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Published in:

Proceedings of the 5th Nordic Conference on Construction Economics and Organisation

2009

[Link to publication](#)

Citation for published version (APA):

Aulin, R., Pemsel, S., & Eliasson, R. (2009). MEASURING PSYCHOSOCIAL WORK ENVIRONMENT IN CONSTRUCTION. In *Proceedings of the 5th Nordic Conference on Construction Economics and Organisation*

Total number of authors:

3

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MEASURING PSYCHOSOCIAL WORK ENVIRONMENT IN CONSTRUCTION

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Aulin, R. Pemsel S and Eliasson R. 2009. Measuring psychosocial work environment in construction. 5th Nordic Conference on Construction, Economic and Organisation, Iceland, 10-12 June 2009. ISBN 978-9979-9483-9-1

ABSTRACT

The study of psychosocial is highly relevant for project-based sector like construction owing to the following justifications: mobility of workers, constant change of workplace, diversity of work performed, physically demanding, high health and safety risk, meeting deadlines, monetary constraints and male-dominated industry. All these factors contribute to the industry having unique and different sets of psychosocial factors affecting the working environment. An important scrutiny is to highlight the psychosocial factors affecting management team and operatives on construction sites. Further analysis into the differences of psychosocial problems encountered by these two cohorts will be probed.

To perform this study, an action programme identified as Utmärkt Bygge (Excellent Construction) was adopted. Utmärkt Bygge was designed with the aim to improve the cooperation and effectiveness for all players in a construction project. The measuring instrument in the programme is Spiken which is in the form of checklists. The authors analysed the impact of psychosocial factors among these two cohorts comprising of 38 site managers and 103 operatives from a large construction company where established questionnaires and structured interviews were used to identify and examine the issues at the workplace.

Overall, the findings indicate that 75% of site managers and 60% of operatives are in agreement that the psychosocial working environment is satisfactory. The work helps to identify the psychosocial problems faced by both the management team and the operatives on construction sites. This in turn provides the company with knowledge on areas of improvements for personnel on construction sites.

1. INTRODUCTION

Since the early sixties, many attempts have been made to gain more insight into the particular relationship between work-related psychosocial risks and employees health by means of theoretical models. This is evident through studies performed among employees whom are reported of being exposed to psychosocial stressors at work, which results in health complications such as traumatic injury, musculoskeletal disorder (MSD), chronic and fatal illnesses, central nervous system disorders, skin disorders, noise-induces hearing loss, family contact disease, burnout, reduces quality of life, sickness absence, decrease motivation and productivity (Salem et al, 2008; Kristensen et al, 2005; Jongel & Kompier, 1997). Previously, these issues confronting the construction industry were silenced on site but now have gained enormous attention to address the causes of psychosocial problems.

Therefore assessment of psychosocial factors and their impact on the health of construction workers is an extremely relevant and topical subject. In a study by Jongel & Kompier (1997), 35% of employees claimed that they would still be working if preventive measures were taken at the early stage. Therefore this study aims to examine the psychosocial problems confronting both the management team and operatives on construction sites. Furthermore the study will also examine if these cohort groups experience the same psychosocial issues at the workplace or differently.

2. STATE-OF-THE-ART REVIEW

2.1 Construction Work Environment

The construction industry is always associated with dirty, dangerous and demanding. The picture painted is always a poor working environment. Therefore it is essential to create a healthy working environment in construction which includes providing a sound physical and psychosocial environment. The physical work environment deals with how the work are performed while the psychosocial work environment focus on the working climate, comfort and factors that affects the work. (Sundström S, 2007).

It is the responsibility of the employer to ensure a systematic work environment and rehabilitating programme exists for workers on site. Preventive, systematic work environment management is conducive to a good work environment from which everyone stands to benefit. The following describes what constitute of a good working environment on a construction site according to the Systematic Work Environment Provisions, AFS 2001: low risk for fall; good working condition of personal protection, low noise and proper lighting, consideration on workload and ergonomic; good in-house climate; proper handling of dangerous chemicals and managing mobbing.

2.2 Psychosocial Work environment

The English Dictionary's definition of psychosocial as pertaining to the influence of social factors on an individual's mind or behaviour and to the interrelation of behavioural and social factors. Psychosocial factors include exposures thought to impact on the well-being and health outcomes of workers (e.g. temporal aspects of employment and the work itself, aspects of work content, work-group, supervision, organisational conditions). Other factors that can be included in an assessment include strain (i.e. workers' psychological and physiological reactions to stressors in terms of anxiety, depression, high blood pressure, heavy smoking, alcohol consumption, etc.), coping strategies and high absenteeism (Tabenelli et al, 2008) and bullying (Niedhammer et al, 2008).

Several theories and models have been developed to explain how psychosocial factors can affect the stress at work and result in varied health outcomes including musculoskeletal disorder (MSD). Principally, the psychosocial models and theories as summarised by Salem et. al. (2008) can be grouped as

- Person-environment theory - Interaction between person and the situation, and how well a person fits into the situation. The model can be viewed at the employees level in terms of employee needs and job suppliers and discussed in terms of *needs-suppliers*. It can also be viewed at the job level in terms of job demands and employees abilities and discussed in terms of *demand-abilities*;

- Transactional model – This model emphasizes the role of cognitive and coping factors of the individual and how they can alter the outcome of exposure to stressors;
- Psychosocial demand/decision latitude model – This widely recognised model by Karasek and Theorell (Karasek & Theorell, 1990) also known as demand/control/model. This model focuses on subject of work related variables, mainly those of psychosocial demand, decision latitude and social support in the predicting stress outcomes; and
- Work compatibility model – It is defined as a latent variable integrating the positive and negative impact characteristic of work related variables in the human-at-work system in the form of a prescribed relationship. Work compatibility allows the assessment of workplace characteristics including both physical and psychosocial factors using a common metric. According to the model work-related variables can exert a positive and a negative effect; the integration of both determines the final outcome.

In summary, an optimal psychosocial environment for workers is characterised by demands that are adapted to an individual's capacities (psychological demands), a satisfactory level of influence (decision latitude), adequate social support from superiors and colleagues, a balance between efforts expended at work and interactions with clients (Salem et. al., 2008).

Among the prominent risk factors having strong influence affecting the psychosocial working environment are: attitude, motivation, stress, working groups, gender perspective, leadership and communication. Attitude is a mental position relative to a way of thinking or being. It relates to a person's predisposition to think, feel or behave in certain defined targets (Arnold et. al, 2004). Each person has different attitude towards things for example attitude towards work organisation or new ideas. In order to work out this attitude, a person needs to identify what thoughts he/she associates with it (beliefs) and how he/she feels about it (physiological emotional or intuitive response). A positive working attitude leads to a better work inputs while a negative attitude leads to the opposite situation.

The driving force for motivation is driven by biological, social and psychological driving characters. Biological driving force example can be hunger or fatigue, while the social driving force deals with team support. Lastly, the psychological driving force focuses on feeling of appreciation, concern and popular. Workers will always thrive to fulfil all the three factors in the hierarchy as they established themselves at workplace (Maslow, 1970). Workers with high psychosocial risk factors such as high workloads, tight deadlines and monotonous work need to be constantly motivated. These risk factors will affect their response to the work and workplace including their relationship with the supervisors or even team members. These risk factors can result in stress-related changes in the body that can make workers more susceptible to insomnia, loss of memory, loss of concentration, high anxiety and pain in the body (HSE, 1999). Recent studies

have shown these symptoms are associated with typical psychosocial factors such as low job control, high job demands and low workers support in various occupational groups (Karasek, 1979).

Team members have a strong influence in the psychosocial work environment. How the group communicate, handle conflict, deal with relationships among members and management team and security reflect the working climate on site (Lenn  r-Axelsson & Thylefors, 2000). Meanwhile, the management team should also be knowledgeable to recognise and manage psychosocial problems at work before it worsens. Effective management team is those who have good human relationship, able to listen to others, manage conflict and control problems. Effective communication is an essential tool for cooperation both within group and with other groups. Forms of communication can be any form whether verbal, orally or even the body language (Lenn  r-Axelsson & Thylefors, 2000).

In construction, there is the additional issue of gender dominated sector. Gender harassment constitutes common workplace stressors that demand serious attention which can lead to adverse psychological consequences as well as impaired work performance (Bergman, 2003). Important variables for health and a good work environment such as control over work, influence, meaningfulness, support and professionalism seems to be negatively influenced by these gender-related personal offences (Bergman 2003; Karasek, 1979). In addition, Vermeulen & Mustard (2000) argue that it is unclear whether the growing body of literature describing the health consequences of psychosocial aspects of the work environment applies equally well to men and women.

2.3 Utm  rkt Bygge Scheme (Constructing Excellence Scheme)

The formation of Utm  rkt Bygge Scheme (UBS) was inspired from the Considerate Constructors Scheme, UK to improve the industry's image. Considerate Constructors Scheme (UK) was formed in 1997. The Scheme is concerned about any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three main categories: the environment, the workforce and the general public. (Considerate Constructors Scheme homepage <http://www.considerateconstructorsscheme.org.uk/>). In summary, the scheme seeks to

- Minimise any negative impact sometimes caused by construction sites to the neighbour, the general public and the environment;
- Eradicate offensive behaviour and language from the construction sites; and
- Recognise and reward the constructor's commitment to raise standards of site management, safety and environment awareness beyond statutory duties.

In Sweden, Byggrådet (Southern Chapter) had taken the efforts to set up the Scheme in 2001 and which was launched in 2004. UBS has the financial support from Boverket, Swedish Construction Industry, Engineering Faculty, Lund University, SABO, Byggcheferna, Byggherreforum, Byggnads, Rådet för Byggkvalitet and BQR. It is available cost free through the www.byggai.se/utmark homepage. UBS provides an ideal framework to demonstrate a project's environmental good practice intentions.

Registered projects are monitored against a Code of Considerate Practices (CCP), designed to encourage best practice beyond statutory requirements. Interested clients and project managers are encouraged to register their projects in UBS which allows the users to have access to CCP. CCP can be assessed through Spiken, an internet-based measurement instrument. The themes for Code of Considerate Practices formed are:

- **Collaboration** – Collaboration emphasis that all participants in project must work towards achieving the project goals. Project goals must fulfil the users requirements and production specifications which can be addressed either orally or written. Furthermore, the collaboration between participants must be formed on respect and understanding of each others role. All depending team must know how communication with each other should transpire, be documented and identify the project critical moment;
- **Pre- planning** – To ensure project success, the planning of the project must be completed before the project starts. Work preparation must be done before and during the project;
- **Project management and site management** – Management should strive to ensure during all the project phases that the right person is doing the right job. Management must also create a good working environment and team work. This can be done by planning a routine on how communication between different trades should be performed. Everyone has its own part to execute and have the possibility to carry it out effectively irrespective of which construction stage they are at;
- **Knowledge management** – Participants in the project are encouraged to function and promote knowledge building through documentation of experiences from the project. A routine for knowledge transfer must be made available. Participants must have access to project rules and regulations together with necessary training if required in order to undertake the project;
- **Considerate** - All activities are to be accomplished with positive consideration to the needs of traders and businesses, site personnel and visitors, and the general public. The idea is to create a positive working climate. Unsuitable and intolerable behaviour must not be accepted at the working site;
- **Respect for the environment** - Be aware of the environmental impact of the site and minimise as far as possible the effects of noise, light and air pollution. Efforts should be made to select and use local resources wherever possible. Attention should be paid to waste management. Reuse and recycle materials where possible;

- **Good working environment** - The project must have a clear working environment policy. Active participation from both the management team and the operative levels are required in order to secure a healthy and safe working environment. All workers concerned must be involved in the planning of the working environment policy and systematic working environment must be visible at worksite; and
- **Good neighbours** - General information regarding the Scheme should be provided for all neighbours affected by the work. Full and regular communication with neighbours, including adjacent residents, traders and businesses, regarding programming and site activities should be maintained from pre-start to completion.

During the construction project, the compliance with the CCP is measured using Spiken and are given a score between 0-900 points against the eight CCP, with each of the eight sections warranting between 0-10 points. A 5 points-score in any of the sections indicates that the project is complying with the Code and is therefore operating beyond standard industry requirements. The average score of a project registered with the Scheme is around 450.

3. RESEARCH PROJECT

3.1 Project description and objectives

The research was performed to answer the following questions:

- How well does the Utmärkt Bygge Scheme measure the psychosocial work environment at construction site?
- Does the management team encounter the same psychosocial issues as the operatives? and
- What are the remedial actions taken to address the psychosocial work environment issues by the employer?

3.2 Research methodology

To address the research questions above, a case study of a single contractor firm (Contractor E) was adopted. The sample will be from the projects undertaken by Contractor E. Contractor E is a well established contractor in the field of construction and civil engineering, with a turnover of more than 30 billion kronor and 12 000 employees (2007) in Sweden and overseas. The company had strived to gain the title for 'Industry's best workplace' among its employees since 2002. Their working policy is that every construction project is considered as a company and the project manager is free to run the company as he/she sees fit. This freedom to manage has proved to be a key success factor in this organisation.

Questionnaires were designed based on the CCP in Utmärkt Bygge. Only six of the eight codes of practice were selected:

- Project management and site management;
- Collaboration;
- Knowledge management;
- Consideration;
- Good work environment; and
- Good neighbours.

The two remaining codes of practice that were discarded are pre-planning and respect for the environment. These two codes of practice have little influence on the psychosocial effect at workplace (Eliasson & Pemsel, 2008). The authors conducted face-to-face surveys using questionnaires together with structured interviews with 141 respondents from Company E. Statistical method was adopted to analyse the results

4. RESEARCH RESULTS

A total of 141 respondents were interviewed throughout south of Skåne of which 103 were operatives and 38 from the management team. Figure 1 & 2 illustrates how these two cohorts evaluated the six CCP.

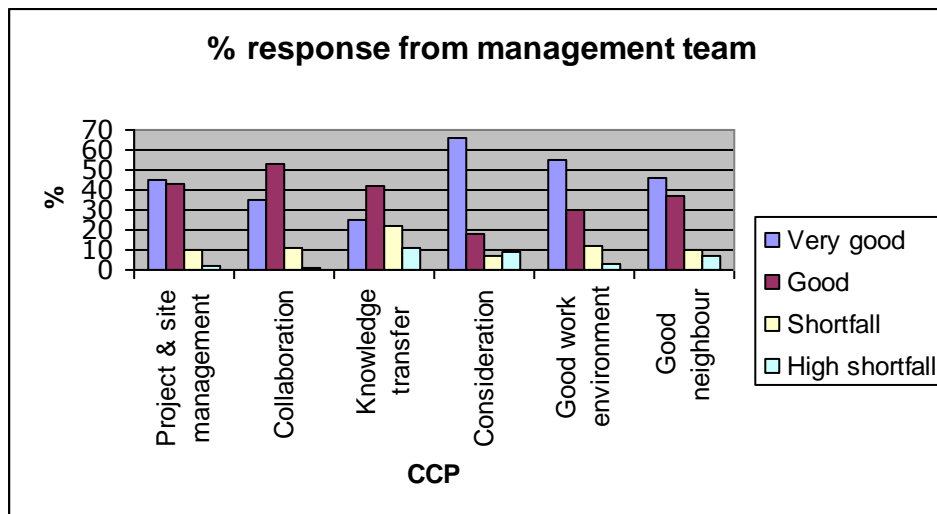


Figure 1 - % response from management team

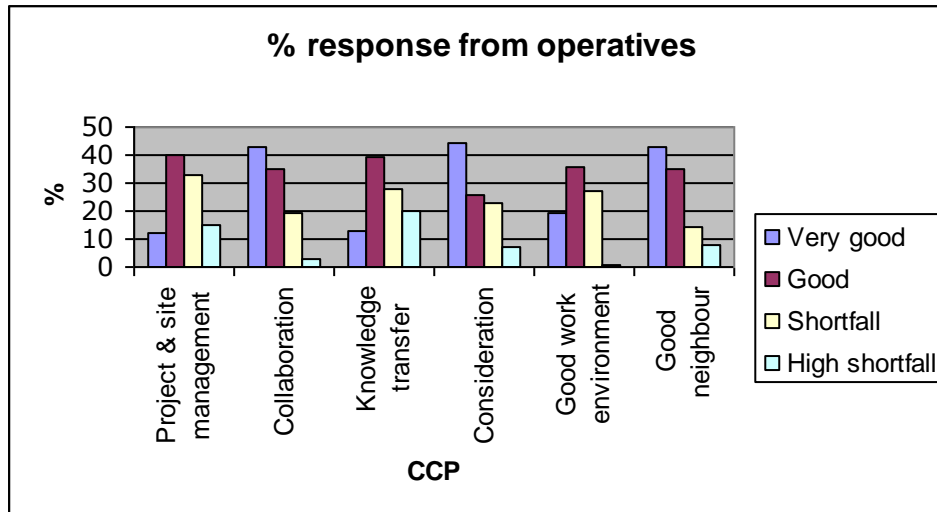


Figure 2 - % response from operatives

The management team is unanimous that they are experiencing a better psychosocial work environment than the operatives who feel that some areas in the CCPs are lacking. Table 1 demonstrates the overall results for both cohorts. The management cohort represents 38 respondents and operatives cohort represent 103 respondents.

Table 1 – Results on how the management team and operatives experience the psychosocial work environment on site

Category	Management cohort (%)	Operative cohort (%)
Project & site management	77	52
Collaboration	75	76
Knowledge management	65	48
Consideration	80	68
Good work environment	77	51
Good neighbour	74	70

Project & site management

Overall the management team scored high (> than 75%) for all the questions. Meanwhile the operatives cohort results show dissatisfactions for the following area:

- Poor work preparation (73%);
- No induction on worksite (56%). Interestingly, on one site, the operatives do not even know who the site manager is even by name;
- Poor communication with site management (55%); and
- Constant miscommunication between trades (52%).

Collaboration

Both parties are in agreement that they are satisfied with the routines of communication between themselves, foreman and site management. The

weakness in collaboration is that there is less respect and understanding of the task performed.

Knowledge management

The management team is satisfied about the practice of knowledge transfer on site. Contrary, operatives cohort felt that there exist weaknesses in the areas of documentation of knowledge transfer (61%) and project experiences to help with future work (51%).

Consideration

Generally, the working climate on site is considered well managed by the management team. Nevertheless, a small number express their dissatisfaction in this CCP. 18 operatives and 6 members from the management team had experienced some form of mobbing either from the leadership or colleagues, and discrimination about race, sexuality or function hinders at work. From the operative group, more than 50% felt that there exist situations where certain behaviour or language is considered offensive or unsuitable. They felt such behaviour is unacceptable at the workplace. Although the percentage is small, the situation must be examined seriously.

Good work environment

Overall, the management team demonstrated satisfaction with the work environment on site. The team follows religiously the project work environment policy and has a plan to handle crisis on site. The focus on providing a good work environment had begun from the planning stage. Meanwhile, the operative cohort score only 48% for this CCP. They did not share the same degree of agreement as the management team had claimed. They felt the site is unorganised. The following are areas of dissatisfaction:

- They have no knowledge of the project work environment policy (52%);
- They have no input on the project work environment policy (53%);
- Weekly planned inspections were not performed according to the schedule (54%); and
- Plan for knowledge transfer regarding work environment issues on site is poor (59%).

Good neighbour

Measures to manage complains from neighbours had been done effectively by the management team. Workers on site have a healthy and active relationship. They are helpful with each other. Kinder treatment towards the public has accentuated.

5. IMPROVEMENT PLAN BY COMPANY E

By highlighting these issues experienced by both the management team and the operatives, Company E had taken a proactive approach to tackle the matter. The company had drawn an action plan to reduce unhealthy working

environment and increase collaboration and better communication with the operatives. They addressed the issues by examining the working environment, working organisation, communication, competence development, wages form and leadership. Leadership and organisation are important to achieve these ambitions. The aim of the action plan is to improve the psychosocial working environment not only among the operatives but also among the management team too. This quality improvement includes changing of attitude, knowledge and habits.

6. CONCLUSIONS

The study has shown positive results reflecting the psychosocial factors affecting both the management team and the operatives using Utmärkt Bygge Scheme. From the total of 141 respondents, 103 are operatives and the rest are management team. Six CCP's were evaluated among these respondents that are project and site management; collaboration; knowledge management; consideration; good working environment, and good neighbours.

Overall, the management team is experiencing a better working environment from the operatives. Contrary, the level of dissatisfaction among the operatives is spread more evenly. For the CCP project and site management, more than 75% of operatives cohort highlight the lack of communication on site, poor work preparation and absence of induction for new workers as issues that need to be addressed. Only half of the operatives are satisfied with their working environment. Operatives felt that they were neither involved in the formulation nor informed of the work environment policy.

Both cohorts agree that better transfer of knowledge management would benefit the project. Sadly, a small number of respondents suffer from mobbing and discrimination at the workplace. This issue is spelled out among other issues highlighted from the study in the action plan to be addressed by the management. Company E had taken measures to work on the issues accentuate from the study with the aim of creating a better working environment for all.

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