

# **Building Risks? Informing the management of O.H & S in the Construction Industry**

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## **Introduction**

There is currently a legislative push in New South Wales to improve safety at work, signalled by the introduction of the Occupational Health and Safety (OHS) Act 2000 and the OHS Regulation 2001. This essay is an introductory literature review designed to inform a research proposal on OHS in the construction industry. A significant component of my work is devoted to delivering WorkCover accredited OHS training to the construction industry.

In this paper I firstly present a brief background to the construction industry I then look at the concepts of hazard, risk and risk perception, and the various cognitive biases that may influence these, including affect, familiarity, voluntariness, culture, gender, and media. I demonstrate how these will effect my research proposal.

As a trainer, I am concerned that OHS training in its current form may not be as effective as it could be. I hope that my research will help to increase understanding of how construction workers perceive safety and thereby improve safety training by making it more relevant. Risk and its control are important themes in occupational health and safety (Holmes and Gilford, 1997: 11), and I explore these in some detail.

## **Background**

The construction industry is a major contributor to the Australian economy (Munro, 2001: 6). It comprises many small enterprises (NSW Government, 1998: 15), with a large percentage of its workers being male, itinerant (Peppercon, in Harris and Volet, 1997) and/or subcontractors (WorkCover, 2001 a: 28). It has inherently many barriers to communication such as noise, workplace layout, temperature, confined spaces, heights, plant, language and cultural differences (WorkCover, 1998: 14). It is a high-

risk industry (Stromm, 2001: 1) with a high incidence of workplace deaths, injury and diseases (WorkCover 2001a: 5) and a poor safety record (Blockley, 1996: 51).

Subcontracting is marked by individualism, defined by Douglas and Wildavsky (82: 90) as individuals sharing common goals, but needing individual success. To achieve this, subcontractors put much energy into creating a flexible negotiated sense of order (Bronstein, 1987: 201).

### **Hazard and Risk**

There are many definitions of hazard and risk. For the purposes of my research, I will use WorkCover NSW's definitions, as these are the ones used by trainers in occupational health and safety:

*Hazard*: anything with the potential to cause harm (WorkCover, 2001b: 137)

*Risk*: the likelihood and consequence of exposure to the hazard (WorkCover, 2001b: 137). Keey also notes that hazards and risks occur within a context, which influences the nature of the risks and the nature of the risk perception (Keey, 1998: 93).

Employers and subcontractors must ensure the health, safety and welfare of people at work (New South Wales Government, 2000: 6-7). They are to achieve this through the application of a risk management approach. This is a legal requirement consisting of four steps: identify hazards, assess the risks of those hazards, develop strategies to control the risks, and monitor the system to allow for continuous improvement (WorkCover, 2001c: chapter 2). Modern legislation is not prescriptive and allows for subjectivity in the risk management process. This is very important because risk cannot be identified objectively or probabilistically, and there are no universally accepted control strategies.

The social context of work shapes the ways that risk is understood, as social meanings of risk in the workplace may differ between different groups (Holmes and Gifford, 1997: 11). Risk is something that might happen – risk is in fact immaterial and invisible and therefore dependent on interpretation. Consequently it is a matter of perspective (Adam and van Loon, 2000: 4) and is constructed (Adam and van Loon, 2000: 2). Decisions and choices must be made without knowing their outcome. The implication is that when one makes that choice, one accepts a gamble that can lead to various outcomes with different probabilities (Kahnemann and Tversky, 1984: 2,

Tversky and Fox, 1995). The essence of risk 'is not that it *is* happening, but that it *might be* happening' (Adam and van Loon, 2000: 2). It has the potential for uncertainty.

### **Risk Perception**

Risks to our health and safety abound in our daily lives. People cope as best they can by making decisions on which risks are important and which can be ignored. Risks considered by some people as acceptable are believed intolerable by others (Covello and Johnson, 1987: viii; Slovic, Fischhoff and Lichtenstein, 1978: 75). It is impossible to live life completely avoiding all risks: one 'might well be paralysed by a lack of feasible alternatives to risky actions' (Heath, 1991: 368). Risk is therefore a part of life, and learning to manage risk is an essential part of adaptation (Bateson, 1991: 353, Slovic, 87: 220). One way people achieve this is to simplify the decision making process by using mental shortcuts, or heuristics (Finucane et al, 2000: 415: Kahnemann et al, 82, in Kasperson et al, 88: 243), to quickly assess a situation. However, these simplifications are subject to biases that create 'distortions and errors' (Kasperson et al, 1988: 243), making risk perception malleable.

Historically, risk perception research has been mainly quantitative, and has focused on answering the question 'How safe is safe enough?' (Fischhoff et al, 1978). Starr (1969 in Fischhoff et al, 1978: 80) looked at historical accident records to assess a society's revealed preferences (Slovic, 1987: 223) in an effort to predict what risk levels will be acceptable to that society. Some cognitive psychologists were concerned with the validity of such an approach, and developed questionnaires based on a psychometric paradigm, to measure people's expressed preferences concerning perceived risks and benefits (see Slovic 2000 for a good collection of this literature). These studies have been criticised for failing to take into account the social environment and cognitive and affective biases that influence most people to imagine that they are less likely than their peers to be affected by risk (Joffe, 1999: 7). That is, these biases make risk perception intensely subjective (Douglas, 1985: 29; Douglas and Wildavsky, 1982: 4; Koesmargono, 1998: 35; Lynn, 1987: 357; Marks, 1990: 22; Slovic, 2000: xxviii; Taig, 1998: 21).

If the world were totally rational, consistent and quantifiable, risks could be logically and objectively ranked, and universal control strategies enacted that would suit everyone. However, this is not the case because ‘individuals perceive risks differently’ (Petcovic, 1987: 117). The implications for risk management are huge, as understanding how and why people perceive risk is vitally important to the success of OHS legislation and training.

Psychometric studies in risk perception consistently reveal a difference of perceptions between lay people and experts (Gough, 1998: 115) and yet even when provided with more facts, the lay people do not readily change their perceptions (Slovic, 1997: 393). Cognitive explanations have difficulty explaining this phenomenon as they do not address why people actually do what they do— why do they continue with risky behaviour such as smoking, fast driving, unsafe sex or dangerous work practices when they have access to contraindicating facts. The inference is that objective data is only one of a number of influences on risk perception.

### *Affect*

Mainstream psychological research on risk perception assumes that people are ‘rational information processors’ (Joffe, 1999: 60) who make mistakes in risk perception because of ‘cognitive illusions’ (Joffe, 1999: 60). However, the affective/emotional side of people underlies beliefs, values and attitudes, and resists change. In fact, some recent research has shown that affective attitudes to behaviours are better predictors of behavioural intentions than cognitive attitudes (Mainsted et al, 1995 in Joffe 1999: 109; Haddock and Zena, 1998 in Joffe, 1999: 109). Attitudes affect motivation (Zegans, 1991: 268-9), moods, and the willingness to take the risks (Williams and Wong Wee Voon, 1999: 9). Research has demonstrated that perceived riskiness increases in proportion with perceived dread, and inverse proportion with the level of voluntariness and perceived benefit (Slovic, 2000: xxxii).

### *Familiarity*

Things that are unfamiliar are more likely to be seen as dangerous (Bronstein, 1987: 202-3). The corollary of this is that the more familiar one is with a risky situation, the more chance that one ignores significant aspects of it. Direct experience of risk can either amplify or attenuate its perception through a feedback mechanism of reflexivity

(Kasperson et al 1988: 241). If one faces the risk everyday with seeming impunity (that is, the risk appears to have a very low probability) the tendency is to become overconfident. Mearns and Finn (1996 in Joffe, 1999: 30) show that 'high levels of familiarity with work tasks play a role in the underestimation of the risks they pose'. Slovic, Fischhoff and Lichtenstein (1976: 46) note that hazards with delayed consequences are easily discounted. This is evident in the construction industry, with hazards that can be hard to detect (Adam and van Loon, 2000) such as dust, noise, vapours and radiation from the sun, which induce illnesses/injuries with symptoms often not obvious for many years.

Overconfidence may also lead to lower perception of risk because individuals who are certain of their decision and rely on their personal competence (Bermudez, 1999: 94) may not be aware of the potential for error (Houghton et al, 2000: 5). Zimolong's (1985 in Joffe, 1999: 30) study of German construction workers found that workers who perceive themselves to be most in control of a task tend to underestimate their risks. As a consequence, when rating risks, a competent person feels they are less vulnerable than others, especially those who may be less competent.

### *Voluntariness*

Traditional psychological research has demonstrated that people are more willing to accept risks from voluntary activities (Fischhoff et al, 1978: 81; Douglas and Wildavsky, 1982: 16). Breivik (1998) claims that this is a natural human condition, and the need for stimulation follows a normal distribution curve. Farley (1991: 372) suggests that risk taking is biologically based and at the core of human creativity, while Zuckerman (1991: 150) believes sensation seeking is genetically determined. People want to take some risks, but they do not want them to be uncontrollable and irrelevant (Breivik, 1998: &). Relevant risks are ones we can control, through our own personal competence. This could be explored in my research – to what extent workers in the construction industry view their own competence as a sufficient measure to control risks.

### *Culture*

Studies from anthropology, cultural theory, history and psychology suggest that people respond to risks firstly with a statement such as: “It won’t happen to me”, phrased by Joffe (1999) as ‘not me, other’. This tends to create a sense of invulnerability to risk. People represent risks in a way that protects them and their group from threat (Joffe, 1999: 10). Joffe’s social representation theory places more emphasis on the role of group affinities in the perception of risk than on individuals processing information in isolation. She explores the ‘meaning made of risks, with its unconscious and symbolic dimensions’ (Joffe, 1999: 13). Carl Jung (1990: 98) uses the term ‘numinosity’ to describe the concept that people perceive symbols personally. Risks are symbols, and they become personally meaningful interpretations of a possibility.

According to Joffe people identify with a group, and through group processes, arrive at common understandings that help define the group. People therefore view risks ‘through a culturally tinged lens’ (Joffe, 1999: 71). Through the social processes of sharing stories and ideas within a group, individuals arrive at ‘common representations of phenomena’ (Joffe, 1999:90). People construct meaning socially rather than solely through individual cognitive processing. Douglas (1985: 37) corroborates: ‘the human’s experience of the environment is mediated by conceptual categories which are fabricated in social intercourse.’ Douglas continues: ‘Culture would seem to be the coding principle by which hazards are recognised.’ (Douglas, 1985: 68). To add some weight to this argument, out of 100 participants from 8 of my OHS courses who answered the course evaluation question ‘Which activities or training methods did you find the most effective in conveying the course content?’, 35 used the words ‘Group discussion’, ‘Group work’, or ‘Working in Groups’. This received by far the greatest number of responses. Note, not one person responded ‘Listening to the lecturer’.

### *Gender*

Zuckerman shows that young males have the highest sensation seeking scores, highest rates of auto accidents and highest levels of testosterone, which is one of the biological correlates of sensation seeking (Zuckerman, 1991: 146-7). Note, the latter

is a correlation rather than a proved causal relation. Slovic (97: 396; 2000: xxviii) stresses that 'Almost every study of risk perception has found that men seem to be less concerned with hazards than are women'. What is less clear is why this is the case.

Results of surveys administered by Slovic (97: 396) showed that white males rated a variety of risks as significantly less threatening than did white females or men and women of other races. Finucane (2000, in Bennett, 2000: 2) reproduced these results and suggests this effect could be caused by individual's perception of their own power. That is, the white males may view their own social power and control as high and this in turn allows them to perceive hazards as less risky. Risk perception is in this way related to systems of power. If I define your risks for you, yet you perceive them subjectively and differently to me, is this not an exercise of my power over you? If hazards and risks are a product of power relationships, risk communication becomes a political process (O'Riordan, 1990: 293).

Kahnemann and Tversky (1984: 16), Covello and Johnson (1987: xi) and Fitchen et al (1987: 50) state that the way one frames or presents the risk information effects the way it is received. It is in this framing stage that the decision maker 'constructs a representation of the risk' (Kahnemann and Tversky, 1992: 46). This critical stage is what sets up the motivation to respond. Understanding this is essential for successful training in OHS, as subtle and not so subtle power relationships define what information is made available and how it is packaged (O'Riordan, 1990: 300). The implications are that a 'banking' (Freire, 1970, in McLean 2000: 243) style of OHS training will not be effective, as students perceive it as one more example of being dominated by a powerful bureaucracy.

Holmes and Gifford (1997) used a qualitative method to study risk perception among employers and employees in the Victorian painting industry. A common theme emerging was that 'both groups shared an understanding of their industry as a hierarchical social structure through which risk was produced' (Holmes and Gifford, 1997: 13). The narratives of risk for both groups centred on the production and control of risks resulting from specific relations of power between and within different levels of the social structure (Holmes and Gifford, 1997: 13). Employers

viewed risks as mainly economic, while employees focused on their tools, substances and type of work. They both identified different risks, and sometimes had competing suggestions as to how to control them. For example, employers controlled financial risks by keeping costs down, while employees interpreted this to mean that cheaper tools and materials compromised their safety. This meant that the employees needed to control their own risks through individual competence, as employers who were meant to provide a safe workplace were not doing so. This created a sense of powerlessness, as trade skills alone were understood to not be enough to control risk on building sites. The findings of this study suggest firstly that OHS strategies that focus purely on individual behaviour change without regard to the social structure 'are unlikely to be successful' (Holmes and Gifford, 1997: 15). Secondly, the narratives suggest that underlying conflict will emerge over strategies that focus solely on technical measures of risk control, as these were viewed as inextricably linked to financial risk by employers which reflected the power struggle (Holmes and Gifford, 1997: 15).

Some questions that relate to training in OHS are: Evidence suggests that relying mainly on legislation is not enough to control risks (Cataido, 1991: 318), so could the cumulative effect of over legislating for risks erode authority and credibility (Stirling, 1999: 1)? What are the implications for the construction industry culture of macho males, who traditionally feel competent, tough, invulnerable, and independent (Hayes, 2002: 637)? To what extent have construction workers learned helplessness as they are repeatedly subjected to particular risks that they 'eventually regard the risk(s) as part of everyday life and reduce efforts to avoid or modify' them (Wilson, 1990: 55-56)? If construction workers gave credibility to all the risks they face, would they feel so vulnerable they would feel powerless? (This may be why they protect themselves by giving low priority to seriously examining risks.)

The answers to the above questions have meaningful implications for training in OHS in the construction industry, where there is currently a legislative attempt to change attitudes of the workplace culture.

## *Media*

The media is perhaps complicit in the above process. In books, television and movies 'we often portray people who take risks as heroes who reap social rewards' (Zegans, 1991: 263). These overt and covert messages can contribute to confusion about risks and risk taking behaviour. For example, during male oriented sports programmes on television there are often advertisements for beer in which men are glorified in doing hard, risky work. This can influence risk construction within similar peer groups. Various studies have demonstrated that the public's perception of risks is often proportional to the amount of exposure given by the media (Shalin, 1981: 186ff; Slovic et al, 1979: 106-107).

Finucane et al (2000: 427) speak of the 'availability bias' affecting risk perception. Availability involves judging the frequency of an event by the ease with which it is imagined or remembered: if people know examples of a particular hazard causing harm, they treat the risk more seriously. It is subjective and influenced by the recency of experiences and its emotional relevance (Slovic et al, 1976: 37). Media can influence this by the risks they portray, and how often and in what way they portray them. However, media influence is mitigated by such things as dread of risk, voluntariness, level of trust in experts and perceived benefits (Slovic, 2000).

## **My Research**

I now explore how the foregoing literature review will help me develop my research topic. As a trainer of OHS in the construction industry I meet with resistance to the legislative push to improve workplace safety. Many common themes regularly appear in my classes with people often responding with such retorts as: "I've been doing this for 20 years, why should I change?", "It costs too much to implement safety", "It takes too long to work safely", and "I look silly in all this safety gear".

Cultural studies suggest that groups construct risk interpretations collectively. To design an effective OHS communication system 'it is first necessary to determine what beliefs and expectations the target people holds about the hazard, and the consequent behavioural intentions' (Green, 1990: 31). The meaning of the risk is collectively constructed by the people in the group rather than the government or

trainer. Risk should be analysed in terms of how it is perceived by the individual in his or her social environment and the options available as understood in that environment (Zegans, 1991: 263).

Finucane et al (2000: 415) suggest people use an affect heuristic to make judgements of risk. According to their research 'people may judge the risks and benefits of hazards by accessing positive and negative feelings that they associate with the hazards (Finucane et al, 2000: 415). They recommend that more research is needed to assess what role affect plays in the perception and judgement of risks.

Koesmargono (1998) used a quantitative format for a PhD research project to identify factors that influenced workers' attitudes to safety on high-rise construction sites in Jakarta, Indonesia, and evaluated their influence on actual safety performance. He found that 'safety performance is primarily affected by individual's attitudes towards safety' (Koesmargono, 1998: 32). Once an individual has an attitude to an object, things related to the object are seen in a selective way. He found that workers' attitudes to safety were affected by age, work experience, level of education, and safety training experience. However, he did not actually explore those attitudes and strongly recommends that 'the construction industry should focus its efforts on a better understanding of workers' attitudes to safety' (Koesmargono, 1998: xx), as 'attitudes will determine their behaviour' (Silber, 1967: 4, in Koesmargono, 1998: 30).

Kasperson et al (1988: 241) urge that understanding risk perception for different cultural groups is an important research need. Joffe's social representation theory stresses the role of group affinities rather than lone information processing of risk perceptions. She suggests this occurs largely in informal everyday ways as dialogue in such places as pubs, homes, buses (Joffe, 1999: 10), and, might I add – workplaces. Joffe suggests that the most appropriate method for studying this is qualitative cultural research using interviews, rather than barrages of hypothetical multiple-choice questions (Joffe, 1999: 70). This could be validated by triangulation with other methods such as participant observation, media study, and recording informal conversations between people, if ethically possible. She sees the need for research to bring together the 'social and subjective elements of human experience' (Joffe, 1999:

71) because risk intervention programs that fail to take this into account 'are doomed to fail' (Joffe, 1999: 71). Holmes and Gifford (1997) lament that little qualitative research has been done to understand the social context of OHS at work. In their research of painters they adopted the narrative tradition of anthropology, where the focus is on the stories that a person tells about his or her life. Bennett advocates this qualitative style of research and describes it thus: 'Welcome to the bold new subjectivism in risk assessment theory' (Bennett, 2000: 1), whose emerging direction is about the perception of risk rather than quantitative measurement of objective phenomena.

### **Conclusion**

In this assignment I have presented a literature review of the field of risk perception and related it to a research proposal that will investigate risk perception in the construction industry. Mainstream psychological psychometric research in risk perception has used surveys eliciting responses to hypothetical questions. This has revealed that risk is not an objective phenomenon that can be observed and measured quantitatively. Risk perception is affected by such things as affect, level of dread of the perceived hazard, voluntariness of undergoing the risk, familiarity with the risk, gender, media and culture. Cultural theories suggest that risk is constructed subjectively within social groups; people make meaning of the risks they face according to group values and norms. My research of risk perception will look at how workers in the construction industry make meaning of risks they face, and explore their attitudes to those risks. This information will be very useful to inform the current legislative push in Australia to enforce a safer workplace.

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