

A study of construction site safety culture and implications for safe and responsive workplaces

Herbert C Biggs , Vaughn L Sheahan

Queensland University of Technology, Australia

Donald P Dingsdag

University of Western Sydney, Australia

Address for correspondence: Dr Herbert Biggs, School of Psychology and Counselling, QUT, Beams Rd, Carseldine, Qld 4034, Australia. E-mail: h.biggs@qut.edu.au

The high injury rate within the Australian construction industry necessitates proactive action on the behalf of rehabilitation professionals. Safety Culture is a concept that is gaining traction within this sector as a useful concept to further reduce fatalities, injuries and incidents. 10 focus groups were completed with Australia's largest constructors to investigate this concept of safety culture and to further evaluate the skills, knowledge and abilities required by people who hold influential and key roles. Data interpretation revealed three important personal characteristics that underlie a positive safety culture: safety knowledge, user / interpersonal skills and appropriate attitudes and beliefs. These findings are applied to the rehabilitation process and it is concluded that rehabilitation professionals need to contribute to the development of a positive safety culture by enhancing the workforce's understanding of injury management.

Work in the Australian construction industry is fraught with risk and the potential for serious harm. The industry is consistently placed within the three most hazardous industries to work along with other industries such as mining and transport (National Occupational Health and Safety Commission, 2003). In the 2001-2002 period, construction work killed 39 people and injured 13,250 more. Hence, more effort is required to reduce the injury rate and maximise the value of the rehabilitation and return to work processes.

A concept that has been used by organisations seeking to improve construction site safety is *safety culture*. This concept is used to describe the values, norms, attitudes and beliefs that are held collectively towards safety within an organisation (Cox, Tomas, Cheyne, & Oliver, 1998; Glendon & Stanton, 2000; Williamson, Feyer, Cairns & Biancotti, 1997). It is thought that these values, attitudes, norms and beliefs guide behaviour by indicating to employees what will be rewarded or punished by the organisation. As safety culture is a source of influence in determining safety outcomes, the construct can be a useful tool to manage and further improve safety outcomes in the construction industry.

This paper discusses qualitative research investigating safety culture conducted within the Australian construction industry, and proposes how the same proactive safety culture principles can be applied after an incident to help manage the rehabilitation process.

Methodology

A qualitative approach using focus groups was taken in order to gather information free from many prior assumptions. That is, participants were asked to provide their own opinion on safety management rather than comment on previous findings (for example, through a survey).

Member organisations of the Australian Constructors Association were contacted to participate in the research. Through this contact and via industry word of mouth, ten organisations agreed to participate in focus groups.

The researchers did not request specific staff, but rather asked the company representative (typically the Senior Safety Manager) to invite four to six people whom

they thought were in a position to drive safety culture and attitudes. As can be seen in Table 1, this approach resulted in a range of different staff. All forty nine participants involved in the study were employees of major construction contractors in Australia, with representatives involved from all Australian States and Territories. The low number of national safety managers involved in the focus groups is reflective of the need for the other participants to feel that they could be honest in their discussion of safety and not feel extra pressure to “toe the company line”.

Table 1.1 Position Grouping and number of Participants for Focus Groups

Position	Number of Participants
Senior Management (Inc CEO & GMs)	7
National OH&S Manager	2
State & Regional OH&S Manager	10
Site OH&S Coordinator / Advisor	10
Engineer / Construction Professional	3
Construction Manager	5
Site Manager / superintendent	4
Project Manager	4
Foremen	4
Total	49

The focus group discussion lasted on average one hour and fifteen minutes and was structured around a discussion of safety culture and the attitudes, skills and behaviours required by key staff members to drive a positive safety culture. The focus groups were recorded then transcribed. The transcribed documents were then analysed for key themes.

Results

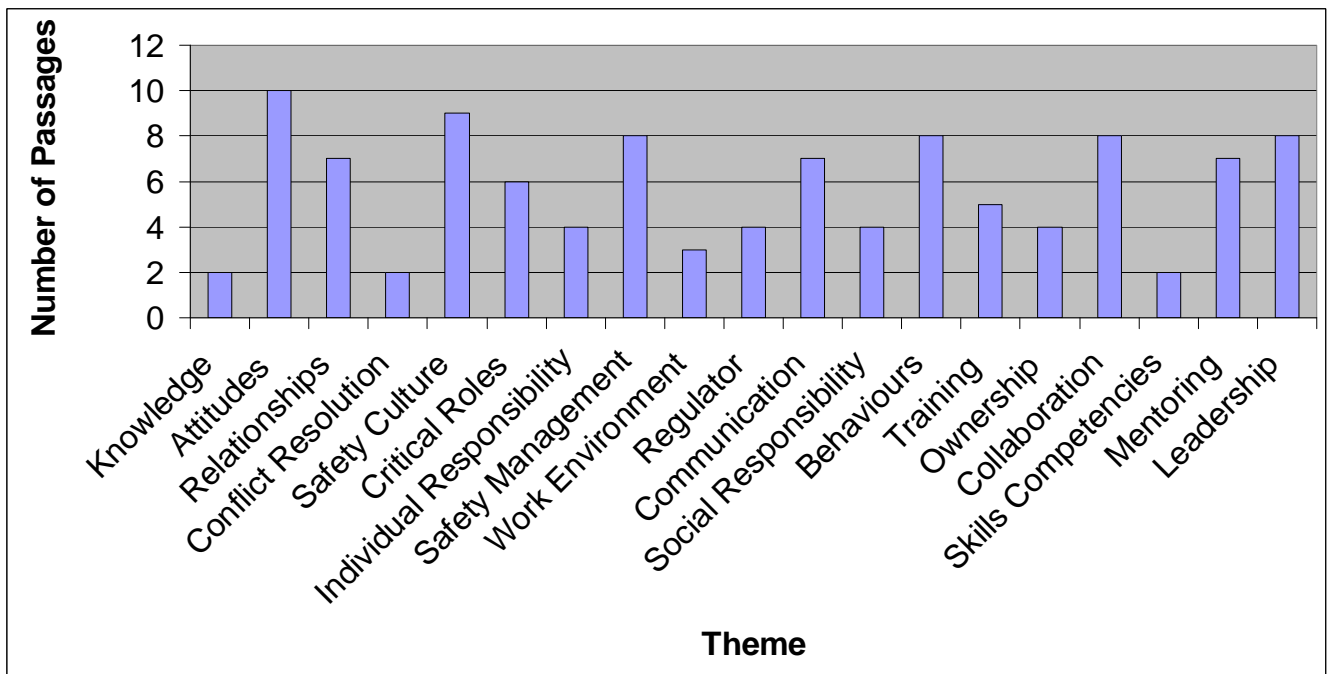
Analysis of the focus group transcripts for major themes revealed a wide range of different skills, attitudes and behaviours required by management to positively influence site culture. The most frequently discussed themes related to:

- safety attitudes,

- safety culture,
- communication,
- safety knowledge
- mentoring, and
- leadership.

See figure 1.1 for the frequency in which key themes were discussed – please note some passages could be coded under several themes.

Figure 1.1 Frequency of Theme Discussion



Data analysis and interpretation of the above themes revealed key three main categories: hard knowledge, user skills and attitude / behaviour drivers (particularly under the attitudes, communication, safety culture, and knowledge themes). Hard knowledge is defined as a quantifiable understanding of safety - what is safe / unsafe behaviour, whereas user competencies relate to the way in which the hard knowledge is enacted and expressed. Hence, there are two important abilities for management: the ability to identify what is safe and unsafe and the ability to effectively transfer to the workforce an understanding of safety and the importance of working safety. The application of these two abilities will be maximised by holding the appropriate attitudes and beliefs.

Hard Knowledge

When participants were asked to identify the skills and knowledge that they believed were paramount in driving site safety, the first response was frequently “common sense.” When asked to elaborate, participants indicated that common sense arose out of a fundamental understanding of what was safe / unsafe. This understanding allows managers to identify and manage risks, appropriately plan work activities, as well as to apply safe work principles to novel situations. For example:

“... all of those forms that we use to administer safety mean nothing to a person without common sense”.

In discussing how it is that a manager may acquire “common sense”, the participants indicated that formal and informal training play a strong role. Informal training included mentoring and observational learning, whereby younger staff are encouraged and given the opportunity to learn from the experience of older staff about site safety, how it can be managed and how various problems may be solved. Formal training involved undertaking specific training courses - addressing various site issues such as the recognition of unsafe scaffolding erection or the requirements for working at heights.

User Skills

As mentioned above, the user skills classification refers to the skills required to effectively undertake the traditional safety management roles and tasks. Key themes classified under this category were communication, attitudes and leadership (the most frequently discussed themes). Fundamentally, these factors appear to relate to the person in the key safety role’s ability to form relationships with staff and gain workforce trust and commitment to, ownership of, and motivation to adhere to site safety management.

Communication

The ability to effectively communicate with employees, though not an easy skill to master, is an obvious requirement for good leadership. When describing effective communication, the focus group participants indicated that flexibility in style was important. That is, the ability to assess whether to speak to the workforce firmly or congenially depending on the person and situation. As well as this, the ability to gain greater audience understanding of the message by listening to and integrating others’ perspectives was seen as vital for a positive safety culture. For example:

I think it’s listening, not only listening but hearing what people are saying to you, also the ability to put yourself into their shoes and see what they’re [saying], what sort of frame of mind they’re coming from.

Avoiding the assignment of blame was also raised as a useful strategy to allow worker engagement with the safety management process. It was argued that blame served to reinforce an “us and them” culture, which meant that the workforce would be less likely to listen to management or engage with management’s message. Communication styles that avoided the assignment of blame were argued to foster better relationships, which in turn resulted in greater worker engagement in safety problem solving.

A communication style that personalised the safety message was another theme that commonly emerged. Underlying this theme was the notion that workers engaged at greater level with the safety message if they understood the consequences of poor safety at the personal level.

...But when you personalise it like that it adds a whole different meaning to it, when you know that there’s individuals involved and how that impacts on them

Leadership

The leadership style employed by those in safety critical roles was an additional factor seen as determining the quality of the site safety culture. Commonly discussed topics included the ability of the manager to: delegate responsibility, provide clear expectations, display work competence, and be highly organised in planning the construction activity.

At a more elementary level, participants believed that a positive safety culture arose out of a leadership style that encouraged relationship building and collaboration. Relationship building was viewed as time spent meeting and engaging with the workforce. Usually this process involved the sharing of non-work related information, so as to foster a greater understanding and awareness of the people on site.

In addition to relationship formation, the role of collaboration was highlighted by participants. Collaboration typically involved asking for workforce input in planning decisions and problem solving, both in regards to safety and in terms of actual construction work. It was argued that a collaborative approach would result in a greater sense of ownership over the work, which would in turn improve the likelihood that the worker would follow the methods agreed upon in the problem solving process. The approach would also foster mutual trust. Hence, a person with management responsibilities who spent time meeting with the workforce and encouraging worker participation in decision making should encourage the development of a positive safety culture.

Attitudes

Beliefs, values and attitudes play a strong role in determining behaviour. We are unlikely to act in ways that are incongruent with our attitudes / beliefs, but when we

do, we react by altering our future behaviour or by changing or modifying our beliefs, values and attitudes (Santrock, 2003). Hence, it is vital to identify and engender those beliefs, values and attitudes that influence safety behaviour.

Participants within the focus groups and interviews spoke at length about positive and negative attitudes within the industry. Fundamentally, it appears that positive values and beliefs are driven by knowledge and experience of safety and these values are then converted to attitudes by a perception of risk. Finally, attitudes then guide behaviour and influence workplace safety behaviour.

The key values and beliefs appear to relate to an understanding of the personal impact of poor worksite safety. A person with a genuine understanding of the reasons behind safety, and who also values the health and wellbeing of workmates or subordinates is likely to develop an attitude that safety is important. This in turn will increase the likelihood that he/she will behave in a manner that is consistent with good safety.

Discussion

The focus group data has provided a much needed understanding of the dynamics of close quarter and dangerous working environments which routinely injure many thousands annually. Rehabilitation professionals are also routinely involved in both the immediate rehabilitation processes of the injured workers and management of a return to work. The development of a constructive disability management plan for injured workers in this sector has been problematic for a number of reasons.

Firstly, there is a strong tendency to under-report accidents and near misses and to deal “in house” with construed minor but potentially major health outcomes. This has an end effect of missed opportunities for early intervention and gives an injury, initially trivialised in macho culture, the potential to develop some intractability.

Secondly, the industry is characterised by an itinerant workforce with the majority of the work undertaken by contractors and sub-contractors who work under the direction of a principal contractor. Projects are very much time limited and movement from completed project to new commencements can blur lines of responsibility and accountabilities for personal injury and rehabilitation programs. Lines of responsibility for workers health and safety vary also between the Australian States and Territories and there are often less than effective communication processes between the regulatory authorities and workers compensation authorities. The combination of such factors very often finds injured workers in transient timeout without knowledge of, or access to, effective rehabilitation processes.

Thirdly, there has been a traditional tendency in the industry to accept the risk of accident and injury and build this into the project cost structure. For example Anderson (1997) reports that 8.5% of the tender price is routinely allocated in the UK to construction projects for the total costs of accidents whilst the rate in the US is 6.5% (The Business Roundtable, 1995). This total cost of accident can be categorised as being either direct or indirect with costs being those associated with injury treatment, rehabilitation and compensation, and indirect costs as those borne by the

contractors e.g. reduced productivity, delay costs, clean-up costs, supervision costs etc. It has been estimated that the proportion of indirect costs to direct costs can be in the order of 11:1 (Movement for Innovation, 2003) or higher (e.g. 14.2:1; Smallwood, 2000). This extraordinary statistic places the direct cost of primary care, rehabilitation and compensation of an injured worker as generating an additional 11-14 times expenditure in indirect costs. It would seem fair comment that rather than simply following the traditional cost plus approach to cover the costs of accidents, only 7-9% of which actually goes to the injured workers' needs, the industry could well concentrate on developing effective strategies to reduce accidents as the economic benefits of such an approach are self evident.

What can rehabilitation practitioners contribute to this environment? The thematic data from the Industry Focus Groups indicated three broad areas of endeavour in hard knowledge, user skills, and attitude / behaviour drivers. As evidence mounts that such themes are positive drivers of safety culture, rehabilitation practitioners need to engage with the industry in gaining a personal understanding of the construction working environment. This could include such strategies for example as undergoing site induction training, attending tool box talks, and forming working partnerships with principal contractor safety teams. There is also a real need to engage in dialogue with contracting teams and principal contractors to proactively identify workplace opportunities for early intervention and graduated return to work. Rehabilitation practitioners, particularly rehabilitation counsellors who are traditionally strong in workplace engagement (Biggs, 1999), are also in a position to assess, coordinate and train workplace resources in disability management techniques from their occupational health and safety base. Finally, construction workers in general are typically unaware of the full range of services and supports that are available following an accident. Making that knowledge freely available, via the principal contractors and other contractors, and encouraging an effective process of early intervention would be a welcome rehabilitation knowledge initiative to complement the current effort to improve accident rates via safety culture changes in the industry.

References

- Anderson, J (1997). The problems with construction. *The Safety and Health Practitioner*, May, 29-30.
- Biggs, H. C. (1999). An amendment to the rehabilitation skills inventory. *Australian Journal of Rehabilitation Counselling*, 5(1), 32-42.
- Cox, S, Tomas, J M, Cheyne, A, & Oliver, A (1998) Safety Culture: the prediction of commitment to safety in the manufacturing industry. *British Journal of Management*, 9, 3-11.
- Glendon, A I, & Stanton, N A (2000) Perspectives on safety culture. *Safety Science*, 34, 193-214.
- Movement for Innovation (M41) (2003). A commitment to people "Our biggest

asset”.[Http://www.rethinkingconstruction.org/rc/publications/reports/rfp_report.pdf](http://www.rethinkingconstruction.org/rc/publications/reports/rfp_report.pdf)

National Occupational Health and Safety Commission, (2003). *Compendium of Workers' Compensation Statistics Australia, 2001- 2002*. Commonwealth of Australia.

Smallwood, J. J. (2000). A study of the relationship between occupational health and safety, labour productivity and quality in the South African construction industry. Unpublished PhD thesis. University of Port Elizabeth, Port Elizabeth, South Africa.

The Business Roundtable (1995). *Improving Construction Safety Performance Report A-3*. New York: The Business Roundtable

Williamson, A M, Feyer, A, Cairns, D, & Biancotti, D (1997) The development of a measure of safety climate: the role of safety perceptions and attitudes. *Safety Science*, **25**(1-3), 15-27.