

FIRST AID AND OCCUPATIONAL HEALTH AND SAFETY: THE CASE FOR AN INTEGRATED TRAINING APPROACH

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KEY WORDS

Safety, attitudes, training, first aid, behaviour

Introduction

Theories of social psychology have postulated a causal relationship between attitudes and behaviour (Fishbein and Ajzen 1975, Ajzen 1991). Harvey *et al* (2001) argue that this theoretical connection is likely to apply to occupational health and safety (OHS) behaviours, as it does to other behaviours. There is some empirical research evidence to support this link. For example, Donald and Canter (1994) identified a significant correlation between safety attitudes and accident rates. Attitude theories acknowledge that attitudes can be changed and therefore, it is possible that beliefs about OHS risk and the salience of OHS in one's job can be influenced by organizational interventions, including training. If one accepts that attitudes and behaviour are causally linked, then this attitudinal change could bring about enhanced OHS performance. The study reported in this paper investigated the effectiveness of first aid training in changing the OHS attitudes of operatives working in small construction firms in Australia.

Attitudes and Safety

The general safety literature contains much information about the role that attitudes play in shaping safety behaviour. For example, it is recognised that people's perceptions of risk are more important than objective assessments of probability in influencing risk response behaviours (Hale and Glendon 1987). Attitudes towards risk-taking are also salient. Perceived control over the situation has been related to risk-taking to the extent that a high level of perceived control is associated with acceptance of a higher level of risk (Horswill and McKenna 1999). Attribution theory also suggests attitudinal influences on safety behaviour. For example, the tendency to attribute negative occurrences involving others to internal causes and negative events involving oneself to external or situational causes has been observed in previous risk research (DeJoy 1994). DeJoy (1994) suggests this 'self-other bias' could inhibit safety behaviour. Accidents are statistically rare events and risk taking and risk exposure over time can also lead to a perception that 'it won't happen to me.' Indeed, Weinstein (1980) discovered that a sense of 'unrealistic optimism' about the probability of being involved in an accident increased with experience. Harvey *et al* (2000) suggest that a by-product of this effect is a perception of luck or chance or the belief that accidents 'just happen.' For example, Saari (1988) reports that 40% of foremen in his survey attributed occupational accidents to chance, an attitude that is likely to discourage workers from taking appropriate preventive action. Cooper and Cotton (2000) also suggest that many people may simply accept risk-taking as part of their everyday life at work. Such a fatalistic resignation has been noted in previous studies in the Australian construction industry (Holmes *et al* 1999).

The Importance of Training

Training is an important component of any OHS management programme. There is evidence to suggest that effective training is a feature of companies with exemplary OHS performance (Cohen *et al* 1975) and that training is an aspect of a positive safety culture (Zohar 1980). Cooper and Cotton (2000) comment that the provision of training is not only fundamental to satisfying employees' basic rights to be protected from workplace hazards but is also a statutory requirement in many jurisdictions. Yet recent European research suggests that task and OHS training on construction sites is inadequate (Laukkanen 1999). Furthermore, there is widespread criticism of the failure to evaluate the training that is provided to ensure that it is having the desired effect (Mukherjee *et al* 2000, McQuiston 2000, Vojtecky and Schmitz 1986).

First aid training

Research conducted in the nineteen-seventies and early nineteen-eighties investigated the impact of first aid training on the prevention of occupational injuries. This research identified an association between traditional first aid training and a lower incidence of workplace injuries (Miller and Agnew 1973; McKenna and Hale 1981). The early research also revealed that people trained in first aid expressed a greater willingness to take personal responsibility for safety and a willingness to adopt safe behaviour (McKenna and Hale 1982). This research suggests that first aid training might be used to supplement more traditional OHS training programmes to provide a positive motivational influence. However, these early studies were not undertaken in a construction industry environment. Furthermore, the choice of injury rates, a notoriously problematic indicator, as the principal safety performance measure rendered the results inconclusive. Cooper and Cotton (2000) identify a shift towards the use of "softer" performance measures in evaluations of training programmes. For example, Harvey *et al* (2001) used an attitude survey to determine the impact of training on safety culture in the nuclear power industry.

Small construction firms

The Australian construction industry is characterised by a multitude of small firms and the domestic building sector is predominantly serviced by such firms. Research suggests that small construction firms do not manage OHS risk as effectively as larger businesses in the industry (Holmes 1995) and experience a higher incidence of occupational injury than larger firms (McVittie *et al* 1997). In this context it is unlikely that formal training programmes will be implemented. Indeed, many operatives in this sector would have learned their trades through on-the-job apprenticeships with minimal formal vocational instruction. As a result of this, the 'top-down' method of delivering OHS messages is of limited utility in small firms (Mayhew 1997). Furthermore there is evidence to suggest that OHS messages 'from above' may be rejected at the shop floor (Harvey *et al* 2001). These findings suggest that alternative insertion points for the OHS message may need to be found to reach workers in small firms. Mayhew (1997) recommends the use of 'bottom up' or laterally inserted messages. First aid training may provide one opportunity to insert the OHS preventive message from the 'bottom up.'

Methods

A 24-week experiment was conducted on small domestic housing construction sites in Melbourne, Australia. A purposeful, typical case sampling strategy was used to recruit a sample of 25 participants from 10 different construction industry small businesses operating in this sector. Three participants subsequently dropped out of the study leaving a sample of 22. Participants' OHS-related attitudes were explored during in-depth interviews were conducted at two times during the study. Interviews were conducted at T1, before participants underwent first aid training, and again at T2, following their completion of a first aid training course.

A structured interview theme list was developed to explore participants' OHS attitudes. The interview questions were open-ended and designed to elicit personal anecdotes from participants' workplaces. Weidner *et al* (1998) suggest that employees' 'stories' provide a valuable data source in the evaluation of the effect of a training intervention. A structured approach was suited to the research purpose in that it is useful in ensuring the comparability of data and enabled the identification of similarities and differences between participants' understandings before and after their receipt of first aid training (Maxwell 1996). A coding framework was developed independently by two researchers and the interview data were then analysed to identify the importance of key themes.

Results

The important themes emerging from the interview data at T1 and T2 are presented in Table 1. These themes indicate that participants' attitudes changed in some important respects following their receipt of first aid training.

Theme	Pre-training (T1)	Post training (T2)
OHS risk perception	<ul style="list-style-type: none"> ▪ Immediate effect OHS risks (Falls, power tools, trenches) ▪ Fatal consequences, permanent damage, dread 	<ul style="list-style-type: none"> ▪ Acute effect OHS risks (Falls, power tools, trenches) ▪ Fatal consequences, permanent damage, dread ▪ Infectious diseases
OHS risk attribution	<ul style="list-style-type: none"> ▪ Carelessness or complacency (other workers) ▪ Inexperience (other workers) ▪ Chance (self) 	<ul style="list-style-type: none"> ▪ Carelessness or complacency (other workers and self) ▪ Inexperience (other workers)
Likelihood of injury/illness	<ul style="list-style-type: none"> ▪ Low probability ▪ 'Won't happen to me' 	<ul style="list-style-type: none"> ▪ Medium to high probability ▪ 'Can happen to me'
OHS risk-taking	<ul style="list-style-type: none"> ▪ Accept risk taking to 'get the job done.' ▪ Don't think of consequences 	<ul style="list-style-type: none"> ▪ Unwilling to take certain risks to 'get the job done.' ▪ Consideration of the costs/benefits of risk-taking ▪ Aware of consequences

Table 1 Important themes emerging from interview data

Risk perception

During both T1 and T2 interviews, participants' awareness of OHS risks relevant to their work focused on acute effect injuries. Chronic or delayed effect risks were mentioned much less frequently. In the post-training interviews, one participant expressed this as follows:

"I suppose with heights you are more prone to falling. With dust and things like that, you don't realise it until later on in life so you look at things that happen there and then rather than the long term."

The only change in participants' perception of risks in their workplace following first aid training was the increased awareness of infectious diseases. During the T2 interviews, almost half of the participants identified these illnesses as being relevant to their work. Before first aid training, participants thought of minor injuries such as nicks, cuts, scratches as a cost of doing business and indicated that they would often ignore such wounds. Johnson (1999) identified the importance of first aid training in increasing individuals' awareness of the need to treat minor cuts and abrasions immediately to prevent infections from untreated wounds. However, it appears that other than raising awareness of the risk of infection, first aid training had little impact upon participants' perceptions of workplace OHS risks.

Risk Attribution

Before training, OHS incidents were understood to occur as result of individual factors. The most commonly cited source of OHS risks affecting other workers was their carelessness or complacency. For example one participant said

"You can educate people till the cows come home. Overconfidence causes most of the problems and there is nothing you can do about it...You can put up a handrail and provide someone with a harness, but they have to choose to use the harness and they have to operate within the boundaries of the handrail. If someone decides it is a nuisance, they will take it down."

However, although before training participants tended to believe accidents to others were attributable to a lack of care or complacency about OHS, they did not regard carelessness as being relevant to their personal experience of OHS risk. Almost half of the participants expressed the belief that accidents to themselves were attributable to factors beyond their own control, such as the negligence of others. For example, one participant said "There is always the risk of stepping into a puddle and finding out that someone has been negligent and dropped a power cord in there and there is a fault in the leakage switch." Another commented "Well hopefully I won't but things can happen where it is not your fault either, I mean someone could drop a hammer and it could hit you in the head...there is nothing you can do."

During the T1 interviews, participants also expressed the fatalistic view that their own personal experience of occupational injury or illness was a matter of luck or chance. For example, one participant said "Put it this way, in ten years I've had one injury that has taken me to hospital, so that is not to be I think." Another commented "I think it is hard to say. Its your own fate." During the T2 interviews, participants still largely attributed OHS risks to individual factors, such as complacency or carelessness. However, the perception that they could not control their own personal experience of OHS risk appears to have been reduced. Following first aid training, most of the participants expressed the importance of taking care and concentrating to avoid occupational injury or illness to themselves. At T2, very few participants mentioned fate or the negligence of others as important influences on their personal experience of OHS risk. This indicates an increased recognition by participants that their own behaviour is also important in the prevention of occupational injury and disease.

Likelihood of Injury/Illness

In the T1 interviews, many participants expressed the unrealistically optimistic belief that 'it won't happen to me'. In comparison to others in their workplace, more than a third of participants indicated that others were more likely to suffer from an occupational injury or illness than themselves. For example, one participant expressed this by saying "*You make scaffolds that aren't up to scratch - I would be the only one to walk on them because I know its safe for me but I wouldn't want any one else doing it.*" More than a third of the participants explained their ability to avoid occupational injury or illness in terms of the degree of control they exercised in the work environment. One participant expressed this by saying "*I think if you have got your wits about yourself, you can deal with anything.*" At T1, another group of participants attributed their comparatively low probability of suffering a work-related injury or illness to their experience in their job. One participant expressed this by saying "*I'm probably less likely [to have an accident] because I've been doing it a long time. Not like the young guys running around madly..[they] run into things, fall off the roof and try to carry heavy weights too quickly.*"

At T2, two thirds of participants indicated that they had a medium to high probability of personally suffering a work-related injury or illness. Only a small minority of participants said the chance of them suffering a work-related injury or illness was low. One of these was an office-based site manager while another had just returned to work on 'light duties' having suffered a work-related back injury.

OHS Risk-Taking

At T1, when asked whether they ever knowingly took unnecessary OHS risks at work, every participant in the sample said that they did. When asked what types of risks these were, 12 participants indicated that they were associated with working unsafely at height, for example using unsafe scaffolding, using improvised means of gaining access to height or failing to use a safety harness when required. A further five participants indicated that they occasionally took unnecessary risks using power tools and another four said they sometimes failed to use the correct personal protective equipment. There was a strong acceptance of risk-taking behaviour as 'part of the job.' Only two participants suggested that risks should not be taken or that they were concerned about taking risks. When asked why they took such risks, the most commonly cited response was 'to get the job done,' reflecting a strong production orientation among construction workers.

Following first aid training, participants did not express such a ready acceptance of risk-taking behaviour. In the T2 interviews, only one third of the participants expressed an unreserved willingness to take OHS risks to 'get the job done.' participants suggested that they would take OHS risks but only under certain circumstances. Five participants indicated that they had taken such risks in the past but that they were less likely to do so now. Three participants said they sometimes took risks that they recognised that they should not take. Four participants indicated that they would consider the costs and benefits before taking an OHS risk and base their behaviour on a 'calculated risk,' only taking risks where the benefits outweighed the costs and where they considered the risk to be 'worth it.'

Discussion

These results suggest that first aid training can have a positive effect on construction operatives' attitudes towards OHS. First aid training appears to enhance construction operatives' awareness of the risk of infectious diseases and develop their understanding of the need to treat minor wounds. The first aid

training also appears to change construction operatives' attitudes towards the source of occupational injury and illness, making them more aware of the relevance of their own behaviour in the avoidance of occupational injury or disease. First aid training seems to reduce workers' sense of 'unrealistic optimism' about their likelihood of experiencing a work-related injury or illness and therefore it seems that first aid training could help to overcome the motivational problem that workers' direct personal experience of serious negative OHS consequences is rare. It also seems likely that participants' stronger belief that they could personally suffer an occupational injury or illness, following first aid training, renders them less comfortable about taking unnecessary risks.

This attitudinal change is an essential aspect to any preventive OHS training programme. Goldstein (1993) has observed a low correlation between learning an ability to do something and actual job behaviour. With regard to OHS, this low correlation has been explained by the moderating effect of attitudinal factors (Liddell 1994). Therefore, providing workers with the knowledge, skills and abilities (KSAs) to work safely is insufficient. Most task and OHS training programmes focus on providing these KSAs. However, the results of the present study suggest that first aid training would be a valuable supplement to such training programmes and could enhance their preventive effect.

Similarly, the provision of first aid training on its own is likely to have a limited preventive effect. As the interview data revealed, other than raising awareness of the risk of infectious diseases, the first aid training did not increase participants' understandings of specific OHS risks relevant to their work and it is likely that the extent to which the attitudinal change translates to positive behaviour change will depend upon workers' understandings of OHS risk, knowledge of appropriate risk control behaviours, or their KSAs.

Conclusions

These findings have important implications for the role of first aid training in OHS and task training programmes. Presently, the provision of first aid training is recommended in proportion to the extent of workplace occupational health and safety (OHS) risks. Thus, the greater the risk, the more people trained in first aid are required. The recommended ratio of 'first aiders' to people not trained in first aid ranges from 1:25 to 1:50 depending on the extent of workplace (OHS) risk (Vaaraanen *et al* 1979). The findings of this study suggest that there could be value in providing first aid training to all employees in a workplace, rather than to a limited number of designated 'first aiders.' First aid training could be a useful component of task and OHS training courses and should be viewed as a core competency in the construction trades.

These findings also have important implications for the way that first aid courses may be directed and delivered. First aid training courses should be designed to encourage people to think about OHS risks in their workplace. For example, first aid trainees could be given 'homework' of thinking up three or four commonplace situations they find themselves in at work and asked to imagine emergency situations involving breathing, bleeding, breaks and burns in each of the situations (Cooper 1996). Visual imagery could also be used so that the first aider can relate the training to their own work environment. This is a similar approach to that used in sports psychology in which the athlete is taught to mentally rehearse performance. Alternatively, training could be conducted at the workplace and injury scenarios created by placing the Resusci-Annie at a location on site. First aid trainers could also present information about injuries and illnesses and their treatment in the context of how they could occur in the participants' own workplace. For example, injuries could be related to the OHS risks relevant to participants' work such as discussing wounds occurring while using power tools, burns from bitumen, or occupational asthma arising from exposure to chemicals. This could serve the dual purpose of providing participants with the skills to treat injuries and illnesses and improving their understanding of specific workplace OHS risks.

Limitations and Future Research

The findings of this study provide a good insight into the positive effect of first aid training on OHS attitudes. However, the study was limited by the small sample size which was determined partly by the labour-intensive qualitative research methods adopted. However, the results could be used to devise a questionnaire to quickly and easily elicit individuals' OHS attitudes before and after first aid training. This could enable an assessment to be undertaken on a larger scale. Given a sufficiently large sample size, it would then be possible to generalize the findings.

Also, No attempt was made in this study to consider other factors, such as age, experience or intelligence, that have been found to have an impact upon how receptive workers are to the OHS message (McKenna 1987). These issues could be explored in future work because they may have an implication for training course delivery.

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