
Underlying Causes for Risk Taking Behaviour Among Construction Workers

Underlying
Causes for
Risk Taking
Behaviour

419

Radhlinah Aulin

Division of Construction Management, Lund University, Lund, Sweden

Åsa Ek

Department of Design Science, Lund University, Lund, Sweden

Christofer Edling

Department of Sociology, Lund University, Lund, Sweden

Abstract

Purpose – This paper will examine the unsafe work practices that are plaguing the construction industry. Statistics show that four out of five of all workplace accidents are attributed to unsafe behaviour. Research studies have sought to understand worker self-protection. For example, it is difficult to make predictions of conditions that influenced worker's behaviour to act unsafely or safely in a given work situation. It is evident there is a gap in the literature in this area of research, most notably failing to understand the underlying "why" factors. The aim of the study is to identify and examine the proximate set of contributing factors most likely to have an influence on workers' decisions about participation in unsafe behaviour.

Design/Methodology/Approach – To perform the study, questionnaires were adopted, and 225 construction workers from 9 construction companies participated in the study.

Findings – Results showed that both underlying organisational factors and individual factors could affect the risk aversion among construction workers. The paper also highlights measures to create a safe work environment to minimise unsafe behaviour among construction workers. Results from the study are important to help organisation to systematically plan for a good working environment.

Research limitations – As the results were based only from the questionnaires, a deeper understanding behind the workers' responses was not probed.

Practical implications – Construction companies should work at several organisational levels at the same time. It is necessary to include levels such as individual, group, workplace and management levels, thus taking a system perspective on risk behaviour and safety.

Keywords Risk taking, Unsafe behaviour, Construction workers, Underlying causes, Management, Risk-taking behaviour

All papers within this proceedings volume have been peer reviewed by the scientific committee of the 10th Nordic Conference on Construction Economics and Organization (CEO 2019).

Financier – The Swedish Construction Federation

© Radhlinah Aulin, Åsa Ek, Christofer Edling. Published in the Emerald Reach Proceedings Series. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>



Emerald Reach Proceedings Series
Vol. 2
pp. 419–426
Emerald Publishing Limited
2516-2853
DOI 10.1108/S2516-28532019000002012

1. Introduction

Behavioural approaches to safety management are applied to improve workplace safety by promoting behaviours deemed critical to health, safety and risk control (Cooper, 1994). Statistics show that four out five of all workplace accidents can be attributed to unsafe behaviour. Understanding what makes some people display unsafe behaviours, and others not, is somewhat perplexing. Various social cognition theories and models associated with behavioural change (such as stages of change, risk perception trans-theoretical model, theory of planned behaviour and health belief model) have been formulated to assist in understanding this phenomenon (Armitage and Connor, 2000). When engaging in safe or unsafe behaviour, an individual exists in, and moves between, one of three affective states (Caffray and Schneider, 2000): positive affective state where the individual is experiencing positive feelings, such as relaxation, excitement, pleasure or joy; negative affective state where the individual is experiencing negative feelings and emotions such as emotional pain, anxiety, guilt, frustration, boredom or anger and neutral affective state where the individual is experiencing few or no feelings at the present time. The cognitive motivations or goals to regulate affective states are performed by studying the predictive relationship between latent constructs, such as expectancies or reason and individuals' behavioural decisions (Cooper, 1994). A better understanding of workers' beliefs about attaining desired emotional outcomes requires the examination of both sides of the motivational continuum (constructs that encourage and constructs that discourage participation).

Workers may participate in risk-taking behaviour that might have life-altering consequences. Under normal circumstances, they will have the knowledge and ability to perform the tasks, but he/she may not have the motivation to carry it out. Among the fundamental questions highlighted by Mullen (2004) are: why do workers behave in either a safe way or an unsafe way. Why do workers who are aware of the risks involved in performing the work unsafely, decide to ignore safety procedures? How to account for an individual's selection of one path of action among a set of possible alternatives and the amplitude or vigour of the action once it is initiated? It is against this backdrop that this research project was undertaken. The aim of the paper is to present the identification and examination set of affective motivators most likely to have influence on the decisions of the construction workers about participation in safe behaviour (risk adverse) and unsafe behaviour (risk-taking).

2. Contributing factors for risk-taking behaviour

Research on underlying causes of occupational incidents has been widely studied (see, for example, Tam *et al.*, 2006; Mitropoulos *et al.*, 2005; Haslam *et al.*, 2005; Svedung *et al.*, 2002 and Hollnagel, 2002). These findings show that construction incidents are multi-causal in nature, involving interactions between hazards, management, equipment, workplace, workers and factors unique to construction. Having a rough workplace with disorder can expose occupational workers to unnecessary risks. Old or broken machines are another source of risk. At the same time, it is necessary to realise that construction sites are highly dynamic physical environments. New activities are introduced at a fast pace, which aggravate the detection of potential hazards (Mroszczyk, 2015). This feature makes it important to have operational safety routines for a wide range of construction activities.

Safety behaviour means personal actions taken for self-protection, such as following safety regulations to prevent dangers to self or others, and wearing protective gear (Garavan and O'Brien, 2001; Neal *et al.*, 2000). Studies of safety behaviour provide a basis for generating predictions regarding the levels at which relationships between accidents and behaviour or work environment may be observed (Neal and Griffin, 2006). Additionally,

safety research suggest that there is a link between safety behaviour and accidents concluding that the majority of accidents and injuries are attributable to unsafe work practices or unsafe behaviour rather than unsafe conditions (Lingard and Rowlinson, 1997; Choudhry and Fang, 2008). The underlying causes of unsafe behaviour are organisational factors (i.e. role overload, performance above safety, socialisation influences, safety attitudes and perceived risks), self-image (i.e. macho or tough person syndrome and competence) and avoiding negative consequences (i.e. teasing and harassment from co-workers and fear of losing a good position; Mullen, 2004). In addition, workers lacking experience of visible or immediate harm are more likely to have low capacity to judge the associated risks and to greatly underestimate or even believe that they are immune to the risks of their inherently unsafe behaviour. It is reasoned that workers behave on the basis of their estimate of personal risk and not of general risk and that they rate the risk lower for themselves than their peers, a tendency referred to as “comparative optimism” (Sjöberg, 2000).

Most of these studies have sought to identify individual and organisations characteristics but have not provided a comprehensive understanding of worker self-protection. For example, it is difficult to make predictions of conditions that influenced worker’s behaviour to act unsafely or safely in a given work situation. Non-compliance with safety procedures and refusal to participate in safety activities not only affect the person carrying out the task but can create conditions that may injure someone else (Neal and Griffin, 2006).

3. Methodology

The research project is deductive, i.e. the research is based on existing theory and places it in relation to the observed reality. Pre-agreed terms and explanations form the basis for the conclusions drawn. This is followed by survey design using questionnaires targeting construction workers. Questionnaire was adopted at this stage to capture the level of risk tolerance among construction workers. The anticipated results will lead to further research probing further the weak variables. The questionnaire was divided into three parts: Part A focused on background information of respondents; Part B consisted of five themes, namely, job control, individual, group, work place and project management; Part C comprised an open-ended question requesting the suggestions from the respondents on how they want to improve their working environment. This paper focuses on the five themes from Part B using a five-grade answering scale ranging from totally agree to totally disagree. As time was a constraint, a group-administered questionnaire was adopted. The project managers at the respective construction projects or researchers divided the questionnaires, for example, during the weekly meetings or breakfast meetings to secure as high a response rate as possible. Prior to answering the questionnaire, the purpose of the study was explained to the group of respondents and then respondents were left alone to complete the questionnaire. A total of 16 construction firms in south of Sweden were contacted based on the list from the Swedish Building Federation. Nine companies agreed to participate and in total 225 construction workers filled in the questionnaire.

4. Findings

Part A – Respondent general information

In total, 48 per cent of the respondents were below 40 years of age, while only 6 per cent were above 60 years old. The majority had more than ten years of working experience in the construction industry. Only 19 per cent of the respondents worked for sub-contractors while the rest worked for the main contractors, and as many as 90 per cent were members of the union. Most of the respondents had good health and safety training. A total of 33 per cent

had been directly involved in accidents at the workplace and the majority of them were affected by these incidences.

Part B – Themes on organisational safety levels

The questionnaire contained items reflecting several work place safety levels at the construction work sites, i.e. individual, work group, work place and management levels. Items focusing on job control were also included.

Job control theme

This theme probe on the workers' knowledge and influence to perform their daily work. Results showed that the construction workers had the knowledge required to perform their work. As many as 59 per cent (N = 131) of the respondents claimed that they were involved in workplace decision-making and had the freedom to decide how to perform their tasks. They believed the management expected them to be able make their own decisions and be responsible for the decisions made. The item in the job control theme that received the lowest mean value (2.14 on a 1 to 5 scale) indicated that the majority of respondents (N = 211) experienced that they were expected to work fast. Of the respondents, 53 per cent (N = 73) believed they sometimes or seldom had enough time to perform their work. A majority found the rules and regulations at the workplace to be clear, but sometimes, conflicts of interest could arise. A good safe working climate of 78 per cent (N = 175) of the respondents found their co-workers to be positive and supportive and they felt accepted and safe at their workplace.

Individual theme

This theme covered how individuals perform their daily work, including how management and co-workers influences their daily tasks. A small number of workers (7 per cent, N = 17) broke or ignored safety rules to get the work done faster, while 25 per cent (N = 57) of respondents said that they do so sometimes. Only 14 per cent (N = 32) claimed that they never adopt this approach. An overwhelming 95 per cent of the respondents were aware of the risks involved with the work performed and often had the knowledge to manage the risks in their work. Many respondents (58 per cent, N = 128) seldom took risks when wearing personal protective equipment (PPE). Surprisingly, we asked another question whether PPE makes them work faster and 68 per cent (N = 138) answered yes. 84 per cent (N = 191) of the respondents knew that incidents and near misses should be reported. However, almost 25 per cent (N = 56) believed the reporting could lead to negative consequences. Still, 60 per cent (N = 135) of workers were willing to report incidents and near misses. Many of the respondents believed that co-workers often showed interest in safety issues and that management listened to workers highlighting safety issues.

Co-workers theme

The questionnaire contained items reflecting safety issues at a work group level. Many respondents (36 per cent, N = 83) were always or often attentive to co-workers unsafe behaviour and would sometimes remind each other to work safely. However, during time pressure, many believed the team sometimes took shortcuts. On a positive note, the majority of the respondents (84 per cent, N = 189) did not feel that the team pressured them to ignore safety rules. 57 per cent (N = 128) of respondents revealed that there was seldom any disagreement among co-workers in terms of working environment and safety. The majority

(80 per cent, N = 180) of the respondents believed that they could trust their co-workers, supervisors and project managers.

Work place theme

This theme focuses on organisational culture and implementation of a safe work environment. Respondents believed that management had appropriate safety competence and was often engaged in dialogue regarding safety with workers. Many respondents (65 per cent, N = 146) often found that workplace housekeeping was good, with well-defined safety responsibilities at the work place. However, language barriers leading to misunderstandings sometimes existed. The psychosocial work environment at the workplace was good in the sense that workers were not blamed for mistakes at work (agreed by 68 per cent, N = 137).

Management theme

The questionnaire also contained items reflecting safety issues at the management level. The results showed that respondents believed that management were concerned for workers' welfare and prioritised work safety at the worksite. In contrast, 80 per cent (N = 180) of the respondents also claimed that management wanted them to perform work faster by taking shortcuts to complete the work. Often, clear work instructions were used when performing the work. Many respondents (78 per cent, N = 175) believed that there was open and clear communication between supervisors and workers, and that workers were involved in decisions concerning safety. Management were stern with those who violated the site rules and regulations and strong actions were taken for those who broke the rules especially concerning mobbing and abuse of drugs and alcohol.

5. Analysis and discussions

Job control theme

The construction industry consists of many different jobs, each with its own specific demands and requirements. Examples of job demands in construction include the pressure to do too much work in too little time and working long hours, long commutes, having responsibility for the safety of others at work, engaging in dangerous tasks, the transient nature of the job, and the 'hire and fire' culture (Beswick *et al.*, 2007). Results for this theme indicate that the workers have a high job control in their daily work. This is a positive sign of strong decision latitude where the individuals have potential control over their tasks and their conduct during the working day. This enables the workers to build their identity through work, which gives the necessary context for a meaningful life, and subsequently facilitates the feeling of well-being (Arwedson *et al.*, 2007), in turn affecting important conditions for health and a good work environment. However, workers are constantly having the pressure to perform their job faster, which is likely to have negative effects on workers well-being and safety.

Individual theme

The most important factor influencing unsafe behaviour and accidents was individual characteristics. Safety behaviour is directly affected by sincerity, openness and extroversion (Jin and Lee, 2013). Additionally, it is indirectly affected by stress reactions, safety motivation and safety knowledge. As discussed earlier, there are many studies that identify inappropriate actions (e.g., unsafe acts, improper use or not using the provided PPE and taking shortcuts) as the immediate causes of accidents. Results from this theme indicated strongly that workers were fully aware of the risks involved with the work performed and

often had the knowledge to manage the risks in their work. Another interesting result is time pressure that was claimed to be the contributing factor for risk-taking behaviour on construction projects. This is supported by Mullen (2004) who pointed out that construction workers behave unsafely not because they are not aware of the risks involved but because of the work pressure exerted by supervisors and managers. Therefore, workers take shortcuts to satisfy their bosses and to avoid negative consequences. Such production pressure causes unsafe behaviours by decreasing workers' safety motivation. Therefore, there is a clear relationship between individual characteristics and other distal factors influencing risk-taking behaviour and accident on construction sites.

Co-workers theme

One underlying cause of unsafe behaviour is how socialisation influences the self-image (i.e. macho or tough person syndrome and competence) and relation to co-workers (Mullen, 2004). Social support is very important for frontline workers because they are more likely to be influenced by daily interactions with supervisors and co-workers (Lingard *et al.*, 2012). Social support shapes factors at the group level and that define attitudes about various things among a group of people (Aksorn and Hadikusumo, 2008). In this study, it was evident that there was safe behaviour among the groups and that social support facilitated safety communication that is of key importance for improving safety performance. There was no pressure from co-workers to perform unsafe behaviour or mocking co-workers about individual's safety consciousness. As reported by Aksorn and Hadikusumo (2008), this accepted attitude on safe behaviour embedded within a group allows safety to be managed successfully. Therefore, it is a basis of good safety culture.

Work place theme

Safety culture and safety climate are considered organisational factors that can affect personal safety behaviour (Seo, 2005). The organisational culture enables workers to understand the functioning of the organisation and shapes their behaviour and norms prevalent within the organisation. When organisations put high priority in health and safety, they cultivate a no-blame culture creating a working environment with a high degree of trust. This makes it possible for workers to report incidents or mistakes. Based on the assumption that no system is flawless, a no-blame system represents a structured approach to managing organisational errors. This no-blame system and willingness to report near miss and accidents are evident from the survey on all the investigated projects sites. This approach cultivates a culture where human errors will not result in punishment and instead be treated as an organisational learning tool (Aulin and Linderbäck, 2004).

Management theme

Management commitment plays a significant role in safety performance and reduction of accidents (Teo *et al.*, 2005, Aksorn and Hadikusumo, 2008), and is defined as the extent to which management is perceived to place high priority on safety and communicate and act on safety issues effectively (Neal and Griffin, 2004). However, results from the study revealed that as production pressure increases, managers temporarily prioritize production over safety and thus some safety practices might be ignored to get back on schedule. Therefore, production pressure can have negative effects both on workers' safety knowledge and safety motivation. Only when upper managers are perceived as placing high commitment on safety, will supervisors and workers increase their willingness to participate in daily safety practices. Work instructions and clear communication between supervisors and workers were prioritized on many of the projects studied. Punishment and warning are

possible ways to regulate risk and motivate workers to work safely (Dillon, 2012). The management in all the projects had zero tolerance for any behaviour intended to harm another worker or the organisation. Clearly identified consequences for those who perpetrated such act were well defined and communicated to all.

6. Conclusions

There is a large and diverse literature on interventions and work practices for improving workplace safety, especially in construction. Studies of fatal and nonfatal incidents have shown that pre-existing organisational factors and work practices are often the underlying causes of these incidents. While the event immediately preceding an injury may be caused by human error, the antecedent events are often outside the control of the worker. This study presents the findings of construction workers views, administered through a questionnaire on how they manage safety in their daily work. The motivating factors affecting safe behaviour (risk adverse) in the work environment are: less pressure from co-workers; clear, defined and good dialogue with the management; high commitment from the management towards health and safety for everyone; orderly work place; good housekeeping; being able to influence in making work decisions; and less or no conflict with other workers. On the other hand, apparent factors promoting unsafe behaviour (risk-taking) are: low individual knowledge; unclear goals; undefined rules and instructions; a blame culture when reporting accidents and near-misses and taking risk when putting on PPE. The study also revealed factors that had no direct relation to risk adversity such as making one's own decisions; an attentive and safety concerned management; clear management role; poor equipment and material; and workers' awareness on risks involving their work. These findings will be useful in increasing knowledge about factors that affect and motivate risk-taking behaviour among construction workers. Organisations can use these results to prevent risk-taking behaviour at all levels from individual, co-workers, construction site management and company organisation to take the necessary systematic perspective on risk behaviour and safety in the organisation. The results reflect practices in the Swedish construction industry where the working culture may well be different to other countries and so the results might not be so applicable. The next stage of this research is to perform further investigation into factors promoting unsafe behaviour.

References

- Aksorn, T. and Hadikusumo, B.H.W. (2008), "Critical success factors influencing safety program performance in Thai construction projects", *Safety Science*, Vol. 46 No. 4, pp. 709–727.
- Armitage, C.J. and Connor, M. (2000), "Social cognition models and health behaviour: a structured review", *Psychology and Health*, Vol. 15, pp. 173–189.
- Arwedson I.L., Roos S and Björklund A. (2007), "Constituents of healthy workplaces", *Work*, Vol. 28 pp. 3–11.
- Aulin R. and Linderbäck E. (2004), "Near miss reporting among construction workers", in Aulin R and Ek Å (Ed), *Proc. CIB W099 Achieving Sustainable Construction Health and Safety, Lund, Sweden, 2-3 June 2014*, ISBN: 978-91-7623-005-3, pp. 456–466.
- Beswick, J., Rogers, K., Corbett, E., Binch, S., & Jackson, K. (2007), "An analysis of the prevalence and distribution of stress in the construction industry", (No. RR518), Derbyshire, England: Health and Safety Executive, Health and Safety Laboratory.
- Caffray, C.M. and Schneider, S.L. (2000), "Why do they do it? Affective motivators in adolescents' decision to participate in risk behaviours", *Cognition and Emotion*, Vol. 14 No. 4, pp 543–576.

- Choudhry, R.M. and Fang, D. (2008), "Why operatives engage in unsafe work behaviour: Investigating factors on construction sites", *Safety Science*, Vol. 46, pp. 566–584.
- Cooper, M.L. (1994), "Motivation for alcohol use among adolescents: development and validation of a four-factor model", *Psychological Assessment*, Vol. 6, pp. 117–128.
- Dillon, B.L. (2012), "Workplace violence: Impact, causes and prevention", *Work*, Vol. 42, pp. 15–20.
- Garavan, T.N. and O'Brien, F. (2001), "An investigation into the relationship between safety climate and safety behaviours in Irish organisations", *Irish J. Manage*, Vol. 22 No. 1, pp. 141–170.
- Haslam, R.A., Hide, S. A., Gibb, A. G. F., Gyi, D. E., Pavitt, T., Atkinson, S. and Duff, A. R., (2005), "Contributing factors in construction accidents", *Applied Ergonomics*, Vol. 36, pp. 401–415.
- Hollnagel, E. (2002), "Understanding accidents – from root causes to perform variability", *Proceedings of the IEEE 7th Conference on Human Factors and Power Plants, Scottsdale, AZ, USA*, 19-19 Sept.
- Jin, H.S. and Lee, D.E. (2013), "Developing the path model defining the relationship between construction workers' personal characteristics and safety behaviors", *Journal of the Korea Institute of Building Construction*, Vol. 13 No. 2, pp. 169–180.
- Lingard, H. and Rowlinson, S. (1997), "Behaviour-based safety management in Hong Kong's construction industry", *Journal of Safety Research*, Vol. 28 No. 4, pp. 243–256.
- Lingard, H., Cooke, T. and Blismas, N. (2012), "Do perceptions of supervisors' safety responses mediate the relationship between perceptions of the organizational safety climate and incident rates in the construction supply chain? *Journal of Construction and Engineering Management*, Vol. 138, pp. 234–241.
- Mitropoulos, P., Abdelhamid, T.S. and Howell, G.A. (2005), "Systems model of construction accident causation", *Construction Management and Economics*, Vol. 131 No. 7, pp. 816–825.
- Mroszczyk, J. (2015), "Improving construction safety a team effort", *Professional Safety*, pp. 55–68.
- Mullen, J. (2004), "Investigating factors that influence individual safety behaviour at work", *Journal of Safety Research*, Vol. 35, pp. 275–285.
- Neal, A., Griffin, M.A. and Hart, P.M. (2000), "The impact of organizational climate on safety climate and individual behaviour", *Safety Science*, Vol. 34 No. 1-3, pp. 99–109.
- Neal, A. and Griffin, M. A. (2004), "Safety climate and safety at work", in Frone M.R and Barling J (Eds.), *The psychology of workplace safety* Washington, DC: American Psychological Association, pp. 15–34.
- Neal, A. and Griffin, M.A., (2006), "A study of the lagged relationships among safety climate, safety motivation, safety behavior, and accidents at the individual and group levels", *Journal of Applied Psychology*, Vol. 91 No. 4, pp. 946–953.
- Seo, Dong-Chul. (2005), "An explicative model of unsafe work behaviour", *Safety Science*, Vol. 43, pp. 187–211.
- Sjöberg, L. (2000), "Factors in risk perception", *Risk Analysis*, Vol. 20, pp. 1–11.
- Svedung, I. and Rasmussen, J. (2002), "Graphic representation of accident scenarios: mapping system structure and the causation of accidents", *Safety Science*, Vol. 40, pp. 397–417.
- Tam, C.T.C.M., Tom, T. and Chan, K. K. (2006), "Rough set theory for distilling construction safety measures", *Construction Management and Economics*, Vol. 24 No. 11, pp. 1,199–1,206.
- Teo, E. A., Yng Ling, F. Y., and Yau, Ong, D. S. (2005), "Fostering safe work behaviour in workers at construction sites", *Engineering, Construction And Architectural Management*, Vol. 12 No. 4, pp. 410–422.