occupational attainment, as also reported in other studies (e.g., Mckenzie and Campbell, 1987). Nevertheless, our model suggests that the effect of education is higher in those workers who attained a higher occupational status and developed a strong sense of occupational identity.

An important finding of this study is that income is not predictive of any of the characteristics of mental health studied if the objective and subjective occupational characteristics are controlled. This finding can explain frequently noted inconsistencies in previous research on the role of income from work. Associations between income and various characteristics of mental health observed in some studies can be attributed to the fact that both income and mental health depend on education and occupational status. Thus, income from work is a co-variate rather than a factor of mental health.

An unexpected finding of this study is an apparent lack of associations between anxiety and components of occupational identity. None of the work orientations, as well as Vocational Identity, was significantly correlated with anxiety. A possible explanation is that anxiety is a more complex, somewhat ambiguous indicator of mental health in general compared with depression, self-esteem, and life satisfaction. Indeed, a higher level of anxiety can indicate distress and frustration over poor occupational goal attainment, but it can also be characteristic of excitement and agitation, which normally accompany progress toward personally important occupational objectives. Similarly, a lower level of anxiety can be associated with either occupational success and confidence or lack of work motivation and withdrawal. However, another plausible explanation is that occupational identity has an effect on well-being, but not distress. Its effect on depression can be attributed to the frequently reported double nature of depression, which appears to be an indicator of both well-being and distress in factor-analytic studies (e.g., Compton et al., 1996). Further research with a broader range of distress characteristics is needed in order to test these explanations.

The pattern of the relationships among the components of occupational identity and between occupational identity and other variables provides empirical evidence of the validity of the conceptualization and measurement of major work orientations. First, there is evidence of convergent and discriminant validity: Only those work orientations that share an aspect of work attitudes are correlated, i.e., Work as a Calling with Work as Self-Actualization and Work as a Social Ladder with Work as Self-Actualization. Second, there is evidence of criterion-related validity. As expected, perception of work as a calling is positively correlated with age, education, occupational attainment, and income, whereas perception of work as a job is unrelated to any of those variables. Pure “careerism” predictably decreases with age, whereas interest in self-expression through work and professional advancement is higher in those with higher levels of educational and occupational attainment.

Overall, the results of this study provide clear evidence of the positive effects of developing a strong sense of occupational identity and orientation toward work as one’s calling on well-being. Effects of occupational identity on other aspects of mental health need further investigation. Directions for future research include expanding the number of mental health variables, testing consistency of the effects in different age, gender, and occupational groups, and conducting longitudinal studies, capable of further clarifying the nature of causality in the identity-health relationships.
References


Assessment of stress and strain components in health services organisations: The case of a hospital.

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Introduction
Socio-economic conditions in the public health sector are continuing to change and will ultimately lead to different working conditions. In addition, far reaching changes are forthcoming for hospitals (e.g. introduction of DRG’s). Possible consequences of these developments are greater specialisation, increased work pressure, and (more) flexible working hours. With these impending changes, it is important to determine whether there are specific factories that are especially problematic in order to develop objective methods and prevent negative health and personality consequences at work.

One goal of the current study is the conceptual differentiation of existing risk models (job strain model, Karasek; gratification crises, Siegrist) for the field of health services and their extension on a system level, taking the whole organisation into account. A main methodological goal is to adapt and extend methods of objective and subjective job analysis for use in the health services field. Based on our preliminary research, we are extending the TBS/REBA instruments which are objective, i.e. expert-based, job analysis tools by introducing criteria for the evaluation of social interaction activities as well as criteria for the evaluation of processes in work systems (self-regulation potential, control and steering capacity, operational uncertainty).

In implementing the project a procedure of so-called process analysis was developed. Process analysis is a combination of condition and personal job analysis.

Method
In two pilot studies, 14 selected wards (N=98) were analysed regarding work- and organisational processes and demands and strain resulting from the work. Prevailing work structures and process cycles were identified and evaluated in regard to the demands they place on employees on using subjective and objective data (Büssing, 2002; Hacker 1997; Zijlstra & Van Doorn, 1985). For each ward about 10 employees (nurses and medical doctors) were examined using three methods: work flow observations, standardised interviews and demand analyses related to the process.

Results
The first results suggest different demand processes in the nurses and medical doctors activity and show systematic associations between objective and subjective data.

(Project is supported by BMBF, FRG)

References
Company decisions on primary and secondary occupational health interventions during a restructuring period

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Introduction

During the last decades, different branches and sectors, like the electric energy sector in Norway, have experienced a wave of deregulations and intensified market competition. Within the companies in the electric energy branch the focus changed from a specific field, such as engineering in, to a customer focus and attention to costs. The changes in market conditions and technology in the 1990’s have caused restructuring and job redesign on both company and department level in most branches. Restructuring refers to how the organization is structured and the process by which decisions are made and communication carried out. Job redesign deals with who should be doing what, where, how much and for how long (Curtin, 1994). The individual employees have experienced changes in job content and increased demands on flexibility and learning. In the same period the psychosocial work problems and sick leave have increased. Most published research has shown that downsizing has more often had a negative effect on both organizations and individuals than a positive effect (Brockner, 1992; Kozlowski, Chao, Smith & Hedlund, 1993; Henkkoff, 1994; Cameron, 1997). More than one-half of survivors after restructuring and downsizing report increased job stress and symptoms of burnout (Cascio, 1993).

To obtain competitive advantage and to prevent costs connected to sick leave, turnover and early retirement, different interventions are carried out. Looking at the prevention of stress, two facets in particular may be considered in 1) worker versus work-oriented interventions and 2) primary versus secondary/tertiary interventions (Geurts & Gründemann, 1999). Worker-oriented interventions focus on the individual (or group) in such a way that employees learn to deal more effectively with experienced stress or to modify their appraisal of a stressful situation so that the perceived threats are reduced. Work-oriented interventions focus on the work environment (or organization) in such a way that the fit between an individual worker and the workplace is improved. Primary prevention is concerned with taking action to modify or eliminate the sources of stress. Secondary/tertiary prevention is essentially aimed at the reduction or elimination of the effects of stress. Secondary prevention concerns preventing employees, who are already showing signs of stress, from getting sick (for example, by increasing their coping capacity), and tertiary prevention concerns treatment activities for employees with serious stress-related health problems (for example, the rehabilitation after long-term absenteeism). By combining worker versus work-oriented interventions and primary versus secondary/tertiary interventions, a conceptual framework arises, indicating four types of stress prevention (Figure 1) (Kompier et al., 1998).

The aim of this study was to identify company initiated interventions to improve occupational health during a restructuring period, to study the effect of these interventions and to compare company departments with a positive versus a negative development in occupational health in the defined intervention period. The aim was also to identify how the managers founded and justified the interventions.

Methods

During the 1990s the electricity producing industry was deregulated in many countries in Europe. In Norway a new Energy Act, became law in 1991. This law changed the market situation of the electrical power industry in Norway, taking it from the status of a regulated local monopoly to that of a deregulated, high competitive national (and international) market (NVE, 1999).

The study was part of the project “Restructuring the electric energy industry: Work design, productivity and health” funded by the Norwegian Research Council as part of the “Health in Working Life” program. The sample consisted of 13 electric energy companies in Norway with a total of 180 departments and 3335 employees. Two measurements by a postal questionnaire were used in this study, the first one in November 1999 and the second one in November 2000. The response rate was 75 % in 1999 and 72 % in 2000. Individual survey data at the two measurements were used to identify the work units (departments) with either an increase or a decrease in occupational health in the period between the two measurements. To identify those departments in each company that had had significant positive versus negative change, the following variables were used: job satisfaction, job stress, subjective health complaints, anxiety and characterizations of own health level.

In total, 64 departments were included in the final sample for identifying occupational health interventions and for comparison between the departments with a positive and negative development. To diagnose the situation in the organizational units and to identify the interventions and improvement activities carried out, qualitative interviews with the managers in these selected work units were carried out. In addition, the top manager of the company and union repre-
sentatives were interviewed. The interviews were taken in two periods, the first one just after the first postal question-
naire and in 2001, after the second survey measurement.

Results

The deregulation in the electric energy branch started a restructuring and downsizing process within all the
companies in this study. Interviews with top managers in each of the company revealed that all the companies could be
categorized within an incremental change model. Only one of the companies had used lay offs as a chosen downsizing
strategy. The other companies used a mixture of incentive packages, early retirement and freeze hiring.

Table 2 shows the effect of company initiated interventions. The multivariate analysis by repeated measures ANCOVA
of each of the occupational change variables showed effect of change over time for both job stress, for subjective health
complaints, commitment, effort, skill discretion, social support, and organizational climate (Table 1). The interaction
effect (change in the dependent variables over time * participated/ not participated in interventions) were significant for
commitment, job satisfaction, effort, skill discretion, social support, participation, organizational climate and health and
safety climate. In both groups the stress level increased in the period as an effect of change over time, but independent
of reported participation in the interventions. Subjective health complaints declined for both groups. There were no
effects of change over time for job satisfaction, participation and health and safety. On many variables, the groups that
reported that they had been part of interventions improved their situation, whereas the non-participation group had a
negative development on most variables. Generally participation in interventions had a positive effect or buffering ef-
fact against an overall negative effect of change over time on the occupational health and organizational characteristics
included in the analysis.

In the 64 departments with significant change on the occupational health variables job satisfaction, job stress, subjective
health complaints, anxiety and characterization of own health a total of 441 interventions were reported and could be
categorized in accordance with the concepts of Kompier et al. (1998). The most frequent interventions reported are
presented in Table 2. The companies only with rare exceptions discriminated between primary and secondary/tertiary
interventions. The interventions were at the same time used for both proactive and reactive purposes. There were few
attempts to use specific interventions to solve clearly defined problems. The only exception to this was the secondary/tertiary worker oriented interventions to find job tasks for employees on long-term sick leave.

Discussion

Organizational phenomena as participation and work place democracy imply substantial investments have to
be made in employees. Short-term individual and organizational interventions do not seem to be sufficient to stem the
flow of negative developments in a company or facility. Specific interventions for specific problems (Eriksen et al., in
press), and a proper implementation process seem to be necessary (Saksvik et al., 2002). Work-based support and em-
ployee involvement programs may be moderators in addressing the effects of organizational uncertainty and job inse-
curity (Lim, 1997; Martin, Parsons & Bennett, 1995). The best practice departments in this study had a higher rating on
management trust and feedback than the others. Other parts of this study show that time constraints and customer de-
mands have few moderators (Mikkelsen, Øgaard & Landsbergis, 2002). Landsbergis, Cahill and Schnall (1999) show
that when organizations are becoming lean there is a negative health effect on their employees. As also shown by
Schweikhart and Smith-Daniels (1996) general work practices should be redesigned in periods of restructuring and
downsizing to avoid just having fewer people doing inefficient operations. In this study interventions were mostly reac-
tive, and most often initiated when management experienced that something was wrong, without knowing exactly what.
Most managers and supervisors were inexperienced in handling psychosocial work problems

In contrast to the findings in the literature reviewed by Geurts and Gründemann (1999), where most of the interventions
were individual and concentrated on reducing the effects of stress, rather then its sources, most of the company initiated
interventions in this study fell in the work-oriented group as either primary or secondary interventions. In reporting on
the improvement activities carried out, the managers and supervisors only with rare exceptions discriminated between
primary and secondary/tertiary interventions. The reason for this may be that the managers had limited competence in
the occupational health and the business development field. It may also be that the restructuring activities of the com-
pany overshadowed the occupational health activities and that the dominating view was that the same activities that
would improve business development also would promote job satisfaction and occupational health. The interventions
were meant to address the emergent issues and idiosyncrasies of the organizations and at the same time to have business
development purposes. Interventions like performance appraisals and management development were examples of
interventions introduced with this double aim.

References

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**Table 1:** Effects of self-reported participation in company initiated interventions.

<table>
<thead>
<tr>
<th>Participated in interventions</th>
<th>Did not participate in interventions</th>
<th>Factor 1 (T1-T0)</th>
<th>Factor 1* Participation in interventions</th>
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<tr>
<td>N</td>
<td>Time 1</td>
<td>Time 2</td>
<td>N</td>
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<tr>
<td>Subjective health complaints</td>
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<td>Sick leave last 6 month</td>
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<td>1.69</td>
<td>1.66</td>
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<tr>
<td>Commitment</td>
<td>593</td>
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<tr>
<td>Effort</td>
<td>574</td>
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<td>8.07</td>
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<td>592</td>
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<td>6.58</td>
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<td>Skill discretion</td>
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<td>Social support</td>
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<td>19.42</td>
<td>19.40</td>
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<td>Participation</td>
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<td>Health and safety climate</td>
<td>574</td>
<td>16.64</td>
<td>16.83</td>
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*** p-value of F-test is significant at the 0.001 level; **p-value of F-test is significant at the 0.01 level; *p-value of F-test is significant at the 0.05 level;
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<th>Interventions</th>
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<th>Secondary/Tertiary</th>
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<td>Safety auditions (39)</td>
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<td>Management development (36)</td>
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<td>Health and safety agenda on meetings (32)</td>
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<td></td>
<td>General meeting (24)</td>
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<td></td>
<td>Physical work environment (22)</td>
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<td></td>
<td>Health and safety training (19)</td>
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<td></td>
<td>Climate and satisfaction surveys (15)</td>
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</tr>
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<td></td>
<td>Social arrangement (13)</td>
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<tr>
<td></td>
<td>Others (76)</td>
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<td><strong>Worker oriented</strong></td>
<td>Physical exercises (25)</td>
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<td>Training plan (20)</td>
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<td></td>
<td>Smoke ending (18)</td>
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<td></td>
<td>Stop drinking support (14)</td>
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<td>Career planning (6)</td>
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<td></td>
<td>Nutrition courses (5)</td>
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<td>Stress management (2)</td>
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<td>Retirement courses (2)</td>
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<td>Individual talk (12)</td>
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<td>Follow up on sick leave (8)</td>
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<td>Reduction in working hours (3)</td>
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<td></td>
<td>Others (3)</td>
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The relationship between systematic occupational health and safety work and sick leave.

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Introduction

Due to increased cost connected to sick leave, accidents and early retirement it has become mandatory for every company to fulfill business goals to pay attention to preventive health and safety systems. On the societal level the Norwegian authorities in 1992 introduced the "Regulations for systematic health, environment and safety" (HES) in Norwegian companies. The aim of the regulations, which have received considerable international attention, was to improve occupational health and safety and stimulate counteractive work against occupational illnesses at the operational levels. Systematic HES work (Internal Control) is defined as "all systematic undertakings which will ensure that the company is planned, organized, implemented and maintained in accordance with demands stipulated by or supported by the health environment and safety regulative" (Ministry of Municipal Affairs and Labor, 1996). Due to low level of implementation, an initiative was taken in 1995 to simplify and change the regulation. The definition of systematic HES work in the new regulation became "systematic actions to ensure that the foundation of systematic HES-work is planned, organized, executed and maintained in accordance with requirements specified in laws and regulations in the HES’s domain". In the new regulation the emphasis is on actions (at the expense of documentation). Many managers and employees experience, however, that today’s rapidly changing working organizations can only slightly be regarded in connection with systematic HES, and that it is difficult to work counteractively when Taylorist principles still lie at the basis for the organization of the work. In 1999 the implementation of this regulation within every enterprise in Norway still was incomplete, with 47% of the enterprises claiming to have a HES-system implemented and in use (Saksvik, Torvatn & Nytro, 2002). The overall picture in 1999, however, shows a substantial improvement in comparison to 1993 (8% implemented) (Saksvik & Nytro, 1996). This was also the case of the Norwegian energy industry that was changed due to a law of deregulation that came into force in 1992. The aim of this study is to describe the degree of systematic HES implementation in the energy branch and to investigate whether degree of systematic HES implementation has any relationship with occupational health and human resource management in the companies.

The Norwegian regulation defines the content of an systematic HES system as technical and administrative procedures, but gives only general requirements of what the content should be (Saksvik, Torvatn & Nytro, 2002). The process criteria stated in the regulation are managerial involvement, active participation form employees, sufficient training and a recommended systematic stepwise approach for the implementation process. The systematic work with HES is thus based on participation and work place democracy. A model consisting of six steps can illustrate this work (Nytro & Saksvik, 2001): 1) In the preparation phase the aim is to get an overview over the laws and regulations on the HES area to get the needed knowledge and permissions to start the work. In this phase the dialogue between the management and union representatives and HES organization in the company is important. 2) In the second phase the emphasis is on information. Management has to inform the managers and employees at all levels about the demands and obligations in the systematic HES work system. The background for the project is illuminated, information is given about the initiative for the systematic HES work and the structure and content of the future dialogue between the partners are presented. 3) In the mapping/diagnosing phase the aim is to get an overview over the working conditions and the health and safety risks that may cause stress, health problems and lower the job satisfaction. 4) After having diagnosed the problems, the next phase consists of prioritizing actions and allocating resources. 5) The fifth phase is the intervention phase. The content in this phase is dependent on the content in the other phases and also of the available resources. 6) The final phase is the evaluation phase of the process and measuring effects of the interventions. After this the process starts all over again.

In this paper we hypothesize that higher degree of systematic HES implementation is related to a lower sick leave level, better subjective health and higher level of human resource management.

Methodology

European utilities for electricity supply are under increasing pressure to become competitive (Geddes, 1998). After the United Kingdom, Norway has been the most aggressive of the European countries in introducing competition into electricity markets. The 1990 Norwegian Energy Act, which became effective in January 1991, calls for increased competition in the production and sale of electricity.

This longitudinal study was part of the project: "Restructuring the electric energy industry: Work design, productivity and health” funded by the Norwegian Research Council as part of the intervention program "Health in Working Life". The sample consisted of 13 electric energy companies in Norway with a total of 180 departments and 3335 employees. Two measurements by a postal questionnaire were used in this study, the first one in November 1999 and the second one in November 2000. The response rate was 73 % in 1999 and 72 % in 2000. At the second measurement, work units that first had been registered were kept unchanged. Thus work units that were closed, merged
Results

The deregulation law for the electric energy branch in 1991 started a restructuring and downsizing process within all the companies in this study. This law came one year before the Norwegian authorities introduced the “Regulations for systematic health, environment and safety (HES). The work to systematize all the undertakings which ensure that the company was planned, organized, implemented and maintained in accordance with demands stipulated by or supported by the health and safety regulative” came about the same time as the companies had to look for new business partners, start severe cost reduction activities and prepare for market competition. This may be one of the reasons why the introduction of the systematic HES work regulation was rather slow and in a very stepwise manner. Interviews with top managers in each of the companies confirmed that the change process could be understood within an incremental change model.

The first steps in implementing the systematic HES regulations were to write down the contemporary practice as to HES and make the document available for the employees. Table 1 shows that in 54 of the 56 departments included in this study the companies had established an HES system.

Table 1 shows that the higher up in the implementation process the fewer departments had any implementation activities. In addition to work out and make available the handbooks prescribed by law (preparation phase), the most common activities was the HES audits that most often was hold once a year. In the interviews the union representatives expressed satisfaction with these routines, but in several of the companies there were some critique to the top management on not participating enough in these audits. To compensate for this and to establish a better dialogue between the top management and the shop floor employees yearly general meetings between all the employees and the management were held. Systematic HES work was a main focus on these meetings. Supporting these meetings, the unions still had objections against the top managers that did not participate in audits, because “if they do not see how our equipment and lack of manpower works in the field, they will not give priority to our wishes for how our resources should be used and organized”.

In the recent years most companies and departments had carried out surveys to map physical and the psycho social work environment. The reason for doing so was twofold: first of all the systematic HES work regulation prescribes a regular and systematic mapping of work environment, health and safety risks. Next, the restructuring and downsizing created a new kind of turbulence that the companies had not been confronted with earlier. The surveys were introduced as a means for understanding what was going on, and were often carried out with the support of external expertise. The systematic HES regulation also prescribes rolling HES action plans, and most companies and departments worked these out every year. In 20 departments, however, the action plans were made for the drawer and was not available for the employees.

The most common interventions in the departments were actions to improve physical work environment, management training and actions to reduce the risk of physical accidents. Due to the restructuring and the problems that this created, in recent year actions to reduce sick leave and improve the psychosocial work environment became more common. This was also the case with information and training in the relationship between health and lifestyle. In between 13-18 of the departments there was, however, no evaluation of the interventions carried out - neither of the effect nor of the process.

Table 2 shows Pearson correlation coefficients for the relationship between systematic HES implementation activities in each phase and selected occupation health variables. Due to little variation in the sample, there were no significant relationship between the preparation phase and any of the occupational health variables. Except for the evaluation phase there were significant relationships between implementation activities and sick leave. The higher the systematic HES activity, the fewer sick leaves was reported. There was also a significant relationship between the information phase and the prioritizing phase and subjective health complaints – the higher the activity the fewer complaints. For all but the intervention phase there was also a significant relationship between systematic HES activities and training and competence development. A good organizational climate was related to high activity in the mapping phase and the prioritizing phase.

Discussion

In the analysis we have seen that the implementation of the systematic HES regulation in the electric energy industry in Norway has been incremental. The preparation phase in the implementation process was carried out in almost all the companies, but the higher the implementation phase the less departments were active. The study also
showed that there was a relationship between organizational level activities and occupational health measured at individual level and aggregated to organizational level.

The Norwegian systematic HES work system might be seen as an organizational level intervention to improve health and safety in organizations by introducing a system in the company to look for the causes of the problems and by joint two partite efforts in the organization to try to remove or modify the reason for the problems. The success of these efforts is however influenced of coalitions of power, informal group processes, and bargaining positions of various stakeholder (Cyert & March, 1963; Landsbergis & Vivona-Vaughan).

The energy sector had up till the deregulation been run as a traditional hierarchical organization with monopolized market situation. As a consequence of the deregulation act and the pressure on costs organizational changes took place. This was not an overnight change in the whole branch and traditional work organizations came to coexist with new work designs and organizational patterns (Mikkelsen, Nyboe & Gronhaug, 2002). One of the main problems for managers in the companies was that they new they had to do something to meet market demands and reduce costs, but they did not know what to do. Compared to other more diffuse demands on improvement actions in this period, the concrete prescription on developing systematic HES documents were a concrete and understandable task in line with the culture in the energy branch on follow up on authority demands. The work with this part of the implementation of the systematic HES work system also gave the employees needed time to change from a reactive to a more proactive way of doing HES management, and underlines importance of the process in itself.

Participation and cooperation between the working life parties has a strong tradition in the Scandinavian countries and is partially reflected in the systematic HES work regulations. The tradition was primarily developed in the organizational change and development sector, which has focused on the importance of collective participation and involvement from all parties in bringing about positive business development. A basic idea in this tradition is that an effective intervention should be based on participation, dialogue, and workplace democracy (Gustavsen, 1992). The main perspective is that change and improvement are facilitated by effective intervention, which obtains the best results when employees participate in the change process.

This study demonstrates, however, that organizational level activities in changing the HES work processes and routines are decisive for the wellbeing of the individuals. In addition to continuing to develop organizational intervention studies, a combined design were workplace activities are reported systematically and combined with individual data might be useful.

References
Table 1: Department activities in each phase of the implementation process of systematic HES work.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparation phase</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Systematic HES work system established</td>
<td>54</td>
<td>1</td>
<td>55</td>
</tr>
<tr>
<td>- Laws, regulations and handbooks are available at the work unit</td>
<td>54</td>
<td>2</td>
<td>56</td>
</tr>
<tr>
<td>- AMU in function</td>
<td>54</td>
<td>2</td>
<td>56</td>
</tr>
<tr>
<td>- Documentation of responsibilities</td>
<td>47</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td><strong>Information phase</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- HES auditions</td>
<td>51</td>
<td>3</td>
<td>54</td>
</tr>
<tr>
<td>- Meeting with all employees on HES</td>
<td>42</td>
<td>13</td>
<td>55</td>
</tr>
<tr>
<td>- HES on the agenda in all meetings</td>
<td>32</td>
<td>23</td>
<td>55</td>
</tr>
<tr>
<td><strong>Mapping phase</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- overview over sick leave</td>
<td>53</td>
<td>2</td>
<td>55</td>
</tr>
<tr>
<td>- survey of safety risks/personal accidents</td>
<td>47</td>
<td>5</td>
<td>52</td>
</tr>
<tr>
<td>- survey of physical work environments factors</td>
<td>45</td>
<td>8</td>
<td>53</td>
</tr>
<tr>
<td>- survey of health and psychosocial factors</td>
<td>39</td>
<td>13</td>
<td>52</td>
</tr>
<tr>
<td><strong>Prioritizing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- HES action plans in the company</td>
<td>41</td>
<td>10</td>
<td>51</td>
</tr>
<tr>
<td>- Action plans are available to all employees</td>
<td>29</td>
<td>20</td>
<td>49</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- physical work environment</td>
<td>49</td>
<td>5</td>
<td>54</td>
</tr>
<tr>
<td>- management training</td>
<td>47</td>
<td>8</td>
<td>55</td>
</tr>
<tr>
<td>- for reducing risk of accidents</td>
<td>43</td>
<td>8</td>
<td>51</td>
</tr>
<tr>
<td>- information and training in HES</td>
<td>43</td>
<td>10</td>
<td>53</td>
</tr>
<tr>
<td>- sick leave</td>
<td>39</td>
<td>16</td>
<td>55</td>
</tr>
<tr>
<td>- health and psychosocial factors</td>
<td>35</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>- information/training in lifestyle and health</td>
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<td>52</td>
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<tr>
<td>- training in psychosocial factors</td>
<td>21</td>
<td>29</td>
<td>50</td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Of interventions</td>
<td>39</td>
<td>13</td>
<td>52</td>
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<tr>
<td>- of intervention process</td>
<td>33</td>
<td>18</td>
<td>51</td>
</tr>
</tbody>
</table>
Table 2: Correlations between degree of implementation of systematic HES work and occupational health. Organizational level. N = 49-56

<table>
<thead>
<tr>
<th>Systematic HES work phase</th>
<th>Sick leave</th>
<th>Subjective health complaints</th>
<th>Change management</th>
<th>Relation management</th>
<th>Organizational climate</th>
<th>Training/competence development</th>
<th>Collaboration between union and management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation phase</td>
<td>.01</td>
<td>-.08</td>
<td>.14</td>
<td>.03</td>
<td>.15</td>
<td>.07</td>
<td>.02</td>
</tr>
<tr>
<td>Information phase</td>
<td>-.33*</td>
<td>-.33*</td>
<td>.27*</td>
<td>.40**</td>
<td>.13</td>
<td>.36**</td>
<td>.11</td>
</tr>
<tr>
<td>Mapping phase</td>
<td>-.30**</td>
<td>-.18</td>
<td>.04</td>
<td>.23</td>
<td>.29*</td>
<td>.44**</td>
<td>.11</td>
</tr>
<tr>
<td>Prioritizing</td>
<td>-.42**</td>
<td>-.30*</td>
<td>.18</td>
<td>.20</td>
<td>.31*</td>
<td>.44**</td>
<td>.18</td>
</tr>
<tr>
<td>Interventions</td>
<td>-.30*</td>
<td>.02</td>
<td>.08</td>
<td>.05</td>
<td>.07</td>
<td>.14</td>
<td>.50***</td>
</tr>
<tr>
<td>Evaluation</td>
<td>-.08</td>
<td>.12</td>
<td>.04</td>
<td>.02</td>
<td>-.07</td>
<td>.29*</td>
<td>.39**</td>
</tr>
<tr>
<td>Total systematic HES work</td>
<td>-.38*</td>
<td>-.06</td>
<td>.04</td>
<td>.12</td>
<td>.06</td>
<td>.38*</td>
<td>.44**</td>
</tr>
</tbody>
</table>

*** Correlation is significant at the 0.001 level; ** Correlation is significant at the 0.01 level; * Correlation is significant at the 0.05 level.
2, 3 Data collected at organizational level by the interviews.
Chernobyl National Park project: Accident's site fate and curing psychological trauma in mitigation workers

S. MIRNYI
National Radiation Protection Commission of Ukraine

Based on the complex interdisciplinary research on Chernobyl zone mitigation workers' present health state and its causes, the idea to convert the Chernobyl zone into the Chernobyl National Memorial-Natural Park has emerged. One of the main conclusions based on this research, is that for the absolute majority of the workers the observed health effects can be attributed to in-zone psychological trauma, exacerbated by harmful societal responses in the post-zone period rather than to radiation injury (for details see refs. and web-site below).

Research has indicated that the Chernobyl area in its present form of the ZONE - a place, considered to be a dangerous, alien and threatening territory of limited access - is, in fact, a 'memorial of failure', and acts as an important psycho-traumatic factor: it renders the results of the mitigation work virtually invisible, and the work done in vain. This notion is radically incorrect, for the present-day problems of the zone, NPP and Sarcophagus actually represent a minute share of those of the first periods of the disaster; the mitigation work have been a huge, unprecedented success, and should be represented as such.

The terrain (except some very limited areas of the NPP) does not represent an actual radiation hazard (this important conclusion is based upon the maps of the present-day radiation levels and the author's personal experience of staying and working within the zone).

The zone has been closed to the public for almost two decades and has become very favourable for the wildlife and nature in the area, which is beautiful, rich and diverse.

The aftermaths of the explosion and its mitigation - the colossal cultural signs left in the zone - along with the traces of radiation 'burns' on the natural objects, are special attractions of the area. Parts of the decommissioned Chernobyl NPP have the potential to become unique excursion objects.

The idea of opening the area for guided visitors and tourists seems to be a financially feasible one, which could solve enormous economic and social problems of the closing Chernobyl NPP and adjacent region.

A national park at the site of former accident would act as a powerful recognition of the mitigation workers' suffering and victory (thus fulfilling one of the necessary preconditions of their recovery from PTSD), and will empower and stimulate them to cope with the remote consequences of the traumatising event in the individual and society.

The approach to use the site as means to improve the psychosomatic health of the mitigation workers does not seem to be case-specific; the paper discusses its applicability to accidents of a different nature (terrorist acts, military conflicts, natural, technological and ecological disasters).

References
Mirnyi, S., and Khazan, V. (2001). Chernobyl liquidators' health as a result of psycho-social trauma. In: 3rd Interna-

mirnyi@netscape.net; http://www.mirnyi.arwis.com
Post-accident communication and commemoration: Hazards - or means to empower mitigation workers to sustain and manage their health? (Chernobyl zone workers' case study)

S. MIRNYI¹ and A. YASTRZHEMBSKA²

¹ National Radiation Protection Committee of Ukraine
² Consultant, Hungary

Based on previous research by S. Mirnyi, the main assumption of this paper is that the present health state of the majority of the Chernobyl Zone (1986-1990) workers (“liquidators”) is related to psycho-social traumas rather than radiation injuries. Communication- and information-related factors have been found to be major components contributing to such traumas. Therefore, a set of recommendations for relevant communication and commemoration policies to mitigate the trauma is proposed in this presentation.

First the presentation identifies the communication problems between the parties within the relevant field of public discourse production (authorities, international organizations, experts, mass media, NGOs, general public and liquidators themselves), second the sources of these problems are discussed (conflicting political interests of the actors involved, underdeveloped culture of dialogue and compromise, conflict of professional ethos, linguistic barriers and other historically and culturally determined circumstances). Finally, it is discussed how such problems lead to liquidators’ psychological trauma aggravation. The following factors concerning mis-communication are discussed: 1) absence of liquidators’ access to immediate, correct, continuous and trustworthy information, 2) specific symbolic representation of the event and its participants in public discourse and 3) liquidators’ limited access to public discourse. In terms of the psychological and social components contributing to liquidators’ trauma, these factors share the following characteristics: lack of coping mechanisms, fear of the unknown (increased risk perception), social victimization, feeling of a meaningless loss (of their efforts, health, etc.), feeling ostracized from the community, etc.

Based on these findings and with reference to research on post-traumatic stress disorder treatment, the authors propose a set of recommendations on communication- and commemoration-related policies. Special emphasis is put on the following measures:

1. Providing liquidators with a set of tools to actively manage their health. Practical steps include publishing user-friendly Chernobyl radiation-contamination maps for the whole period since the accident; data on the health effects of the previous radiation misfortunes, medical statistics on the liquidators' health and practical health-care recommendations.

2. Changing the habitual symbolic representation of Chernobyl disaster in public discourse (focus on solutions rather than problems, spreading the survivors’ positive experiences, commemoration of people’s efforts to manage the hazard rather than of their suffering).

Without considering these measures the commemoration has a potential not to rehabilitate the affected but to exacerbate their health problems.

References

mirnyi@netscape.net; http://www.mirnyi.arwis.com
Workers' Well Being in Different Working Environments

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2 HERMES SoftLab research group, Ljubljana, Slovenia

Introduction
Perceived levels of workers' availability and well-being are essential parameters predicting the level of workers' health in particular working environments. In the process of risk estimation in the workplace, perceived levels of workers' well-being describe impacts of workload. According to the AH model (1) workload is shaped by the influence of technology, ecology – environment, organization and human resources. To estimate the impact of a particular workload's component, the AH model has been developed and validated. Development of the AH model had been initiated due to appreciation of the high importance of workers' perceptions of their well-being, availability and health. Determination of how the workload's components impact on workers' well-being should help to identify required interventions in technology, working environment, organization and human resource management.

Method
To evaluate the workload component’s impact on workers’ well-being and actual availability, the AH model has been developed (2). The central part of the model is the evaluation of human actual availability – perceived as the level of well-being in the real working situation. For self-assessment of well-being a special questionnaire composed from 47 items of well-being had been developed. For each item a bipolar five-point scale is available. The method has been developed for early identifications of health-related problems and decrease of well-being in the workplace. The method (AH model and questionnaire) was tested in different working environments. On the sample of 2000 workers' standardized values and critical limits for availability were defined. According to the AH model impacts of four particular workload components have been identified. AQ is implemented as part of periodical evaluation of workers health and well-being in different working environments for different workloads. Results of AQ were compared with workloads components data and completed with the interview data.

Results
According to the results of our previous research, workload-shaping factors are grouped in four categories:
- ecology
- technology
- organization
- human resources

Technology

Table 1: Perceived level of fatigue in the Nuclear Power Plant Krško

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Day shift</th>
<th>Night shift</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Operators</td>
<td>Guards</td>
</tr>
<tr>
<td>N</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>1st</td>
<td>70</td>
<td>1.67</td>
</tr>
<tr>
<td>2nd</td>
<td>69</td>
<td>1.77</td>
</tr>
<tr>
<td>3rd</td>
<td>66</td>
<td>2.02</td>
</tr>
<tr>
<td>4th</td>
<td>68</td>
<td>2.22</td>
</tr>
<tr>
<td>Δ₄-Δ₁</td>
<td>0.55</td>
<td>Δ₄-Δ₁</td>
</tr>
</tbody>
</table>

In the category “technology” factors describing pure work were inserted. Operators were performing highly automated work whereas guards had to monitor and assure physical protection. Both groups had the same work schedules, both group were the same age.

Differences:
- level of education and training
- level of responsibility
- domination of psychological loads (operators)
• domination of physical loads (guards)

According to our results “pure work” – technology had positive effects. Decrease of operators’ well-being was smaller than guards. High levels of monotony had more negative impacts than high levels of responsibility. Well-being in automated working environments has been much better than in monotonous environments of physical work.

Ecology

Table 2: Perceived level of well-being in different working environment

<table>
<thead>
<tr>
<th></th>
<th>Air conditioned</th>
<th>Natural ventilation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 46</td>
<td>N = 25</td>
</tr>
<tr>
<td></td>
<td>1st 2nd 3rd</td>
<td>1st 2nd 3rd</td>
</tr>
<tr>
<td>Stress</td>
<td>2.27 2.47 2.66</td>
<td>1.99 2.28 2.40</td>
</tr>
<tr>
<td>Mood</td>
<td>2.35 2.66 2.95</td>
<td>1.88 2.24 2.47</td>
</tr>
<tr>
<td>Vigilance</td>
<td>1.65 2.07 2.92</td>
<td>1.48 1.96 2.25</td>
</tr>
<tr>
<td>Motivation</td>
<td>2.21 2.60 3.10</td>
<td>1.82 2.08 2.29</td>
</tr>
<tr>
<td>Fatigue</td>
<td>2.51 2.98 3.55</td>
<td>2.05 2.46 2.83</td>
</tr>
<tr>
<td>Psychical fatigue</td>
<td>2.16 2.62 3.03</td>
<td>2.10 2.26 2.58</td>
</tr>
<tr>
<td>Physical fatigue</td>
<td>2.24 2.35 2.76</td>
<td>2.05 2.19 2.39</td>
</tr>
</tbody>
</table>

Sample: female administration workers at the same age

Workers feel much better in natural working environments, where they can open windows. Air-conditioned working environments with standardized parameters (humidity, temperature, velocity) are less acceptable. Workers complain about air quality and quite often do not accept air-conditioned working environment (3).

Organization

Table 3: Organizational factors

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>GENERAL FATTIGUE</th>
<th>MOOD</th>
<th>STRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>14</td>
<td>2.20</td>
<td>2.13</td>
<td>1.99</td>
</tr>
<tr>
<td>Supp. nurses</td>
<td>54</td>
<td>1.93</td>
<td>1.72</td>
<td>1.77</td>
</tr>
<tr>
<td>Nurses</td>
<td>77</td>
<td>2.09</td>
<td>1.80</td>
<td>1.85</td>
</tr>
<tr>
<td>Therapeutists</td>
<td>27</td>
<td>2.09</td>
<td>1.95</td>
<td>2.00</td>
</tr>
<tr>
<td>Consultants</td>
<td>10</td>
<td>2.34</td>
<td>2.22</td>
<td>1.99</td>
</tr>
<tr>
<td>Administrators</td>
<td>23</td>
<td>2.24</td>
<td>2.23</td>
<td>2.27</td>
</tr>
<tr>
<td>Cleaning staff</td>
<td>7</td>
<td>2.54</td>
<td>2.23</td>
<td>2.27</td>
</tr>
<tr>
<td>Technical staff</td>
<td>21</td>
<td>2.11</td>
<td>2.00</td>
<td>1.99</td>
</tr>
</tbody>
</table>

Workers in lower positions in the hierarchical structure (administration and cleaning staff) were reported to feel worse. Both consultants and therapists excluded from treatment also reported lower well-being.

Identification of influential factors helps in the identification of possible and necessary interventions to work organization which should lead to higher levels of well-being and less perceived stress:

- integration of all workers in the main working process,
- less hierarchical organizational structure,
- more work independence,
- team work,
Table 4: Organization of working schedule

<table>
<thead>
<tr>
<th></th>
<th>Morning shift (from 8h – 16h)</th>
<th>Day shift (from 8h – 18h – pause 12h-14h)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 64</td>
<td>N = 16</td>
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<tr>
<td>Physical fatigue</td>
<td>1,84</td>
<td>2,59</td>
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<tr>
<td>Psychical fatigue</td>
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<td>2,91</td>
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<tr>
<td>General fatigue</td>
<td>2,12</td>
<td>3,43</td>
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<tr>
<td>Motivation</td>
<td>1,80</td>
<td>3,18</td>
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<tr>
<td>Vigilance</td>
<td>1,80</td>
<td>3,06</td>
</tr>
<tr>
<td>Mood</td>
<td>1,98</td>
<td>3,00</td>
</tr>
<tr>
<td>Stress</td>
<td>2,03</td>
<td>2,64</td>
</tr>
</tbody>
</table>

The majority of workers (85%) were women. According to our results they have been strictly against whole day shift work for a variety of reasons including family problems, travel to work, other social activities and services such as schools and kindergartens which have been not adapted to this type of work.

Possible solutions:
- distinguish between customer services and other banking activities,
- introduction of more e-banking services,
- possible rotation (young workers start on customer services and than they are promoted on other working places with morning shift organization),
- offer of part-time employment (this is an adequate solution for women with children).

Human resource management

Table 5: Human resource management

<table>
<thead>
<tr>
<th></th>
<th>Educational level</th>
<th>Age</th>
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<tr>
<td></td>
<td>M=2,95 (professional school)</td>
<td>M=38,95;SD=8,98</td>
</tr>
<tr>
<td></td>
<td>N = 604</td>
<td></td>
</tr>
<tr>
<td>Physical fatigue</td>
<td>-0,32 xx</td>
<td>0,29 xx</td>
</tr>
<tr>
<td>Psychical fatigue</td>
<td>-0,21 xx</td>
<td>0,25 xx</td>
</tr>
<tr>
<td>General fatigue</td>
<td>-0,23 xx</td>
<td>0,23 xx</td>
</tr>
<tr>
<td>Motivation</td>
<td>-0,13 xx</td>
<td>0,12 xx</td>
</tr>
<tr>
<td>Vigilance</td>
<td>-0,11 xx</td>
<td>0,15 xx</td>
</tr>
<tr>
<td>Mood</td>
<td>-0,15 xx</td>
<td>0,20 xx</td>
</tr>
<tr>
<td>Stress</td>
<td>-0,24 xx</td>
<td>0,23 xx</td>
</tr>
</tbody>
</table>

Workers with lower education feel worse. They perform more physically intensive work (higher correlation with physical fatigue), but they are also less motivated in their work. As age increases, levels of perceived fatigue increase and mood worsened. Aging has negative impact on workers’ well being.

Possible solutions and humanization measures

In the process of recruitment, it is important to consider education and age. In risk assessments of workplaces preferred levels of education and age should be defined. Middle age and older workers should be included in fitness for duty programs. Adequate levels of psychical condition and fitness for duty may predominate negative effects of ages.

Conclusion

According to our results, perceived levels of fatigue and well-being are shaped by the influence of organization, technology, ecology and human resources. Through the identification of these impacts the most adequate humanization measures are determinable, involving interventions to the T, O, M and E. Their successful application demands a team approach including organizational specialists, technologists, occupational health professionals, physicians and psychologists. In time, interventions hold the potential to prevent fatigue increases, well-being decreases and increases in other health problems.
References


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Expert model for professional counselling

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Introduction

Counselling in professional orientation of school children has to take into account child’s health, his or her interests and abilities and the influence of important environmental factors. It is very important to stress the role of these influential factors. Facilitation of decision making in this process requires development of an expert model for professional counselling. For this purpose, a special expert model for prediction of the most appropriate profession according to child’s interests has been developed. Determination of the most adequate professional recommendation for the child will depend on his or her own interests, the interests of the parents, the interests of friends and the reputation of particular professions in the child’s environment.

Method

A special questionnaire for the determination of professional interest areas (PIA) was developed. There are nine professional interest areas and four influential factors (IF): (S) Self (himself/herself), (P) Parents, (F) Friend, and (R) Reputation of the profession in the social environment. Each child (C) states his or her five most desired professions (DP). Sample: 170 children from ages 11 to 13 from two different environments.

Determination of the expert model

All data were entered into a relational database. On this database the expert model was developed. Determination of the model involved the following steps:
1) Arrangement of all the data in relational database
2) Data in database are presented as a graph
3) Determination of the graph: Four sets of vertices: PIA, IF, C, DP; Edges between PIA and DP; Directed arcs between IF and PIA
4) Determination of directed cycles (positive and negative direction)
5) Counting of positive and negative cycles
6) Determination of connections between IF and DP

Results

A positive cycle connecting PIA and DP defined IF in the following order: (N=202): Reputation of the profession in the society, (N=178): Influence of parents, (N=169): Influence of friend, (N=157): Child individual interests. According to our results children choose professions with higher reputation. They do not consider the nature of the work itself. In their decision, they take into account the opinion of environment and parents.


References


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Developing Interventions for Risk Management: The Action Innovation Process

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Introduction
It is thought that conducting research in organisational settings without actively involving participant employees often results in little understanding of the micro-environment or local context and can lead to inappropriate interventions (Cornwall & Jewkes, 1995). By way of a solution, encouraging employee involvement at various stages of the research process has become increasingly popular in recent years. Miller and Monge (1986) report that employee involvement enhances the flow and use of information as well as satisfying employees’ needs to be heard and feel valued, and is thus effective both at cognitive and affective levels. Such involvement has been described as ‘a participative process to use the entire capacity of workers, designed to encourage employee commitment to organisational success’ (Cotton, 1993). Several terms - action research, co-operative inquiry, action inquiry, participation and participatory action research - have been used to indicate various degrees of participation of a study (Grønhaug & Olson, 1999). In this paper the term ‘participatory action research’ is used to reflect the active involvement of employees at all stages of the research process.

The main principles of participatory action research are as follows:

1) Scientific knowledge is applied to investigate real life issues and to plan and implement interventions to improve the social environment. This is well illustrated by Kurt Lewin’s dictum “there is nothing as practical as a good theory” (Lewin, 1951; Grønhaug & Olson, 1999).

2) Knowledge obtained through participatory action research should contribute both to the organisation under study and to knowledge about organisations in general (Grønhaug & Olson, 1999).

3) In order to arrive at such knowledge, the exploration of local theories and participants’ expertise is necessary so as to develop a realistic and detailed understanding of the organisation under study (Cornwall & Jewkes, 1995).

4) Only through the active involvement and participation of employees is it possible to obtain such a detailed understanding (Grønhaug & Olson, 1999).

The following paper describes how the principles of participatory action research have been applied to the risk management approach to the prevention of work stress that has been developed and tested by researchers at the Institute of Work, Health & Organisations at the University of Nottingham (Cox, Griffiths & Rial-Gonzalez, 2000; Cox, Griffiths, Barlow, Randall, Thomson & Rial-Gonzalez, 2000; Cox & Rial-Gonzalez, 2000; Cox, Griffiths & Randall, 2002). The risk management approach is based on participation with a strong emphasis of employee involvement throughout all stages of the process. It consists of a seven-stage sequence where the two main components are risk assessment and, subsequently, risk reduction. The experiences of the research team have demonstrated that it is often a challenging task for organisations to ‘translate’ the results of a risk assessment into interventions to reduce risk - an ‘Action ‘Plan’. The major focus of much published intervention (or risk reduction) research is on the content and outcome of interventions, often at the expense of a consideration of process issues.

The translation process involves feeding back the results of the risk assessment to employees, followed by a discussion and exploration of those results in order to identify possible underlying problems (organisational pathologies). This process is designed to lead employees and organisations to develop a deeper understanding of the problems of the groups under assessment, and thus to be better prepared for developing an effective plan of action. However, problems have been identified in relation to the translation process that concern time pressures, the quality of interventions and unclear action plans:

1) A series of meetings is often necessary in order to identify underlying pathologies, to prioritise issues and to develop interventions. Scheduling such meetings with a large group of employees is challenging.

2) Short meetings do not allow sufficient time for constructive and innovative discussion about possible interventions. It is often difficult for participants to ‘shut off’ from their other organisational commitments and responsibilities.
3) It is time-consuming and challenging to develop fully-fledged and clear-cut intervention and implementation plans, and to identify the roles and responsibilities of specific individuals.

It was proposed that many of these difficulties might be avoided if all players committed an entire day devoted to the process. The Action Innovation Process (AIP) was thus developed as a strategy for promoting and facilitating the development of reasonable and practicable interventions. It consists of a one-day workshop and involves key players from the organisation concerned, with the research team acting as facilitators. It assists in the development of a set of interventions designed to address issues raised in a previously conducted Risk Assessment Survey (RAS). It explores the identified risk factors and how they relate to employee well-being, as well as examining any issues that have emerged from an appraisal of the support services for staff that are relevant to well-being (an Audit of Management Systems and Employee Support - AMSES).

The AIP is inspired by democratic dialogue, action research and participatory principles. The tradition of democratic dialogue conferences originated in Norway in the early 1960s, where extensive efforts were made to change working life via the application of action research techniques. A major principle behind such efforts is that the most appropriate solutions are found and implemented where participants engage in open discussion, with no hidden agendas, and where all participants have, in principle, equal rights (Gustavsen & Engelstad, 1986). It is also held that involvement in decision-making ensures the buy-in of participants and their commitment to any emerging solutions (Gustavsen & Engelstad, 1986).

**Aims and Objective of the Action Innovation Process**

The overall objective of the AIP is to offer management, staff and key stakeholders the opportunity to develop, evaluate and integrate their ideas in relation to the reduction of work stress and the enhancement of employee support. It aims to build confidence and create an environment in which participants feel empowered to identify and confront problems. An important feature is a focus on the future – on the changes and interventions that can be undertaken, rather than on an extensive discussion of existing problems. Thus, the aims of the Action Innovation Process are:

1) To bring together the main stakeholders by identifying and creating networks between employers, managers, union representatives, employees, occupational health and personnel, and by facilitating open communication between these groups of representatives from different areas and levels within the organisation (Zell, 2001; Gustavsen, 1998; Emery & Oeser, 1958). The planning and implementation of change through such networks will increase the chance of successfully changing working conditions

2) To develop an overview and shared understanding of the problems identified in the AMSES and the RAS, and their possible underlying pathologies.

3) To develop reasonable and practicable interventions that can be successfully implemented taking into account realistic constraints and opportunities.

It is useful to set ground rules for workshop participants. These have been adapted from the democratic dialogue workshop literature (Gustavsen & Engelstad, 1986). They are as follows:

1) There is a clear definition of when and where decision-making takes place – namely, in the formal group session, rather than in any off-line discussions. This is to ensure an open discussion and to make certain that all participants are involved in the decision-making process.

2) In order to facilitate open communication, only public issues are legitimate. Hidden agendas and personal preferences should, as far as possible, be avoided.

3) Facilitators act only in formal group sessions, in order to avoid being aligned with particular individuals or groups of participants.

4) Analyses, problem solving and decisions must rest on the publicly available results of the RAS and AMSES (the risk assessment and audit of employee support).

5) The focus of discussion should be on the organisation, rather than on individuals.
Structure of the AIP
The two main stages of the AIP are the development of a ‘Business Framework’ and subsequently the Action Planning Process (see Figure 1). These are described in more detail below.

![Diagram of the Action Innovation Process]

The Business Framework involves developing a set of principles that will lay the foundation for the workshop. It sets out the constraints, opportunities and objectives. In addition, a set of aims that address the issues raised in the RAS and AMSES is established. The Business Framework thus effectively lays the framework for the day’s activities. A football analogy can be applied: the principles establish the pitch, size of the ball, and rules of the game whereas the objective determines the purpose of the game, i.e. scoring goals. In addition to addressing the issues related to work stress identified in the RAS, a welcome ‘side effect’ can be increased organisational efficiency. The process can thus also be conceived of as a business opportunity. This complements a growing understanding of the importance of using employee resources to compete effectively and gain market advantage, and of allowing employees to use their skills and abilities without hindrance from organisational constraints (Cotton, 1993; Nemeth & Owens, 1996). Using an overview of results of the RAS and AMSES, the Business Framework provides an opportunity for key stakeholders to discuss work stress issues, and through discussion of the relevant constraints and opportunities, to develop an understanding of what is feasible.

The second part of the workshop involves an Action Planning Process that addresses issues raised in the RAS and the AMSES. It is important to ensure that suggestions are reasonable and practicable by taking into account resources, culture and work organisation (Jeppesen, 2000). Specifically, an Action Plan involves: a description of the Actions, allocated Responsibilities, necessary Resources, Timeframes and Evaluation (ARRTE). It has been found that multiple interventions, and those that address several issues increase the likelihood of success, particularly since, because of strategic or financial changes, not all planned interventions can ultimately be implemented (Winter & Lusky, 2001).

Ensuring Opportunities
The one-day workshop brings together managers, key stakeholders, functional unit representatives (such as Human Resources, Employee Support, Health & Safety or Occupational Health Services) and employee groups in order to ensure the availability of a wide range of expertise, as well as potential employee buy-in and commitment (Cox et al, 2000). The precise organisation of participants into discussion groups will vary according to need. However, the following is an example of one approach that has been used by researchers at the Institute of Work, Health & Organisations.

Four groups of participants are established:

1) **Two ‘headline’ groups.** These groups consist of decision and policy makers - those with authority to implement interventions. One group concentrates on addressing issues emerging from the results of the AMSES. This group
should comprise of the key stakeholders and functional unit representatives involved in employee support systems. The second group, consists of managers with the commitment and authority to deal with the issues raised in the risk assessment survey (RAS). This group focuses on how working conditions may be improved at organisational, site, departmental and team levels.

2) Two ‘partner’ groups. Each headline group is mirrored by an appropriate partner group of employees. One group collaborates with the AMSES group giving feedback regarding (i) their expectations of effective support systems, (ii) how the existing support systems might improve, and (iii) their perceptions, as users, of any proposed system changes. The other partner group supports the RAS group and discusses specific issues related to working conditions.

The participation of such representatives from relevant areas and from several levels is essential for the development and implementation of a successful Action Plan. This is for several reasons (Cotton, 1993):

1) Those likely to be affected by interventions, either as agents of or targets for change, should know the origins of the actions. This will ensure buy-in and create a sense of those interventions.

2) Involving a wide range of participants in the process enables them all to act as sounding boards for proposed interventions. At times, brainstorming processes tend to ‘take on a life of their own’. Feeding discussions back to employees provides opportunities for ‘reality testing’, ensuring that any proposed interventions are appropriate to the problems they experience. Similarly, feeding discussions to managers ensures that unrealistic interventions, with little allowance for economic constraints, are not proposed by employees.

3) Employees have an opportunity to contribute ideas based on their expert knowledge of the relevant jobs.

4) The process provides an all-too-often rare opportunity for employees to have their opinions heard by managers with a stated interest and commitment to change.

5) Employees have an opportunity to gain an understanding and acceptance of the rationale behind proposed changes to their work, informed by their managers’ accounts of organisational constraints.

Experiences with the AIP : Final Thoughts
When conducting research in organisational settings, it is important to note that no two organisations are alike. This is reflected in the flexibility of the research process. The AIP does not attempt to solve all problems and thus stress-related issues (as well as others) should be continually monitored and attempts made to manage them. And finally, an important part of the AIP is to create a structure through which interventions can be implemented in a coherent manner. This involves ensuring the long-term commitment of all parties and the identification of one designated, named person who will oversee the implementation of interventions.

References


Nielsen, K (unpublished). *For hængte vi hovedet på krogen* (We used to leave our heads behind). Dissertation at the University of Aarhus, Denmark.


Introduction

Psychological stress factors at the workplace are largely determined using questionnaires that are completed by workers. Such investigations do, however, have a number of limitations:

- When evaluating the questionnaires, it is a good idea, given the difficulties in interpreting the answers of individual interviewees, to pool the answers of a large number of people with similar job profiles – e.g. from the same department – and use them as indicators. This makes it more difficult to use the questionnaires in SMEs where there are many jobs performed by one individual only.
- Once key stress factors have been identified in this way, further investigations are needed to determine the causes of stress factors that are of practical relevance for specific workplaces and to develop concrete remedial proposals. The use of questionnaires must be complemented by the concrete identification of stress factors and their causes.
- Attempts are being made (in Denmark and Finland) to achieve comparability of survey instruments and results on psychological stress factors across EU countries by translating the same questionnaire items into different languages. Whether it is at all possible to achieve such comparability using the questionnaire method is doubtful given the semantic differences between apparently similar terms in different languages.

We introduce a stress-factors model that is objective in terms of both the concepts and the measurements made (cf. Oesterreich & Volpert, 1999). The underlying theoretical concepts for the objective analysis of work stress were developed in various projects conducted as part of the German federal government’s research programmes “Humanizing Working Life” and “Work and Technology”.

### Table 1: Classification of psychological requirements and stress factors in our concept

<table>
<thead>
<tr>
<th>Objective Psychological Requirements</th>
<th>Objective Psychological Stress Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>decision requirements</strong></td>
<td><strong>hindrances</strong></td>
</tr>
<tr>
<td>decision latitude</td>
<td>additional (time) expenditure</td>
</tr>
<tr>
<td>time-related decisions</td>
<td>information-processing impediments</td>
</tr>
<tr>
<td>structure-related decisions</td>
<td>motor impediments</td>
</tr>
<tr>
<td></td>
<td>interruptions</td>
</tr>
<tr>
<td></td>
<td><strong>capacity-overtaxing factors</strong></td>
</tr>
<tr>
<td></td>
<td>monotonous conditions</td>
</tr>
<tr>
<td></td>
<td>during routine phases</td>
</tr>
<tr>
<td></td>
<td>long phases without active intervention</td>
</tr>
<tr>
<td></td>
<td><strong>time pressure</strong></td>
</tr>
<tr>
<td></td>
<td>continual</td>
</tr>
<tr>
<td></td>
<td>discontinual</td>
</tr>
</tbody>
</table>

Let us first take a look at the concepts. Table 1 shows not only stress factors but also psychological requirements. This is meant to demonstrate that the concept presented here is not a stress concept in which all possible psychologically relevant job characteristics are considered stressful. The psychological requirements are not stress factors. Rather, the decision requirements and the cooperation requirements should both be considered positive job requirements.
Figure 1: Illustration of significant correlations between job characteristics and health indicators

Figure 1 illustrates this. We draw on the results of investigations conducted at over 200 workplaces in different companies (cf. Leitner, 1999). It is evident that the psychological job requirements have more of a positive effect on the workers. For instance, high decision requirements result in less anxiety, to a marked feeling of self-efficacy and to leisure time spent more actively. There is, however, no obvious correlation between such job aspects – e.g. decision requirements – and various health indicators. On the other hand, there are correlations between these indicators and psychological stress factors. While these have no impact on anxiety, self-efficacy and actively spent leisure time, there is evidence of correlations with e.g. psychosomatic complaints, depression, allergic complaints, and even chronic diseases.

It is these objective stress factors that we address below. A distinction is made between them in the bottom part of Table 1. Largely familiar are the capacity-overtaxing factors "monotonous conditions" and "time pressure". "Additional (time) expenditure", on the other hand, is not yet a well-known factor within the relevant international community. The following descriptions of these various stress factors also illustrates the objective nature of the respective concept.

**Time pressure** refers to the necessity of working at high speed. This means there is hardly any opportunity to occasionally turn one’s attention from one’s job and, following circadian rhythms, to take short unofficial breaks. Time pressure is thus measured by the percentage of work time during which unofficial breaks can be taken while still completing the amount of work set.

**Monotonous conditions** are characterized by the constant repetition of the same work steps in short cycles, also requiring the continuous evaluation of visual or acoustic information. This is the case, for example, when entering data or typing from dictation. Monotonous conditions are measured according to their typical duration at a workplace. We consider monotonous conditions detrimental to health if they occur in a work activity for more than one hour per week, the number of hours per week being a measure of the stress factor “monotonous conditions”.

In empirical studies, **hindrances** have been shown to be a stress factor involving considerable health risks.

Additional (time) expenditure is generally the result of impediments to work and interruptions.

- **information-processing impediments** refer, for example, to the lack of relevant work information that should in fact be available at the workplace. The impediment means that the missing information has to be looked for, which leads to additional time expenditure.
- **motor impediments** are the result of inappropriate work tools. For example, using a computer program in which unexpected errors constantly occur can lead to considerable additional time expenditure.
- **Interruptions** may be caused by bottlenecks in the material flow or work tools being temporarily unusable. In most cases, however, interruptions are caused by people. There are workplaces at which such interruptions are very frequent. This means additional time expenditure for workers, who have to pick up the “thread” of their work again after each interruption.
The stress factor “additional (time) expenditure” is measured by the time per week this requires. Each impediment or interruption in itself is insignificant. It is only the cumulative occurrence of many impediments and interruptions at the workplace that results in additional time expenditure involving health risks. In German companies, in both the production and administrative sectors, it was found that the average additional time expenditure was approximately one working day per week. This figure is remarkably high. It is in the interest of companies to reduce additional time expenditure because the latter requires greater work resources. And it is in the interest of the workers to reduce such additional time expenditure because this lowers the risk of developing health complaints.

How are these stress factors investigated at the workplace? This is done using work analysis instruments in which a trained investigator observes and interviews a worker on the job. It is the investigators’ task to answer the questions directed to them – i.e. the investigators – in standardized questionnaires. The information required to answer these questions is obtained by observing the work process, the investigators getting the workers to answer the questions which they – i.e. the investigators – have formulated themselves. These questions should be worded so as to refer directly to the concrete work processes, not in the abstract manner of the investigation material.

The main analysis tools and practical guidelines developed on the basis of these theoretical and methodological concepts are:

- analysis tool: RHIA/VERA-Büro (Leitner et al., 1993)
- analysis tool: KABA: Kontrastive Aufgabenanalyse im Büro (Dunckel et al., 1993)
- analysis tool: RHIA/VERA-Produktion (Oesterreich et al., 2000)
- practical guidelines: Büroalltag unter der Lupe (Ducki et al., 1999)

Parts of the tools have been translated into English, Finnish and Swedish.

The objective nature of both the stress-factor concepts and the methods used in the investigation enables us to obtain results that are independent of workers’ individual perceptions. This was verified through reliability tests, whose basic approach is illustrated in Figure 2. Different investigators have, independently of one another, studied the stress factors for a work activity performed by different workers. If not subjective but truly objective stress factors are to be measured, there has to be a sufficiently good concurrence between the two investigators. The concurrences from such investigations were shown to yield a reliability of between $r = .65$ and $r = .8$ (cf. e.g. Oesterreich et al. 2000). This reliability rate may appear low compared with those of questionnaires calculated on the basis of their internal consistency. But the reliability of the objective method must be compared with investigation results in which the concurrence of the answers given by two workers performing the same work task is checked. Experience has shown that the concurrences here are much lower (between $r = .35$ and $r = .5$).

![Figure 2: Checking the objectivity of stress factors using the "double investigation" method](image)

As was pointed out earlier on in this paper, the usual questionnaire-based results on stress factors provide no indication of how to improve a work activity. This does not apply to the stress factors determined here. In particular the impediments and interruptions leading to additional time expenditure are related to quite concrete events at the respective workplace. It must be examined how these can be avoided in the future. This means that while such investigations...
involve more effort than the use of questionnaires, they directly yield design proposals for improving work tasks from the point of view of workers’ health.

One last point: we believe that the results on objective stress factors obtained from investigations of the type described here are much less dependent on language and culture than the results from questionnaires. If our aim is to develop tools for investigating stress at the workplace that can be used in different European countries, the concept and investigation method presented here would appear to be very well-suited to this task.

Based on these concepts and measurement methods, we propose compiling and testing uniform European tools for the objective measurement of psychological stress at the workplace.

References

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Health and safety in homeworking

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Introduction
Working at home is not a new phenomenon. A range of activities such as sewing, packing, assembly, soldering and telesales have traditionally been carried out by homeworkers. While these more traditional forms of homeworking remain widespread, increased use of information technology over the last two decades has added to the numbers of people working at home. Homeworkers whose work relies on the use of computer and telecommunication technology are often referred to as teleworkers. The numbers involved in homeworking increase further when a broad definition of homeworking is adopted to include those who work at home some of the time or those who work from home; these categories are likely to include a wide range of professionals and trades occupations. The variation in defining homeworkers means that constructing an overall picture of homeworking for this disparate population is problematic.

Evidence from UK national data sets such as the Census and Labour Force Survey (LFS) indicate that the numbers of people working at home are increasing. Analysis of LFS data from 1981 and 1998 shows that the numbers working mainly at home have doubled in that period, from 345,920 (1% of the employed workforce) in 1981 to 680,612 (2.5% of the employed workforce) in 1998 (Felstead et al, 2000). Census data shows a similar increase in homeworking (Felstead and Jewson, 1996). These figures are likely to be an underestimate as some homeworkers may be reluctant to admit to homeworking.

The growth in homeworking is attributed not just to increased use of information technology but also to changing employment patterns in the modern economy. Modern methods of controlling cost and regulating labour have introduced outsourcing, subcontracting, just-in-time supply and the enhanced use of all forms of non standard employment (Felstead and Jewson, 1999). Companies can minimise costs by maintaining a flexible pool of workers. A report by the European Agency for Safety and Health at Work (Goudswaard, 2001) examined the impact of changing contractual relationships in the workforce and the impact of increased temporary and short term contracts and subcontracting. In relation to the impact on health and safety it was noted that the shift towards non-permanent workers and subcontractors means a shift towards workers who have less protection and/or access to knowledge to cope with work-related health and safety risks.

This increase in homeworking would imply an increase in the associated health and safety issues. However, it is difficult to obtain meaningful statistical information on the extent of health and safety problems for this group as ill-health and accidents often go unreported. In 1996 the UK Health and Safety Executive (HSE) produced a guidance leaflet on homeworking to inform employers and homeworkers of the health and safety issues involved in homeworking. In this leaflet homeworkers are defined as ‘those people employed to work at home’. It highlights the fact that under the Health and Safety at Work etc. Act (HSWA) 1974 employers have the same obligations to protect the health, safety and welfare of homeworkers who are employees as they have for employees on-site.

This paper presents findings from an explorative study of health and safety issues in homeworking. The work was commissioned by the UK Health and Safety Executive (HSE). The aim of the study was to review existing information on health and safety in homeworking and to identify future research that will inform health and safety policy and guidance on homeworking.

Method
A literature review was conducted in relation to UK studies of homeworking. In addition, four focus groups with homeworkers were conducted across different UK locations, providing a total sample of 30 homeworkers. The focus groups explored participants’ experiences and perceptions of homeworking with a specific focus on health and safety issues (hazards; accidents; ill health; information; training, and equipment provision). Telephone interviews were also conducted with nine suppliers of homework in order to explore their reasons for employing homeworkers and health and safety issues.

Findings from the focus groups with homeworkers and interviews with employers will be presented initially, followed by a discussion of the key findings across the literature review, focus groups and supplier interviews. Recommendations for future research are also provided.

Results
Homeworker Focus Groups
Twenty-eight of the thirty homeworkers who attended the focus groups were female. Nine of the homeworkers were of Asian ethnic origin. The homeworkers who participated in the focus groups were involved in a range of homeworking activities across different industrial sectors. The homework activities of participants are summarised in table 1.
Table 1: Homework activities of focus group participants

<table>
<thead>
<tr>
<th>Homework Activities</th>
<th>No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sewing Clothing, bedding, flags and bunting</td>
<td>10 (33%)</td>
</tr>
<tr>
<td>Finishing Trimming and inserting rubber components</td>
<td>8 (27%)</td>
</tr>
<tr>
<td>Assembling and packing Crackers, tights, cards, various products, books of fabric</td>
<td>7 (23%)</td>
</tr>
<tr>
<td>Soldering &amp; Electrical assembly Dimmer switches</td>
<td>1 (3%)</td>
</tr>
<tr>
<td>Teleworking Data input and report writing, social science research</td>
<td>2 (7%)</td>
</tr>
<tr>
<td>Arts and crafts Making cards, food and various products</td>
<td>2 (7%)</td>
</tr>
</tbody>
</table>

The key reasons identified for working at home were: caring for dependants (mainly children); flexibility; and financial. A small number mentioned that it would be difficult for them to get work outside the home because of their age or health problems. The benefits of homeworking were similar to the advantages. The main disadvantages were identified as: earning less money working at home; isolation; dirt; and homework causing problems with family members (e.g. due the time spent working, the smell and mess).

Homeworkers carried out their work in rooms shared by other members of the house, though some did try to keep children out of the room when they were working because of the hazards posed by their work (e.g. clipping wires for dimmer switches caused flying metal and wires lying on the floor and other surfaces). Table 2 illustrates the health problems experienced by homeworkers and some of the perceived causes of these problems.

Table 2: Health problems experienced by homeworkers and their perceived cause

<table>
<thead>
<tr>
<th>Health problem</th>
<th>Perceived causes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musculoskeletal aches and pains</td>
<td>Heavy bags and boxes.</td>
</tr>
<tr>
<td>Lumps/calluses on hand and fingers</td>
<td>Repetitive scissor and blade work.</td>
</tr>
<tr>
<td>Eyestrain</td>
<td>Constantly working with black rubber. Work requiring close attention.</td>
</tr>
<tr>
<td>Headaches</td>
<td>Noise from the sewing machines.</td>
</tr>
<tr>
<td>Skin irritation</td>
<td>Material, dust and fibres.</td>
</tr>
<tr>
<td>Respiratory irritation</td>
<td>Dust, fluff and fibres.</td>
</tr>
</tbody>
</table>

Participants also identified a number of causes of work-related accidents and injuries:

- Needle injuries were common in sewing, one had affected a child who switched on the machine.
- Cuts from staples in the bags of rubber components, manipulating dimmer switch wires, and cutting implements such as scissors and blades. Cuts were usually minor, requiring plasters.
- Burns from soldering.
- Being hit in the face by ‘flying’ bits of rubber and wire.

Several of the homeworkers who had experienced health problems had visited the doctor. One was advised by the doctor to give up her job. At least half of the focus group participants indicated that they were reluctant to report health problems, accidents and injuries to their suppliers of work. Common reasons for this reluctance included the belief that suppliers would just regard them as part and parcel of the job and that it may affect their supply of work. These concerns were for a number of participants based on the reaction of their supplier when they had mentioned problems previously. On a more positive note, a number of the homeworkers said they either had or would report problems to their supplier without any of the above reservations. This included sending back work because of problems experienced and stating that they did not wish to do particular types of work. Some had been provided with personal protective equipment when they identified problems or asked for something specific. For example, one of the homeworkers who works with glue had been provided with goggles, gloves and a mask after complaining about the glue. He was told the glue was ‘non toxic’.

Many of the homeworkers received little or no health and safety information from their suppliers of work. Where it was provided it was quite limited. For example, one of the suppliers provided its workers with a letter regarding health and safety, which for the most part informed them that working, at home, they were responsible for their own health and safety and that of others who may be affected by their work. The letter also included general advice, for example, working in a well ventilated area and ensuring that equipment was stored safely. One enquired about the glue she used, and was told it was safe. Some workers had enquired about the content of some products (e.g. rubber, glue) and were told that they were ‘safe’ or ‘not toxic’. Some health and safety information had been
communicated informally from suppliers and by drivers, delivering and collecting work (e.g. keep dimmer switch parts and cracker snaps away from children, and keep the snaps away from sources of ignition). Some homeworkers had received free health and safety equipment from local homeworking projects. This included adjustable/swivel chairs, adjustable lamps, smoke alarms, fire blankets, anti-vibration mats and dress making scissors. Some of the women used scarves as masks while sewing with some fabrics.

**Supplier Interviews**

The majority of companies supplying homework were small and medium sized enterprises (SMEs). The main reasons for supplying homework were, restricted factory space, acquiring/retaining staff with children, and managing the peaks and troughs of production. The various homework activities supplied included: assembly and packing (6); Data entry (1); Soldering (1), and knitting (1).

All of the respondents reported that they were not aware of any accidents, injuries or health problems affecting homeworkers. They were also generally unaware of relevant health and safety legislation and specific guidance on homeworking. Four of the suppliers reported that some form of health and safety training was provided, mainly in relation to manual handling. One of the companies provides homeworkers with fire alarms and first aid kits. Two companies had approached HSE for advice.

**Discussion**

**Characteristics of homeworkers and suppliers**

Women constitute the majority of those working mainly at home though men are more likely to work at home on an occasional basis. Women homeworkers are more likely to work in manufacturing than non homeworkers whereas the opposite appears to be the case for men. Women homeworkers are also more likely to have childcare responsibilities. The latter finding is consistent with one of the key reasons why women work at home, i.e. childcare. The presence of children in the work environment highlights a significant health and safety consideration for homeworkers that probably would not be addressed in risk assessments for workers carrying out the same activities on-site. Ethnic minorities were found to be under represented in homeworking compared to the employed workforce but they were over represented in manual and low paid homework.

The main reasons for and advantages of working at home were childcare, financial and flexibility, and the main disadvantages were poor pay, isolation, mess and irregularity of work. The main reason identified by suppliers for employing homeworkers included flexibility/dealing with fluctuating workflows, reduced costs, restricted space, and to solve childcare problems, and the main disadvantages were difficulty with supervision and reduced contact with staff.

The main industry sectors for homework activities were business services and manufacturing. The main occupations identified were sewing, assembly and packing; non-manual occupations included clerical, secretarial and administrative. The employment status of homeworkers varied across studies but a common finding was that there is considerable confusion regarding employment status. The lack of clarity in the distinction between employee and self-employed status makes it very difficult for both suppliers and homeworkers to interpret health and safety legislation and guidance. The majority of homework suppliers are small firms. This appears to be consistent with the view that homeworkers are mainly located at the end of the subcontracting chain.

**Health and safety issues**

A range of work-related hazards have been identified. Environmental hazards included lack of space, dirt, smell, noise, electrical and fire. A number of hazards perceived as causing accidents and ill-health were also identified, for example, poor seating, repetitive work, manual handling and working with substances such as solder, glues and paints. Some of the psychosocial hazards identified as contributing to stress are consistent with the disadvantages mentioned by homeworkers (e.g. isolation and irregularity of work). Some activities emerged as particularly hazardous, for example, sewing. The main health problems experienced by homeworkers were musculoskeletal pain, eye strain, headaches and mental strain.

The research studies provide evidence of accidents affecting homeworkers and others in their home, including children. Gilbert (2002) identified a number of accidents that could have been prevented with provision of training and equipment (e.g. needle guard, goggles). Accidents and health problems often go unreported to the company supplying the work. Even those homeworkers who sought medical treatment had not always informed the health professionals that their problem was work-related. Levels of awareness of health and safety issues appeared to be quite poor as was access to health and safety information, equipment and training. Homeworkers were not familiar with health and safety legislation and guidance relevant to homeworking. Furthermore, risk assessments were not being carried out. While there were a number of examples of homeworkers receiving information, training and equipment, these examples were quite limited. There are some indications from the research that those involved in teleworking fare better in relation to their terms and conditions, including health and safety provision though this is based on a small number of examples.

The isolated and scattered nature of homeworkers means that they are less likely to receive adequate training and information and makes it more difficult for HSE to enforce health and safety legislation. The contact with local homeworking projects and other homeworkers facilitates the information sharing and provision. A number of homeworkers had also benefited from local homeworking projects which provided health and safety equipment (e.g. lamps, chairs and first aid kits).
Recommendations

- A large-scale survey on homeworking to include both homeworkers and suppliers would provide more up to date information on health and safety in homeworking. In order to explore the health and safety issues pertinent to each industry sector, the survey could focus on industry sectors. The definition adopted would warrant close attention, for example, the inclusion of those who work at home some of the time would allow comparisons to be made with those who work at home all of the time.

- A comparative study could be conducted which would compare health and safety issues for homeworkers with those for on-site workers doing similar work.

- The development of revised guidance on homeworking could include sector-based case studies of good practice in health and safety for homeworkers. These case studies could illustrate how employers and homeworkers could identify hazards associated with sector-based activities and the appropriate control measures. The development of guidance should include piloting and address the need for translation into languages other than English.

- Advice and information about health and safety rights is not reaching homeworkers. It is also quite likely that it is not reaching a considerable number of their employers, particularly those who are small subcontracting firms. HSE needs to identify effective avenues for communicating with homeworkers and employers and highlight the fact that much of the legislation that applies to on-site workers also applies to homeworkers.

References


Acknowledgements

This study was funded by the Safety Policy Division (SPDB2) of the UK Health and Safety Executive (HSE) and was carried out with assistance from the UK National Group on Homeworking (NGH). I particularly acknowledge the support of R ne McTaggart and Cavan Woods of SPDB2 and Clare McQuillan of NGH/Temple Consulting Ltd. A full copy of the project report can be found at http://www.hse.gov.uk/research/hsl/assessmt.htm.

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Is participative action research the key to promoting healthy work?

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The philosophy of science perspective to participative action research

Stephen Toulmin, the American philosopher of science, has argued that research designed to promote healthy work conditions and work organisations should be compared to the activities of a physician attempting to enhance the health of a patient (Toulmin, 1999). Thus, a clinical rather than scientific analogy has been proposed. In many cases, the clinical process starts with the patient (members of the organisation) perceiving malfunction or deviance from subjective normality. In others, a routine health screening may suggest the need for further examination. This examination occurs through dialogue with the patient (members of the organisation) and via clinical (participative) observation. In addition, specific tests/measurements may be used to supplement any diagnosis (using employees and other stakeholders as informants). The results of any tests or measurements can be interpreted in a dialogue between patients (participants) and physician (researcher/practitioner). This process has been referred to as a ‘translation’ process (Cox et al, 2002). Drawing from both scientific knowledge and experience, an appropriate programme of treatment (intervention) can then be designed and implemented. The treatment (intervention) is evaluated in dialogue with the patient (organisation) and other concerned parties. It may involve a change of lifestyle, work-life balance or other systematic modifications, hopefully leading to continuous improvement. In this way, knowledge and experience is transformed into action as part of a collaboration between the physician (researcher/practitioner) and the patient (organisation). This participative action research approach, far removed from the experimental science of objectivity and control, has been challenged and deemed unscientific by its adversaries. However, the authors argue that a participatory action research approach is a scientific enterprise, no less scientific than clinical research as, for example, applied in medicine. Further, this approach provides researchers with the opportunity to capture the rich complexity of the organisational setting, whilst also gaining commitment and buy-in from those engaged (Toulmin et al 1994; Englestad 1981).

The Action Science Perspective and Normal Science

Action research, as argued by Chris Argyris and his colleagues (Argyris et al., 1985), goes beyond the limitations of ‘normal science’. It provides an encompassing approach that aims to address the gaps remaining from the adoption of a normal science paradigm. Somewhat similar points about the limitations of a natural science paradigm have been made by Griffiths (1999). In Borell and Brenner, (1997) the ideals of rigour, control and experimentation in normal science are contrasted to the ideal of authenticity and closeness in action research. Whilst working from different and largely incompatible assumptions, both perspectives aim to understand reality. Bunge and Ardila (1987) argue that the difference between these approaches in psychology can be explained in terms of the contrast between systems frameworks and reductionism. In adopting a systems framework, the study of living organisms should be based on three interrelated levels: biological, psychological and social. Due to the interrelated nature of these levels, it is often inappropriate to reduce a higher level to a lower one. The normal science ideals are only appropriate for measurement of factors at the lowest level, and only justified in relation to higher levels if reductionism is both assumed and imposed, thus denying the possibility of a systems perspective.

The risk management approach to work stress developed by the Institute of Work, Health & Organisations (Cox & Griffiths, 1998, Cox et al, 2002) provides a working example of how participatory action research can be conducted at the systems level. The risk management framework draws on the traditional risk management paradigm and applies an evidence-based approach to the identification and assessment of sources of stress within the design and management of work and its social and organisational contexts. Two interrelated cycles of risk assessment and risk reduction form the basis of the approach. Reasonable and practicable actions to reduce risks that pose harm to individual and organisational health and well-being are optimally identified and implemented using a participative action research approach. The approach advocates that a range of identification techniques, tailored to the organisational context, should be incorporated into the risk assessment cycle. These techniques may include structured interviews, Repertory Grid technique, focus groups and/or surveys. Consistent with the context-related assumptions implicit in these methods of enquiry, where survey information is collated, it is proposed that the measurement is tailored to the organisational setting and makes use of the norms and terminology embedded in the culture to elicit meaningful information. This qualitative and quantitative information is then collated and results fed back to the organisation. To facilitate the translation of risk assessment results into meaningful actions, the cycle of risk reduction serves to engage employees in discussion to identify the root causes of the identified risks. Through translating the results in this manner, employees are then better able to identify the most appropriate course of action to reduce the risk. Throughout this process, the researcher adopts a facilitative yet informed role. Encouraging participating in this way engages the employees in the risk management process and helps to encourage employee-driven action.
Participative measurement methods as exemplified by the Repertory Grid Technique

The survey technique as employed during the post-war era has increasingly come to be considered the universal method of social science. Whilst it has made an invaluable contribution to our understanding of a wide range of phenomena including people’s knowledge, values and attitudes, as well as their actions, characteristics and relations to others, the reliance of social scientists on this method alone is now increasingly questioned. In principle, questions in a survey are assumed to have the same meaning for all subjects, and the same meaning for the subjects and the researcher, regardless of context. In practice, this is often not the case, leading on occasion to redundancy and misinterpretation. This communication problem between researchers and subjects exists on several different levels. First, we can distinguish a few immediate problems in the conveyance of messages. Choice of words in the survey questions, as well as for example sentence structure, have been shown to impact on the reaction to the questions in a survey and, subsequently, to the quality of the data collected. Apart from this so-called language breach, we also need to be aware of that words can be both positively and negatively charged. Small changes in the wording of the survey questions can result in surprisingly large differences in results. The problem can be illustrated with the help of the “forbid-allow”- effect demonstrated by Schuman and Presser (1981). They put two similar questions to groups of American subjects: “Do you think the US should forbid public speeches against democracy?” and “Do you think the US should allow public speeches against democracy?” The effects of using the word “forbid” in one case and “allow” in the other proved to be significant. Of the respondents, 21% answered yes and 79% no to the first question, whereas 52% answered yes and 48% answered no to the second. In other words, the “forbid-allow”- effect amounted to as much as 27%.

Second, the survey technique is particularly susceptible to giving rise to artefactual information. In medical and biological research, artefacts signify the origin of a structure not naturally present in the organism, but are the result of the investigative procedure itself (e.g. by x-ray or microscope). The concept has a similar meaning in the social sciences. By using surveys, the researcher runs the risk of forcing unfamiliar terms and problems on the subjects: terms and problems not belonging to everyday reality but to the research community. By using the subjects’ willingness to answer, surveys can give rise to bias, and, in the worst case, to a fictitious ‘research reality’. For example, how are we to understand the results of a recent (unpublished) study of female technical students where they were asked, among other things, to what extent they found their education “reflecting”, “humanistic”, “consequence analytic” and “anchored in society”, and to what extent the students found the education “womanly” in general theoretical terms (as developed in some other research context)? Questions of this kind will certainly get answers, but probably not very meaningful ones, since the concepts the students are asked to consider are unlikely to be part of their everyday reality. The problems – as they were stated in this survey – belong to the researcher and the research community. A particular complication lies in the fact that the artificially created world of the survey is represented by ‘hard’ data that command respect. This contributes to making the professionally schooled social scientist blind to the technique’s inherent problems and risks.

Both context and meaning have to be assured in the development of any adequate survey method. These issues have been addressed in the Institute’s work on risk management. However, in light of these limitations, and an increasing appreciation of social constructivism within the social sciences, researchers have sought alternative and supplementary methodologies. The repertory grid technique was originally developed as an answer to a psychological-therapeutic problem, with considerable recognition of the artefact problem of the survey method. George Kelly asserted that practising psychologists tended to put greater importance on general psychological theories and models than on people’s unique problem descriptions (Kelly 1955, p. 322-323). As a social science method the repertory grid technique can help researchers avoid the risk of construing an artificial ‘research reality’ separate from the reality experienced by the individual members of society.

The Repertory Grid Technique

In Kelly’s Personal Construct Theory the relationship between the layperson’s cognitive effort and the researcher’s search for knowledge, is strongly emphasized (Kelly 1955). The layperson’s interpreting, meaning-producing activities are, according to Kelly, reminiscent of the entire range of procedures that are usually attributed to the professional researcher. The layperson, like the researcher, observes and classifies impressions, tests hypotheses and generalizes. In practice, the human knowledge processes are thereby characterized by the same frame of reference as modern research (consider the researcher who appears in the mass media presenting his findings and almost routinely reserve himself with the words “in the current position of research”). This standpoint implies, according to Kelly, that we as everyday, amateur scientists construct hypotheses based on previous experiences that we use as interim, temporary predictions. Our further actions – the equivalent of the scientific experiment – decide if a certain hypothesis is strengthened or rejected and revised. Everyday concepts are, in other words, tested in regard to their ability to predict future events (Kelly, 1955, p.12).

Kelly proposed that the fundamental difference between the layperson’s and the researcher’s gathering of, and processing of, information lies not so much in the general method of making research into reality but in the motive for
the search for knowledge. If the scientist strives for knowledge that is related to an intra-scientific, esoterically defined project, then the layperson’s search for knowledge has a much more practical, directly utilitarian motive. As laypeople we are first of all interested in mastering our ‘here and now’ and in subsequently developing hypotheses to help create greater predictability and security for our actions (Kelly, 1970). These hypotheses, or ‘constructs’ allude to the more- or-less temporary knowledge and thought structures that comprise our subjective constructions of the world, or, as some cognitive theorists would prefer to say, our mental representations. The emphasis on the context dependency of people’s cognitive processes is pivotal to Kelly. In the Repertory Grid Technique, constructs are developed with continuous comparisons of elements in a certain class meaningful to the subject as a starting point (see Fransella & Bannister, 67,77). The end product, the Repertory Grid, describes in a formal way the relations between constructs and elements, i.e. people’s mental representations and the objects of these representations. Further, to facilitate the application of Kelly’s technique to the organisational setting, a range of individual and group elicitation techniques have been identified (Denicolo & Pope, 1997; Honey, 1977).

In contrast to the conventional survey research, the Repertory Grid technique is characterized by a considerable openness toward the subjects’ unique representations. With certain incisiveness one can perhaps even claim that the technique lets the subjects formulate their own interview questions when they, on their own, introduce constructs from elements. In this regard the technique is suggestive of the loosely structured, conversation-style interview, and like interviews of this type, a rich, detailed and authentic body of data can be produced. At the same time, the technique leaves room for a distinct, quantitative form of presentation. The technique can by those means be described as an explicit combination of qualitative and quantitative dimensions. The Repertory Grid technique draws from element comparisons to uncover the constructs’ from the individuals’ point of view using procedures best described as qualitative. At the next level, these relations elicited from the individual can then be depicted in a formal, quantitative way. Accordingly, the technique can be said to seize upon the strengths of the qualitative methods whilst addressing the weaknesses of these methods, through formalising the structure of accounting and processing of data.

It is therefore proposed that Kelly’s cognition theory, and specifically the Repertory Grid technique, creates an opportunity for a meeting place for researchers from different subject disciplines with a common interest. It provides researchers with the opportunity to explore and understand how people interpret their social and work environments. Further, the qualitative elicitation technique provides the researcher with the opportunity to engage the participant and subsequently accrue the benefits of a participative approach, whilst producing output that is suitable to both qualitative and quantitative analysis.

Concluding Comments

Methods such as the Repertory Grid technique, among others, have an important place in action research and can offer added value to those working in organisations. Such techniques can make a contribution to broader-based methodologies such as risk management, partly because the underlying philosophies are similar in many respects. They can offer gains over survey techniques particularly where there are unresolved issues of context and meaning. It is suggested here that where there is a logical argument that context is important, such as in a risk management approach to work stress, gaining a more comprehensive understanding of the meaning and effects of that context is essential. The complexity of the modern work environment, and the nature of the problems facing organisations and their employees, command a renewed emphasis on contextual factors. It is for this reason, and the limitations of the methods available to us within the natural science paradigm, that action research and the range of context-based participative techniques advocated may prove to have an invaluable contribution to our efforts in promoting healthy work conditions and work organisations.

References


Introduction
The detrimental effects of job loss are well-documented (e.g. Warr, 1987, Feather, 1990). Social disintegration, demoralisation and deleterious effects on well-being can be stated as main examples of negative consequences. The worst affected are the long-term unemployed, whose part of the unemployment quota amounts to 40% in the eastern part of Germany. Faced with increasing numbers, especially of elderly long-term unemployed and welfare recipients, the government of Saxony created a reintegration instrument by offering occupation in the non-profit sector. Since its implementation in 1999, this so-called TAURIS project was subject to psychological evaluation, proceeding on a wider understanding of activity than mere paid work (Biesecker, 2000). Whereas health-stabilizing effects following reemployment have been proved in various studies (e.g. summarized in a meta-analysis ($d=.54$) by Murphy & Athanasoue (1999)), examinations which focus on the effects of volunteer occupations are rare. For this reason, the present study investigates whether voluntary participation in TAURIS is comparable to paid occupation and thus mitigates for the negative effects of former unemployment. Of particular interest are possible interactions with task content and occupational conditions.

Method
Two cohorts of participants in TAURIS (n = 129) were surveyed in a controlled follow-up design with three points of measurement each: immediately after starting work (t1), about 4 months later (t2) and 1 to 1,5 years after the first measurement (t3). The same design was applied to a sample of unemployed without participation in the project (n =159), which served as control group. Additionally, the second cohort included a sample (n = 24) of employed with similar task contents as the TAURIS participants. The long-term unemployed of the TAURIS-group had been unemployed for 42 months on average, compared to 56 months in the control group. For the welfare recipients the average duration of public assistance was 67 months in the TAURIS-group and 41 in the control group. Regarding age (average 53 years), gender and qualification the groups were homogenous, except for the members of the employed-group (average 49 years). The response rate after 4 months ranged from 91% in the TAURIS-group to 86% in the control group, which is unlikely to cause serious systematic bias. Members of the control group received 5 Euro for responding a third time.

Methodological instruments from both work psychology and health psychology were applied. To assess the level of demands inherent in the tasks offered by TAURIS and in regularly paid jobs, REBA (Richter, Hemmann & Pohlandt, 1999), a computer-assisted variant of the Task Diagnosis Survey (TBS), has been employed as objective approach. On a subjective level, motivation and health variables have been measured by standardized questionnaires such as the Job Diagnostic Survey (Hackman & Oldham, 1975), the General Health Questionnaire (Goldberg, 1978) and the Sense of Coherence Scale (Antonovsky, 1987).

Results
Psychic demands of volunteering tasks turned out as by no means inferior to comparable tasks in the first labour market. In fact, they even exceeded the demands of paid work. Between 50% and 80% of the investigated tasks offered by TAURIS can be characterized as cognitively and socially challenging, with respect to sequential task completeness, degrees of freedom and forms of cooperation. In accordance to these findings, participants in TAURIS show a significantly higher motivation potential than the employed respondents did. However, do they also report better health?

According to the parameters of mental health presented in Table 1, the results for the TAURIS-participants surpassed those of employed people, yet not to a statistically significant extent. Nevertheless, the mean values indicate significant differences from the members of the unemployed control group. From the first measurement onwards, psycho-social well-being was significantly higher ($F = 12.685, p<.01$) in the TAURIS-group than in the control group. As can be shown, this is not due to a “creaming-the-poor” effect, which would mean that systematically more motivated and healthy unemployed take part in occupational offers like TAURIS. Nearly all participants reported an improvement in their personal situation since entering TAURIS. Besides, participation is especially attractive for people with moderate income. For them, an allowance of 75 Euro per month represents a main motivating factor to take part.
Table 1  
Progression measurement of selected parameters of mental health, sub-sample of the second cohort  
(members of TAURIS and control group, who took part in all measurements, and a sample of the first  
labour market with comparable tasks)

<table>
<thead>
<tr>
<th>Parameters of mental health</th>
<th>Progression measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>Psycho-social well-being</td>
<td></td>
</tr>
<tr>
<td>TAURIS</td>
<td>17</td>
</tr>
<tr>
<td>Control group</td>
<td>75</td>
</tr>
<tr>
<td>First labour market</td>
<td>24</td>
</tr>
<tr>
<td>Sense of Coherence</td>
<td></td>
</tr>
<tr>
<td>TAURIS</td>
<td>17</td>
</tr>
<tr>
<td>Control group</td>
<td>75</td>
</tr>
<tr>
<td>First labour market</td>
<td>24</td>
</tr>
</tbody>
</table>

The score for Sense of Coherence also remains higher, but the difference from the control group only demonstrates a tendency towards significance.

To reveal the relationship between task characteristics and health, a linear hierarchical regression analysis was performed. Table 2 summarizes significant influencing factors, which represent statistically validated parts of variance prediction of mental health (t2) originating from differences in task demands four months before (t1). The relationships found correspond to those of the first labour market. Learning- and health-promoting tasks, offered by public welfare associations, lead to improvements in mental health. For example, the amount of organisational subtasks explains 26%, the requirement of former qualifications 30% and the quality of feedback 9% of the variance in psycho-social well-being.

Table 2  
Significant influencing factors ($\Delta R^2$ from linear hierarchical regression analysis) of the effects that tasks demands in TAURIS (t1) have on mental health four month later (t2)

<table>
<thead>
<tr>
<th>Task demands (t1)</th>
<th>Psycho-social well-being (t2)</th>
<th>Sense of Coherence (t2)</th>
<th>Growth need (t2)</th>
<th>Depression (t2)</th>
<th>Anxiety (t2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisational subtasks</td>
<td>↑</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequential completeness</td>
<td></td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning potential</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Required qualification level</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feedback</td>
<td>↑</td>
<td>↑</td>
<td></td>
<td>↓</td>
<td></td>
</tr>
<tr>
<td>Possibility of Prediction</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporal degrees of freedom</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical variety</td>
<td>↑</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cronbach’s $\alpha$</td>
<td>0.818</td>
<td>0.834</td>
<td>0.812</td>
<td>0.763</td>
<td>0.887</td>
</tr>
</tbody>
</table>

Note. ↑ stands for increase, ↓ stands for decrease. Cronbach’s $\alpha$ signifies the internal consistency of the subscales.

Findings for the first cohort also demonstrate that changes in psycho-social well-being depend on whether the continuation of the work in the TAURIS-project is secured or not. For the second cohort the majority of the TAURIS-group perceived volunteering as a short-term option rather than as a serious alternative in the long run. Two thirds of the initially 70 examined participants of the second cohort quit TAURIS, although in the first month (t1) and after 4 months (t2) the stability of mental health for the whole sample was as high as in the above sub-sample, which took part in all three measurements (table 1). In this context, data on the further occupational development of former TAURIS-participants (n= 1160) underline the project’s achievement to facilitate transitions regarding re-employment as well as participation in employment incentives.

When asked for suggestions on how to improve the TAURIS-project, the participants stated a need for qualification and psycho-social support, which significantly increased ($Z = -2.081, p<.05$) with the length of participation. In addition, objective task analysis showed potential for a better organizational integration of the tasks offered by TAURIS. Some tasks also required improvements to avoid the risk of monotony. Lastly, former qualification and competences should receive more attention in the staffing process.
Conclusions

As a main conclusion occupation in the volunteering sector, as offered by the TAURIS-project, succeeds in promoting health resources and learning abilities for people with restricted access to the labour force. Nevertheless, there is a clear need for improvement in regard to task-design and working conditions, which will be reported to the coordinators of TAURIS and the public utility institutions. The current evaluation includes a survey, that targets colleagues and superiors of the TAURIS-participants in order to investigate the significance of TAURIS for the institutions, as well as the cooperativeness towards the TAURIS-participants. Furthermore, an instrument to analyse the participants' competences is being developed, so that the fit between competences and the demands of the offered tasks can be optimised, and the need for further qualification can be assessed. This should be complemented by the availability of psycho-social counselling. Most likely, the presented measures could be used to support occupational transition processes in general.

References


Effects of Safety-specific Transformational Leadership Training on Occupational Safety

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Introduction

The safety of workers is a significant issue worldwide. In 1998, there were over 5000 workplace fatalities and 3.8 million disabling injuries in the United States. The cost of these injuries in medical costs, productivity, lost wages and administrative expenses were in the excess of 100 billion dollars (National Safety Council, 1999). The results are not any more encouraging in Canada, where the number of days lost to workplace injuries between 1993 and 1996 exceeded the number of workdays lost to labour strike (Barling & Zacharatos, 2002). Equally troubling are reports from the United Kingdom that suggest that 1.1 million workers were injured between 1993 and 1996. It is further estimated that the annual workdays lost to workplace injuries cost the British economy between four and nine million pounds (Health & Safety Executive, 1997). These costs only reflect those borne by the organizations and do not include the social and psychological costs of occupational injuries incurred by workers and their families.

Possibly motivated by these alarming figures, behavioural researchers have begun exploring behavioural factors that might be of interest in the management of safety. The management of occupational safety has been traditionally viewed through an ergonomic or public policy perspective. Hence, the recent increase in behavioural-based research on occupational safety highlights the acknowledgement of the role behavioural factors play in the management of safety. From a practical standpoint, this trend is promising for human resource practitioners involved with the management of the behavioural aspects of employees’ occupational safety.

Behavioural researchers have begun exploring such factors as safety climate (Zohar, 2000), work design (Parker, Axtell & Turner, 2001), communication (Hofman & Stetzer, 1998), and pay scheme (Kaminski, 2001). Recently there has been a focus on leadership as a vital aspect in the improvement of health and safety of employees. Research has more specifically focused on the effects of transformational leadership on occupational safety (Barling, Loughlin, & Kelloway, 2002; Zohar, 2002). Using restaurant workers, Barling et al. (2002) found that safety-specific transformational leadership were indirectly related to occupational safety. More specifically, the effects of safety-specific leadership on occupational safety were mediated by perceived safety climate, and safety-related incidents. Similarly, in a group of plant employees, Zohar (2002) showed that safety climate mediated the effects of transformational leadership on workplace injuries. While both studies provide evidence of the positive association between transformational leadership and occupational safety and furthermore the possible variables that mediate this relationship, their cross-sectional and non-experimental nature precludes any causal inferences on the relationship between transformational leadership and employees’ safety behaviours. This study represents an attempt to provide an experimental basis that would allow for such causal inferences.

The present study develops and tests the relationship between transformational leadership, safety climate, personal safety orientation and safety infractions through a longitudinal, quasi-experimental design. Using the prior two studies as a foundation for this model, I propose that transformational leadership will be positively related to attitudinal measures of safety (personal safety orientation) and behavioural measures of safety (safety infractions). Furthermore, these effects will be mediated by safety climate.

I tested the proposed model using swim supervisors (focal leaders) from two separate aquatic centres in a suburban community. The two participating aquatic centres are geographically separate community-based centres that provide instructional swimming lessons to the public. Swim instructors at these pools are responsible for delivering various instructional swimming lessons, during which time they are entirely responsible for the safety of the students in their swim class. The students undertaking swim lessons can range in age from toddlers (8-12 months) to young children (7-12 years). Swim supervisors are responsible for ensuring that the group of swim instructors they lead deliver their instructional session in an acceptable and safe manner.

The research sample and context used is unique and important to the study of occupational safety for two reasons. First and most important is the focus on young workers. Although there has been an increasing trend of young workers entering the labour force (Loughlin & Barling, 1999), our knowledge of workplace safety behaviours pertaining to young workers remains limited (Frone, 1998; Loughlin & Barling, 2001, Loughlin & Frone, in press). Exploring the effects of leadership among young adults and its effect on young workers safety behaviours is an important step in redressing this issue. Using an experimental design allows us to assess whether transformational leadership can be taught to young adults, and in the process extend the literature and our understanding of the development of transformational leadership.

Method

Participants.

In the present study, 9 supervisors from each centre (14 women, 4 men) and 81 instructors (67% women) in total from both pools (43 in the intervention group, 38 in the control group) volunteered to participate in the study. There were six different scales used to measure the study variables. More specifically, swim instructors rated the safety-specific trans-
formational leadership of their supervisors, rated the safety climate (perceived level of group safety) of the pool, and self-reported on their level of safety compliance (degree to which one complied to organizational safety measures), safety knowledge (knowledge of organization’s safety regulations), safety initiative (degree to which one took initiative with regards to safety) and safety motivation (level of motivation towards safe behaviour). Safety compliance, safety knowledge, safety initiative and safety motivation comprised the larger scale of ‘personal safety orientation’.

Procedure:
The data were gathered over a 12-week instructional period. During weeks 2-3, both the control group (pool A) and experimental group (pool B) were given questionnaires. Also during these weeks, a trained judge attended each instructional session and rated the safety behaviour of the instructors. These ratings served as a behavioural index of safety. During week 5, the supervisors from the experimental group were given an 8-hour intervention of transformational leadership training. A manipulation check was administered the following week to assess the knowledge acquired from the training. This helped assess whether any changes in the outcome variables were attributable to the experimental intervention. In week 9, the experimental group received a booster session in transformational leadership. Finally, over weeks 11-12, post-test measures of attitudinal and behavioural measures were administered for both the intervention and control groups.

Results
The effect of the intervention on transformational leadership, safety climate, personal safety orientation and safety behaviours were tested using analyses of variance with the post-test subordinate ratings as the dependent measures, the pre-test as covariates and pool membership as the independent variable. The findings revealed that transformational leadership training had a significant effect on post-test measures of safety-specific transformational leadership, safety climate, and personal safety orientation. Testing our model, the findings revealed that safety climate partially mediated the effects of transformational leadership on personal safety orientation. Our findings also revealed that personal safety orientation fully mediated the effects of transformational leadership on behavioural measures of safety.

Consistent with past research on safety-specific transformational leadership (Barling, et al, 2002), we found a positive association between safety-specific transformational leadership and occupational safety. However, this study extends this literature by providing the first experimental investigation of the causal link between these constructs. From a human resources standpoint, the present study’s findings, together with similar results from recent studies (Barling et al., 2002; Hoffman & Stetzer, 1998; Zohar, 2002) support the importance of leadership development with respect to safety, and stimulates the thinking and practice of safety practitioners when implementing behavioural-based interventions towards the management of safety.

In conclusion, our study [a] shows that training supervisors in transformational leadership can serve as a practical intervention for improving occupational safety, [b] extend the possible benefits of transformational leadership, [c] enhances our understanding of the causes of occupational safety, and [d] adds to the growing literature on young workers. If these results are replicated, safety practitioners might find transformational leadership to be one viable behavioural solution to the management of occupational injuries.

References
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performance work systems and workplace safety. Manuscript in preparation. Queen’s School of Business, Kingston, ON.


Developing an OHP Curriculum that Addresses the Needs of Employers and Labor Unions in the USA

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Introduction
The first step in developing a training program is a needs assessment (Goldstein & Ford, 2002). The American Psychological Association and the U.S. National Institute of Occupational Safety and Health conducted a needs assessment in 1992 by surveying 1,100 professionals in human resources management, public health, and other experts in disciplines related to Occupational Health Psychology (OHP) concerning the need for OHP training in the USA (Schneider, Camera, Tetrnick, & Stenberg, 1999). Results supported the need for OHP training but did not provide a specific training model. Since that time, OHP has emerged as a discipline in the USA, and a small, but increasing number of training programs have been developed, mostly as minors within psychology doctoral training programs.

Working from the definition of OHP provided by Sauter, Hurrell, Fox, Tetrnick, and Barling (1999) and Sauter and Hurrell (1999), the OHP program at the University of Houston was designed to provide a primary prevention orientation to health and safety in the workplace (Tetrnick & Quick, 2002). The multidisciplinary curriculum covers topics in industrial and organizational psychology, health psychology, management, safety engineering, law, and epidemiology. The program is similar to early post-doctoral training (Schneider et al., 1999), and its flexibility meets the needs of doctoral students in various areas of study, i.e., industrial and organizational, social/health, or clinical psychology. Initial program development was based on extant theory and research and existing OHP curricula. However, we recognized a need for input from other stakeholders, e.g., local employers and unions, as suggested by the literature on curriculum development (see for example, Ellen & Pilling, 2002). By involving these stakeholders in our curriculum development, we sought to (1) insure a curriculum that addresses OHP-related issues and concerns in the workplace and (2) develop partnerships with local organizations that will provide field placements for students and OHP-related research opportunities. In this paper, we describe the results of a survey to obtain initial input from these stakeholders.

Method
Participants
Dunn & Bradstreet provided a random sample of 1000 employers in the greater Houston metropolitan area. Three duplicate organizations were identified; thus, 997 surveys were mailed along with a cover letter requesting employers’ assistance in reviewing the OHP minor curriculum. Surveys were sent to the Human Resources (HR) manager of each employer. If an HR manager was not available an alternative title was selected from available contact persons. Non-respondents were contacted in a second mailing approximately one month later, and three weeks later a reminder postcard was mailed to those who still had not responded. A total of 141 completed surveys were returned for an effective response rate of only 16% (134 surveys were returned as undeliverable).

The AFL-CIO’s local council provided a list of presidents of unions in the area. 80 union surveys were mailed to local presidents; two were returned as undeliverable. The same schedule of follow-up mailings and reminders was followed as that used for employers. Unions returned 27 completed surveys, yielding an effective response rate of 35%. Survey
The employer survey asked respondents to indicate the extent of the organization’s concern with various OHP-related issues using a 6-point Likert-type scale ranging from 0 = not at all to 5 = to a very great extent. The issues were derived from the authors’ reading of the OHP literature and knowledge of HR practices in the USA (see Table 1). Some issues were not entirely independent, e.g., safety, accidents, and workplace injuries. However, we presented these issues separately to capture potentially different perspectives among the respondents. Union surveys asked respondents to indicate the union’s concern for their members with respect to these same issues.

Respondents also were asked if their organization provided certain OHP-related services (i.e., preventive health training, safety training, social skills training, stress management training, child care assistance, educational assistance, elder care assistance, employment involvement programs, flexible work schedules, health risk assessment, job training programs, medical insurance, and wellness/fitness programs). The list of services was not exhaustive, nor were all services independent; however, our goal was to get an overview of the OHP-services provided by respondents. Employers were asked if each service was (1) not provided, (2) provided for some but not all employees, and (3) provided for all employees. Unions were asked if their local, national, or international provided the service for their members (0 = no, 1 = yes).

Another purpose of the survey was to identify the structures organizations used to address OHP-related functions. Specifically, we wanted to know if the organization had a specific individual or department that was responsible for six OHP-related functions (i.e., physical health of employees, psychological health of employees, health-related benefits, environmental quality, safety, and security). If the respondent answered in the affirmative, the employer was asked to indicate the name of that department or the department in which the individual worked. In addition, employers were asked if they had selected professionals on staff (i.e., benefits/compensation personnel,
industrial hygienist, occupational doctor, occupational health psychologist, occupational nurse, organizational
development specialist, safety engineer, and other). The unions were not asked these questions.

Lastly, union and employer respondents were asked if their organization would be interested in collaborating
with the university with respect to various OHP projects (see Table 3 for specific areas for collaboration). Respondents
indicated their interest collaborating with the university using a response scale of 0 = not at all to 5 = a very great extent

Results and Discussion

The response rate from employers was disappointing. Part of this resulted from a large number of
surveys returned as undeliverable. We hoped that addressing the packet to a specific individual using their title would
increase the response rate; however, this may have been ineffective. A number of notes and phone calls indicated that
the individual to whom the packet was addressed was no longer with the organization and there was reluctance to
forward the survey to that individual's successor. Indeed, three months after the initial mailing, we are still receiving
packets that were not delivered. Therefore, we expect that the response rate of those who actually received the survey
may be somewhat higher than the overall rate reported above. On the other hand, unions were much more responsive
than employers. One explanation for this finding may be that union locals have not been inundated with university
surveys regarding curriculum development. Employers are much more likely to have been involved with the university
in various partnerships, collaborative efforts, and developmental activities (e.g., Ellen & Pilling, 2002), and, thus,
employers may be reluctant to answer yet another survey. Regardless, if our aim is to train OHP scientists and
practitioners who will protect the health and safety of workers, we must consider the concerns of both labor and
management.

Table 1 displays the means and standard deviations of the respondents’ concerns for various OHP-related issues. Both unions and employers rated safety and accidents at the highest level of concern. If issues are rank
ordered based on the mean response, safety, accidents, physical well-being, and education and training were among the
top ten concerns for both the employers and unions. Granted, unions were more concerned about some issues than the
employers and vice versa. However, all of the issues included in the survey appear to be of some concern to employers
or unions, which suggests that the OHP curriculum should incorporate literature and learning experiences relevant to
understanding these issues. Participants were given the opportunity to list additional OHP-related issues that concerned
them. A few employers listed additional topics, but these could conceivably be incorporated in the OHP-related issues
we included on the survey. For example, 'personal problems of some employees' was listed as an additional concern.
In all likelihood, this topic could be subsumed under work-life balance, family issues, alcohol/drug abuse, etc.

Table 1

<table>
<thead>
<tr>
<th>OHP-Related Issue</th>
<th>Employers</th>
<th></th>
<th></th>
<th>Union Locals</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Accidents</td>
<td>136</td>
<td>3.95</td>
<td>1.35</td>
<td>27</td>
<td>4.11</td>
<td>1.37</td>
</tr>
<tr>
<td>Aging Workforce</td>
<td>137</td>
<td>2.09</td>
<td>1.31</td>
<td>26</td>
<td>3.19</td>
<td>1.23</td>
</tr>
<tr>
<td>Alcohol/Drug Abuse</td>
<td>135</td>
<td>2.70</td>
<td>1.62</td>
<td>26</td>
<td>3.00</td>
<td>1.36</td>
</tr>
<tr>
<td>Attendance</td>
<td>136</td>
<td>3.39</td>
<td>1.42</td>
<td>26</td>
<td>2.92</td>
<td>1.47</td>
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<tr>
<td>Burnout</td>
<td>137</td>
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<td>1.39</td>
<td>27</td>
<td>3.00</td>
<td>1.52</td>
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<tr>
<td>Career Planning</td>
<td>131</td>
<td>2.53</td>
<td>1.28</td>
<td>26</td>
<td>2.15</td>
<td>1.78</td>
</tr>
<tr>
<td>Changing Technology</td>
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<td>3.29</td>
<td>1.26</td>
<td>27</td>
<td>3.52</td>
<td>1.45</td>
</tr>
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<td>Disability Compensation</td>
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<td>2.52</td>
<td>1.38</td>
<td>25</td>
<td>3.28</td>
<td>1.49</td>
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<tr>
<td>Diversity</td>
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<td>2.73</td>
<td>1.46</td>
<td>27</td>
<td>2.56</td>
<td>1.47</td>
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<tr>
<td>Education &amp; Training</td>
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<td>3.76</td>
<td>1.13</td>
<td>26</td>
<td>3.81</td>
<td>1.36</td>
</tr>
<tr>
<td>Employee Commitment</td>
<td>136</td>
<td>3.76</td>
<td>1.10</td>
<td>27</td>
<td>3.78</td>
<td>1.05</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>132</td>
<td>2.42</td>
<td>1.20</td>
<td>26</td>
<td>3.50</td>
<td>1.30</td>
</tr>
<tr>
<td>Family Issues</td>
<td>135</td>
<td>2.73</td>
<td>1.10</td>
<td>26</td>
<td>3.54</td>
<td>1.42</td>
</tr>
<tr>
<td>Globalization</td>
<td>133</td>
<td>1.74</td>
<td>1.36</td>
<td>27</td>
<td>2.81</td>
<td>1.44</td>
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<tr>
<td>Job Security</td>
<td>134</td>
<td>2.52</td>
<td>1.40</td>
<td>27</td>
<td>3.93</td>
<td>1.24</td>
</tr>
<tr>
<td>Occupational Stress</td>
<td>136</td>
<td>3.04</td>
<td>1.18</td>
<td>27</td>
<td>3.70</td>
<td>1.03</td>
</tr>
<tr>
<td>Physical Well-Being</td>
<td>136</td>
<td>3.59</td>
<td>1.03</td>
<td>27</td>
<td>3.96</td>
<td>0.94</td>
</tr>
</tbody>
</table>

Table 1 continued on next page
In response to questions regarding OHP-related services, both unions and employers indicated that they were providing some form of safety training, educational assistance, job training programs, and medical insurance. Somewhat surprising, only 46% of the employers and 56% of the unions indicated that preventive health training was provided and only 42% of employers and 48% of the unions indicated that stress management training was provided. Only 45% of the employers and 42% of the unions indicated that wellness/fitness programs were provided and only 37% of the employers and 32% of the unions provided health risk assessments. Perhaps not surprising, but disappointing, only 17% of the employers and 8% of the unions indicated that they provided child care assistance and 13% of the employers and 15% of the unions indicated that they provided elder care assistance. Given the low employer response rate, we should be cautious in generalizing these results to all employers, even to those in the Houston metropolitan area. Results did, however, indicate that several employers already have OHP-related programs in place and this may benefit future research and internship/practicum opportunities.

Another purpose of the study was to find out where OHP-related functions are housed within organizations, since it has been our impression that there are inconsistencies across organizations. Ninety-three percent of the employers indicated that they had an individual or department specifically responsible for safety. Of those who indicated a designated person or department, 27% indicated that this function was housed in a Safety Department; 15% reported that it was the responsibility of HR; 11% said it was the responsibility of Health, Environment and Safety Department; 11% reported safety was the responsibility of department managers/supervisors. Eighty-eight percent of the respondents indicated that a person or department responsible for health-related benefits, with 67% indicating that this function resided in the HR/Personnel department. Eighty-one percent of the respondents indicated that they had a person or department responsible for security. Of these respondents, 21% indicated this function was housed in the Safety/Emergency Management department; 17% reported it being housed in HR/Personnel, and 12% reported that it was housed in Administration, and 12% indicated that the function was the responsibility of the police (campus and city). Fifty-eight percent of the respondents indicated that they had a person or department specifically responsible for environmental quality. Thirty-seven percent indicated this function was housed in the Health, Environment & Safety Department with 18% reporting the function was housed in the Safety Department. Only one respondent indicated that this responsibility was housed in HR. Only 44% of the respondents indicated that their organizations had a person or department specifically responsible for the physical health of the employees with 40% reporting that this function was housed in HR. Similarly, only 36% reported having a specific person or department responsible for the psychological health of employees with 45% reporting this function to be housed in HR. Interestingly, these results suggest that health (physical, psychological, and health-related benefits) tends to be a function within HR while safety, environmental, and security are housed in other departments. If OHP is concerned with health and safety, then these results suggest that students need to be knowledgeable about the functions of various departments. Further, organizations as well as OHP practitioners need to develop communications and working relations among these separate departments to insure the health and safety of employees.

The employers were asked if they had a variety of professionals on staff. Eighty-three percent indicated they had benefits/compensation personnel but only 40% indicated they had a safety engineer and only 17% reported having an industrial hygienist. Nineteen percent indicated they had an occupational nurse, 16% an occupational doctor and 11% reported having an occupational health psychologist. Seventeen percent indicated they had an organizational development specialist. As would be expected, the benefits personnel and organizational development specialists were primarily in HR, the industrial hygienists were housed in Health, Safety and Environmental departments and the occupational doctors and nurses were housed in medical departments.
Interestingly, occupational health psychologists were reported to work in Employee Assistance Programs or Psychological Services. This suggests that employers may confuse clinical psychologists, who focus on tertiary interventions (i.e., treatment of individuals who have exhibited symptoms), with occupational health psychologists who focus on primary interventions (i.e., the prevention of disease and injuries). If that is the case, this indicates we need to educate employers and others about the distinctions between occupational health psychology and clinical psychology.

Lastly, employers and unions were asked if they would be interested in collaborating with individuals from the university. This was an attempt to establish a dialogue with organizations to facilitate faculty and graduate student field research, identify potential internship/practicum sites, and identify ways in which the university could provide a benefit to these local organizations. As shown in Table 2, the union locals expressed more interest in collaborating across the various activities than did the employers. For both the employers and unions, greatest interest was in receiving summaries of OHP research. Unions were also interested in collaborating with faculty, but expressed less interest in providing internships for graduate students. Consistent with their expressed interest in receiving summaries of OHP research, the unions also expressed a strong interest in having workshops for their leaders and members. Overall, employers generally were not very interested in any active collaboration (see Table 2). Only 34% of the employers provided the name of a contact person in the organization while 78% of the unions identified a contact person.

<table>
<thead>
<tr>
<th>Interest in Collaboration</th>
<th>Employers</th>
<th>Union Locals</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Faculty on OHP-Related Projects</td>
<td>127</td>
<td>23</td>
</tr>
<tr>
<td>With Graduate Students (Internships)</td>
<td>129</td>
<td>23</td>
</tr>
<tr>
<td>Having Workshops for Leaders</td>
<td>128</td>
<td>25</td>
</tr>
<tr>
<td>Having Workshops for Employees</td>
<td>128</td>
<td>26</td>
</tr>
<tr>
<td>Participating in OHP Research</td>
<td>128</td>
<td>24</td>
</tr>
<tr>
<td>Conducting OHP Surveys</td>
<td>129</td>
<td>24</td>
</tr>
<tr>
<td>Receiving Summaries of OHP Research</td>
<td>131</td>
<td>26</td>
</tr>
</tbody>
</table>

On the one hand, employers’ lack of interest in collaborating with the university was disappointing, especially in light of the low response rate, which may signal even less interest. The question is whether the lack of enthusiasm reflects disinterest in occupational health psychology or a lack of interest in working with the university. The latter might be the result of over-solicitation or lack of follow-through on the part of the university in the past, or a lack of trust of university faculty based on negative experiences with consulting contacts. On the other hand, the fact that many employers did not respond to the survey combined with the fact that those who did respond had little interest in collaboration, may be a reflection that employers are reluctant to admit that they are not addressing OHP-related issues. Regardless, of the reasons for the relatively unenthusiastic responses from employers, these findings signal that we need to work toward building partnerships within the local community. Perhaps one way to start is through an educational campaign as to what OHP is and how OHP can benefit employers. This could be done in conjunction with providing summaries of OHP research in the form a newsletter or a web-site that is accessible to all local organizations, a form of collaboration that was of interest to both unions and employers. On a more positive note, unions appear to be eager to collaborate with OHP professionals, and we should take advantage of this expressed interest to develop working relationships with unions that will promote and protect workers’ health and safety.

References


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Introduction

Workplace stress is recognised as a costly burden to both individual and industry. In response to this, a nation-wide strategy has been implemented in the UK which aims to reduce absence due to work-related over the next decade. The UK’s Health & Safety Executive (HSE) is at the forefront of this initiative. The HSE has commissioned a review study to identify the best available evidence on the way certain stressors and interventions affect individuals at work. This paper describes the methodology that was developed to undertake this review. It discusses the research aims and objectives, the general methodological approach taken, and the detailed stages of this method. It is argued that the systematic approach taken in this research offers a framework for similar reviews of evidence in other areas of applied psychology.

The research was commissioned by the UK HSE to identify and review the best available evidence on the ways in which specific stressors affect individuals at work. These stressors were:

- Poorly designed/managed workload
- Poorly designed/managed work scheduling
- Poorly designed/managed work design
- Poorly designed/managed physical environment
- Poorly designed/managed other forms of demand
- Lack of skill discretion
- Lack of decision authority
- Lack of other forms of control
- Lack of appropriate support
- Poorly designed/managed procedures for eliminating damaging conflict at individual/team level (bullying/harassment).

The aim was to answer four specific questions in relation to these stressors:

- Question A: What proportions of the population are exposed to harmful levels of each of the nine stressors?
- Question B: What are the effects of the nine stressors on health, well-being and organisational performance?
- Question C: What are the mechanisms through which the nine stressors have effects on health, well-being and organisational performance?
- Question D: What organisational activities reduce the levels of each of the nine stressors and what are the subsequent effects of this on health, well-being and organisational performance?

These aims can be summarised as a matrix, as in Table 1. In essence the task was to find the best available evidence for each of the cells. Given the complexity and scope of the review, the methodology had to be explicit, systematic and objective. This would ensure that the work was conducted in a way that was as free from bias as possible. It would also ensure that any other persons wishing to review this same literature would be able to repeat the process and draw the same, or broadly similar, conclusions.
Table 1: Nine work stressors by four review questions

<table>
<thead>
<tr>
<th>Nine stressors</th>
<th>Four review questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) What proportions of the population are exposed to harmful levels of each of the nine stressors?</td>
<td>(B) What are the effects of the nine stressors on health, well-being and organisational performance?</td>
</tr>
<tr>
<td>(C) What are the mechanisms through which stressors have effects on health, well-being and organisational performance?</td>
<td>(D) What organisational activities reduce the levels of each of the nine stressors and what are the subsequent effects on health, well-being and organisational performance?</td>
</tr>
<tr>
<td>1) Poorly designed/managed workload</td>
<td></td>
</tr>
<tr>
<td>2) Poorly designed/managed work scheduling</td>
<td></td>
</tr>
<tr>
<td>3) Poorly designed/managed work design</td>
<td></td>
</tr>
<tr>
<td>4) Poorly designed/managed physical environmen</td>
<td></td>
</tr>
<tr>
<td>5) Poorly designed/managed other forms of demand</td>
<td></td>
</tr>
<tr>
<td>6) Lack of skill discretion</td>
<td></td>
</tr>
<tr>
<td>7) Lack of decision authority</td>
<td></td>
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<tr>
<td>8) Lack of other forms of control</td>
<td></td>
</tr>
<tr>
<td>9) Lack of appropriate support</td>
<td></td>
</tr>
<tr>
<td>10) Poorly designed/managed procedures for eliminating damaging conflict at individual/team level (bullying/harassment)</td>
<td></td>
</tr>
</tbody>
</table>
The Evidence-Based Approach

The general approach taken is what is currently described as an evidence-based approach, which is most dominant in medicine and allied health disciplines. Where possible, within the time and resource constraints, this research follows the approach and format of such reviews (Clarke & Oxman, 2002).

An evidence based approach is characterised by the use of systematic and explicit review process to rate the strength of scientific evidence in relation to specific research questions. One difficult aspect of taking this approach is that often the available evidence about any question is small in quantity, of poor quality, or inconsistent. This issue can to some extent be captured by the following statement taken from a medical context:

"What are we to do when the irresistible force of the need to offer [clinical] advice meets with the immovable object of flawed evidence? All we can do is our best: Give the advice, but alert the advisees to the flaws in the evidence on which it is based'.


Therefore, the review also sought to alert readers to the extent and nature of the strengths and weaknesses in the evidence in relation to individual studies and the field more broadly.

Expert Advisers

To assist in the development of the methodology and interpretation of the findings, a panel of experts was consulted throughout the project. In recruiting expert advisors, we chose individuals who have particular expertise and experience in relevant fields and whose own work clearly indicates a critical approach to research, evidence and methodological issues. The panel consisted of the following people:

- Ronny Lardner (The Keil Centre)
- Associate Professor Sharon Parker (Australian Graduate School of Management, University of Sydney/University of New South Wales)
- Dr Kathy Parke (University of Oxford)
- Professor Roy Payne (Institute of Work Psychology, University of Sheffield)
- Dr Shirley Reynolds (University of East Anglia)
- Professor Peter Warr (Institute of Work Psychology, University of Sheffield)

The main role of the expert advisor panel was to assist in identifying the relevant literature, developing the criteria for judging study quality, checking the interpretations of study results, commenting on the final report structure, and reading and commenting on the draft final report.

Detailed Methodology

The methodology involved four main stages, each building on the previous one. Each stage involved a number of activities, for which various supporting materials and databases were developed. As indicated earlier, the expert advisers were consulted at each stage. The four stages were:

- identification of the literature for review
- sifting the literature against relevance criteria
- reviewing the relevant literature for evidence
- analysing the review results

Identification of the literature

Because of the vast number of articles on stress, it is almost impossible to conduct a keyword search on electronic databases without generating many thousands of articles, the majority of which would be redundant to the specific review questions of this research. Given the timescale and budget for the research and the requirement to focus on the best available evidence, a more parsimonious route to identification of relevant literature was therefore used.

The expert panel was asked to identify what was considered to be the best evidence to include in the review. The experts had partly been chosen on the basis of knowledge of the literature relating to the stressors. They therefore acted as an authoritative source of information about relevant articles in relation to each of the four review questions. This was then supported through keyword searches of electronic data bases for more recent years to ensure the review was fully up to date, and was further supplemented by writing to researchers who are active in the relevant areas to seek their advice on any further sources. Through the use of these multiple methods, the risk of omitting any key studies would be minimised.

A fully searchable database was designed to record references and their progress through the review process. This made it possible to search for each new reference on the database before entering it, ensuring that only one copy of each
recommended paper was retrieved. The software automatically provided each paper with a unique identifying number. A total of 373 papers, books and reports were identified and entered into the database.

Sifting the literature against relevancy and quality criteria
This stage of the method involved making an initial assessment of the relevance and quality of each paper, book or report. It identified which data would go on to be thoroughly reviewed for the next stage of the project. The sift criteria were developed through consultation with the expert advisors and from drawing on existing accepted standards about what constitutes evidence in relation to the specified objectives for the research.

The first set of criteria concerned the relevancy of each article. In order for any article to be included in the review it had to provide evidence relating to at least one of the stressors and at least one of the review questions.

The second set of criteria concerned the quality of each article. The stated aim of the research was to identify the best available evidence. The quality criteria had to be relatively complex to take into account the variety of research types. The key criteria included:

- empirical studies relevant for review questions B, C and D had to be a randomised controlled trial, a full field experiment, a quasi-experimental design or a longitudinal study. These designs were included as they allow inferences to be made about causality. In addition, the sample had to be either a randomly drawn representative sample of the general population, or a full population, or a random or stratified random sample drawn from a specific population (e.g., an organization). These samples were included as they allowed inferences to be made about the generalisability of the findings.

- empirical studies relevant for review question A had to be based on a representative sample of the UK general population with a sample size greater than 667. This sample size allows a 99% confidence interval of .1 of a standard error around the population mean. Cross-sectional designs could be included for review question A.

- meta-analyses or literature reviews had to give clear accounts of their method (e.g., search methods, inclusion criteria, meta-analysis methods).

These criteria were written down to form paper-based sift proformas which were piloted on a small number of papers and amended accordingly. In total, 68 articles went on to be fully reviewed after the sifting process, with a further 34 identified as suitable for future review.

Reviewing the literature for evidence
Review criteria were developed to extract the detailed findings from each article that were relevant to the review. The criteria were developed through consultation with the expert advisors and by drawing on accepted standards about what constitutes evidence in relation to the specific review questions.

Different review proformas were developed for empirical studies and meta-analyses/literature reviews. The proforma for empirical papers asked reviewers to extract the following details from each paper:

- Sampling: sample origin, sampling procedure, checks on representativeness, checks on response bias, sample size, response rate
- Measures: description of stressor and outcome measures, their validity, reliability and time of measurement
- Design: rationale for the design and any specific design features
- Analysis: analysis method, control variables, subject-to-variable ratio
- Results: main findings, effect sizes, statistical probability
- Research source: who commissioned and conducted the research

The proforma for meta-analyses and literature reviews asked reviewers to extract the following details from each paper:

- Literature identification: sources of literature, search criteria, number of papers identified, inclusion criteria, sample size (papers and participants)
- Analysis: corrections and checks conducted, moderators
- Results: number of samples/participants, correlation coefficient, confidence intervals or significance
- Research source: who commissioned and conducted the research

The results of each review were recorded on two Excel databases developed for the purpose; one for meta-analyses and one for empirical studies. This facilitated the sorting of papers by various fields. Results relevant to each of the stressor/question cell could then be extracted, in turn, for analysis.
The review team were trained in the use of the review criteria to ensure consistency amongst the reviewers. Three practice reviews were completed by the review team and the inter-rater reliability showed a high level of agreement. Any areas of disagreement were discussed within the team and resolved prior to the reviews being completed.

**Analysing the review results**
Once reviews were complete, information was drawn from the database to describe the evidence available for each of the stressor areas in relation to each of the review questions, and each cell was described individually.

Adjustments were made to the original matrix table as some papers were concerned with stressors which did not map precisely onto the nine specified by the HSE. Proactive and reactive support (as defined by the HSE) were rarely distinguished from each other in the literature, but instead the research was concerned with support generally. Therefore, these two stressors were grouped together to form a general (lack of) support stressor. In order to be as inclusive as possible, two additional categories were added for ‘other forms of demand’ and ‘other forms of control’. These categories captured any stressors that were relevant for the review but did not quite match the definition of stressors provided by the HSE.

**Conclusions**
This paper has described in detail the methodology developed to identify and review existing evidence concerning the effects of specific stressors. Although the methodology was developed as a means of achieving a systematic and unbiased review, it should be recognised that the processes and proformas are a valuable output of the project in their own right. The stages that were followed and the proformas that were developed for sifting papers and for extracting detailed review information provide flexible tools that can be used to guide future research assessment and evaluation.

**References**

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Perceived stress and control among women and men at different organisational levels

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Introduction

Stress at work is increasingly recognised as a serious health hazard, and the costs of occupational stress are substantial. The growing concerns about job stress have stimulated efforts to understand the different sources of stress at work and its consequences (Harris, 1995; Spielberger & Reheiser, 1995). Many studies have been conducted in this area, and job stress research is promoting a rich debate concerning theory, constructs and their relationships (Harris, 1995; Jones & Kinnin, 2001). Although there is a lack of agreement about how to define stress in the literature, many contemporary studies to understand stress are based on Lazarus and Folkman’s (1984) transactional perspective. They describe stress as a process where strain occurs when the demands in the environment are perceived to exceed the resources of the person. Different investigators focus on one or another component of the process, and in many studies the sources of stress are considered to be the core element. In an overview by Cooper, Dewe and O’Driscoll (2001) several environmental sources are mentioned: intrinsic job characteristics, organisational roles, work relationships, career development, organisational factors and home-work interface.

Despite the fact that female participation in the workforce has grown in recent years and women account for nearly 50% of the labour force in Sweden (Bäckman & Edling, 2001) as well as in other Western societies (Vinnicombe & Sturges, 1995) studies on stress have largely been restricted to male populations, as pointed out by several authors (Hall, 1989; Lundberg, 1998; Skues & Kirkby, 1995; Swanson, Piotrowski, Keita & Becker, 1997). In addition, Long and Cox (2000) argue that women are often viewed from the standpoint of deficiency, as much of the research on occupational health is based on male standards.

The studies that have included women show that they experience a greater amount of work-related stress than men and jobs dominated by women have lower status, are less well paid, require a lower level of qualification, the opportunities for personal and career development are limited, are more monotonous than occupations dominated by men (Alexanderson & Östlin, 2001; Lundberg & Gonäs, 1998). Women also are confronted with additional stressors such as conflicts between job and family responsibilities, greater workload, sex role attitudes and sexual harassment (Brannon, 1999; Davidson & Fielden, 1999; Marshall, 1997; Skues & Kirkby 1995; Swanson, et al., 1997). As a result, women experience more physical, behavioural and emotional symptoms of distress (Alexanderson & Östlin, 2001; Bildt, 2001; Davidson & Fielden, 1999; Piltch, Walch, Mangione, & Jennings, 1994; Swanson et al., 1997).

Studies of gender differences in workplace stress are often performed in organisations where women are employed in different roles than men, which makes comparisons difficult (Guppy & Rick, 1996). In addition, Spielberger and Reheiser (1995) argue that in studies where gender differences are found, the results may be due to the fact that the women and men in the studies were found in different types of jobs and at different levels in the organisations. Men are over-represented in managerial positions and women in lower positions with little influence and control (Alexanderson & Östlin, 2001; Jick & Mitz, 1985; Vinnicombe & Sturges, 1995). The ability to maintain control and influence over one’s work situation has also been found to be closely related to type of job and organisational level. Heaney (1993) found that in the same type of job women and men perceived control to the same extent, and Hall (1989) reported the highest level of control among white-collar men and the lowest level among blue-collar women. Colwill (1993) argues that in many countries women tend to be in positions where they lack power and control, which in turn fosters a feeling of learned helplessness. Colwill (1995) addressed the problem of separating the variables of sex and status in research that in many countries women tend to be in positions where they lack power and control, which in turn fosters a feeling of learned helplessness.

The aim of this study was to investigate perceived stress at work from a gender perspective. By studying an organisation where men and women are doing the same type of job and are working in both high and low levels in the organisation, the purpose was to study gender and power differences in perceived stress and control. It was hypothesised that there are no differences in perceived stress between men and women when performing the same type of job and positioned at the same level in the organisation. It was also hypothesised that women and men at the same organisational level perceive control to the same extent.

Method

Participants

Questionnaires were distributed to 422 persons, both women and men, employed at different organisational levels (both managers and non-managers) at the sales department in a large Swedish telecom company. All employees at the managerial level were included here (45 women and 67 men), as were 310 randomly selected employees at a non-managerial level (155 women and 155 men). A total of 281 of the questionnaires were completed, yielding a response rate of 66%. The average age of the participants was 43 years (SD = 9.1) and 37% had university education. Most respondents were
married or cohabitants (82%) and nearly all (94%) were working full time. They had been working in the company for on average 15 years (SD = 12.2).

**Measures**

**Demographic characteristics.** The questionnaire included items about demographic characteristics such as, gender, age, marital status and length of employment and education. **Power** was measured in terms of occupational level (1 = managerial position, 0 = non-managerial position). Three questionnaire items concerning control at work (Dallner, Gamberale, Olsson & Örelius, 1999) were also used as indicators of power, the respondents being asked how often (1 = very seldom to 4 = very often) they were able to make decisions that were important to their work, to carry out their work in their own way, and to influence changes in the work (α = .81).

**Stressors.** Items describing sources of stress were selected from Dallner et al., (1999) and developed through a group interview with employees in the telecom company. As pointed out by Narayanan, Menon and Spector (1999), stressors differ across occupations and are related to the unique situation that is specific to each job. Therefore the group interview was conducted to adjust the questions of the survey to the context of the telecom employees. The six participants in the group consisted of men and women, working at both managerial and non-managerial levels. The items were quantitative overload, home-work conflict, measurement of performance (stressful that one’s performance is continuously measured), insecurity about performance (worried about not performing well enough), stressful relationship with their supervisor, stressful relationship with their colleagues, poor planning, threat of downsizing, inadequate information (inadequate information about changes that affects one’s work), knowledge demands (stressful to keep up with new knowledge) and lack of meaning at work. The participants were asked how often (1 = very seldom to 4 = very often) they were bothered by each stressor.

**Results**

**Initial analysis**

In order to compare the groups of female managers with male managers and female non-managers with male non-managers on demographic data, t-tests and chi-square tests were conducted. The results indicate that at the managerial level the men were educated at university level to a greater extent than the women, $\chi^2 (1, N = 100) = 4.3, p < .05$, and they had been employed in the company for fewer years ($M = 11.0, SD = 10.4$) compared to the women ($M = 16.5, SD = 10.9; t = -2.5, df = 96, p < .01$). Some differences were also found at the non-managerial level. Here the women were working part-time to a greater extent, $\chi^2 (1, N = 179) = 5.0, p < .05$, and were younger ($M = 44.4, SD = 9.8; t = -2.3, df = 175, p < .05$).

Gender differences in perceived stress and control

The hypothesis that there are no differences in perceived stress between men and women performing the same job at the same level was to a large extent supported. The results from t-tests including female and male managers are shown in table 1. Only one significant difference between female and male managers was found. The female managers experienced the relationship to their supervisor as more stressful than male managers did. No other significant differences in perceived stress were found between the female and male managers.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female managers (N = 40)</th>
<th>Male managers (N = 60)</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Quantitative overload</td>
<td>3.18</td>
<td>0.81</td>
<td>3.25</td>
<td>0.60</td>
</tr>
<tr>
<td>Home-work conflict</td>
<td>2.58</td>
<td>0.84</td>
<td>2.63</td>
<td>0.66</td>
</tr>
<tr>
<td>Measurement of performance</td>
<td>1.90</td>
<td>0.63</td>
<td>1.69</td>
<td>0.70</td>
</tr>
<tr>
<td>Insecurity about performance</td>
<td>1.88</td>
<td>0.65</td>
<td>1.75</td>
<td>0.70</td>
</tr>
<tr>
<td>Relationship to supervisor</td>
<td>1.70</td>
<td>0.88</td>
<td>1.37</td>
<td>0.69</td>
</tr>
<tr>
<td>Relationship to colleagues</td>
<td>1.68</td>
<td>0.62</td>
<td>1.55</td>
<td>0.65</td>
</tr>
<tr>
<td>Poor planning</td>
<td>2.65</td>
<td>0.66</td>
<td>2.47</td>
<td>0.85</td>
</tr>
<tr>
<td>Threat of downsizing</td>
<td>1.63</td>
<td>0.67</td>
<td>1.58</td>
<td>0.70</td>
</tr>
<tr>
<td>Inadequate information</td>
<td>2.10</td>
<td>0.81</td>
<td>2.03</td>
<td>0.82</td>
</tr>
<tr>
<td>Knowledge demands</td>
<td>2.10</td>
<td>0.93</td>
<td>1.90</td>
<td>0.71</td>
</tr>
<tr>
<td>Lack of meaning at work</td>
<td>1.53</td>
<td>0.60</td>
<td>1.48</td>
<td>0.57</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.

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Table 2 shows that at non-managerial level only one significant difference between men and women can be found concerning perceived stress. Male non-managers reported greater quantitative overload than female non-managers.

### Table 2 Differences in Perceived Stress between Female and Male Non-managers

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female non-managers</th>
<th>Male non-managers</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 94)</td>
<td>(N = 85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Quantitative overload</td>
<td>2.22</td>
<td>0.91</td>
<td>2.68</td>
<td>0.82</td>
</tr>
<tr>
<td>Home-work conflict</td>
<td>1.95</td>
<td>0.83</td>
<td>2.13</td>
<td>0.84</td>
</tr>
<tr>
<td>Measurement of performance</td>
<td>1.91</td>
<td>0.88</td>
<td>2.00</td>
<td>0.90</td>
</tr>
<tr>
<td>Insecurity about performance</td>
<td>1.83</td>
<td>0.76</td>
<td>1.91</td>
<td>0.88</td>
</tr>
<tr>
<td>Relationship to supervisor</td>
<td>1.45</td>
<td>0.67</td>
<td>1.56</td>
<td>0.78</td>
</tr>
<tr>
<td>Relationship to colleagues</td>
<td>1.45</td>
<td>0.62</td>
<td>1.55</td>
<td>0.70</td>
</tr>
<tr>
<td>Poor planning</td>
<td>2.33</td>
<td>0.98</td>
<td>2.40</td>
<td>0.88</td>
</tr>
<tr>
<td>Threat of downsizing</td>
<td>1.93</td>
<td>0.87</td>
<td>1.78</td>
<td>0.84</td>
</tr>
<tr>
<td>Inadequate information</td>
<td>2.47</td>
<td>0.73</td>
<td>2.52</td>
<td>0.95</td>
</tr>
<tr>
<td>Knowledge demands</td>
<td>2.30</td>
<td>1.02</td>
<td>2.29</td>
<td>0.86</td>
</tr>
<tr>
<td>Lack of meaning at work</td>
<td>1.77</td>
<td>0.77</td>
<td>1.58</td>
<td>0.62</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.

Comparing managers and non-managers, table 3 shows that managers, both men and women, perceived more quantitative overload and home-work conflict than non-managers, and non-managers, on the other hand, perceived more threat of downsizing, inadequate information, knowledge demands and lack of meaning at work.

### Table 3 Differences between Managers and Non-managers concerning Stressors at Work

<table>
<thead>
<tr>
<th>Variable</th>
<th>Non-managers (N = 179)</th>
<th>Managers (N = 100)</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Quantitative overload</td>
<td>2.44</td>
<td>0.89</td>
<td>3.22</td>
<td>0.69</td>
</tr>
<tr>
<td>Home-work conflict</td>
<td>2.03</td>
<td>0.84</td>
<td>2.61</td>
<td>0.74</td>
</tr>
<tr>
<td>Measurement of performance</td>
<td>1.96</td>
<td>0.89</td>
<td>1.78</td>
<td>0.68</td>
</tr>
<tr>
<td>Insecurity about performance</td>
<td>1.87</td>
<td>0.82</td>
<td>1.80</td>
<td>0.68</td>
</tr>
<tr>
<td>Relationship to supervisor</td>
<td>1.50</td>
<td>0.72</td>
<td>1.50</td>
<td>0.78</td>
</tr>
<tr>
<td>Relationship to colleagues</td>
<td>1.50</td>
<td>0.66</td>
<td>1.60</td>
<td>0.64</td>
</tr>
<tr>
<td>Poor planning</td>
<td>2.36</td>
<td>0.93</td>
<td>2.54</td>
<td>0.78</td>
</tr>
<tr>
<td>Threat of downsizing</td>
<td>1.85</td>
<td>0.86</td>
<td>1.60</td>
<td>0.68</td>
</tr>
<tr>
<td>Inadequate information</td>
<td>2.49</td>
<td>0.84</td>
<td>2.06</td>
<td>0.81</td>
</tr>
<tr>
<td>Knowledge demands</td>
<td>2.30</td>
<td>0.94</td>
<td>1.98</td>
<td>0.80</td>
</tr>
<tr>
<td>Lack of meaning at work</td>
<td>1.67</td>
<td>0.71</td>
<td>1.50</td>
<td>0.58</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01. ***p < .001.

The hypothesis that women and men at the same organisational level perceive control to the same extent was supported. Control was equally perceived by female (M = 9.4, SD = 1.9) and male managers (M = 9.9, SD = 1.4; t = -1.4, df = 98, p >.05) as well as by female (M = 9.4, SD = 1.9) and male non-managers (M = 9.9, SD = 1.4; t = -1.4, df = 98, p > 0.5). Instead, differences in perceived control were related to the level in the organisation. Managers, both men and women, perceived control to higher extent (M = 9.7, SD = 1.6) than non-managers (M = 8.4 SD = 2.2; t = 5.0, df = 277, p < 0.1).
Discussion

The present study examined perceived stress at work from a gender perspective. It was hypothesised that there would be no differences in perceived stress between men and women performing the same type of job and positioned at the same level in the organisation. To a large extent the hypothesis was supported and in line with Greenglass (1995) and Spielberger and Reheiser (1995). The results showed only few differences in perceived stress between men and women working at the same level in the organisation. Women managers perceived a stressful relationship to supervisor to a greater extent than male managers, and at non-managerial level the men perceived more quantitative overload than the women did. No other significant gender differences were found. Instead the results clearly show that for men and women, working with the same type of job, it is the level in the organisation rather than gender that is related to perceived stress. Managers, both men and women, perceived more quantitative overload and home-work conflict than non-managers, and non-managers perceived more threat of downsizing, inadequate information, knowledge demands and lack of meaning at work.

The hypothesis that there would be no differences in perceived control between men and women when performing the same type of job and positioned at the same level in the organisation was also confirmed and in line with Hall (1989) and Heaney (1993). Control was equally perceived by female and male managers as well as by female and male non-managers. Instead, differences in perceived control were related to level in the organisation. Managers, both men and women, perceived control to a higher extent than non-managers.

A limitation in the study is that the data is from a Swedish population and may not be entirely generalisable to other countries.

In summary, this study shows that when comparing women and men, doing the same type of job and working at the same level in the organisation, perceiving control to the same extent, only minor differences in perceived stress were found. The results indicate that some of the differences between the sexes in perceived stress that have been found in earlier studies may be due to the fact that working conditions for women and men usually differ to a large extent. As Jick and Mitz (1985) point out, these earlier results, showing gender differences in perceived stress, may mirror the gender-segregated labour market where women and men work in different types of jobs meeting different sources of stress, and that men are over-represented in higher positions in the organisation, rather than differences between women and men. The results of the present study clearly show that for men and women working within the same type of job, it is the level in the organisation rather than gender that is related to perceived control and stress. In order to better understand job stress and its effects on women and men, it is important to take into account the issue of power, in future studies.

References


**Acknowledgement**

The research described in this paper was funded by AFA insurance company in Sweden. We gratefully acknowledge this financial assistance.