



Queensland University of Technology
Brisbane Australia

This is the author's version of a work that was submitted/accepted for publication in the following source:

Biggs, Herbert C., Williamson, Amy, & Davey, Tamzyn M. (2012) The role of education and awareness in workplace alcohol and drug use in the Australian construction industry : proposed program of research and preliminary results. *Vulnerable Groups and Inclusion*, 3.

This file was downloaded from: <http://eprints.qut.edu.au/49912/>

© Copyright 2012 The Authors

Notice: *Changes introduced as a result of publishing processes such as copy-editing and formatting may not be reflected in this document. For a definitive version of this work, please refer to the published source:*

<http://dx.doi.org/10.3402/vgi.v3i0.17284>

WORKING LIFE STRESS, REHABILITATION COUNSELLING AND INCLUSION

The role of education and awareness in workplace alcohol and drug use in the Australian construction industry: Proposed program of research and preliminary results

Herbert C. Biggs*, Amy R. Williamson and
Tamzyn M. Davey

*Centre for Accident Research and Road Safety Queensland, Queensland University of
Technology, Brisbane, Queensland, Australia*

Abstract

The main aim of this paper is to outline a proposed program of research which will attempt to quantify the extent of the problem of alcohol and other drugs in the Australian construction industry, and furthermore, develop an appropriate industry-wide policy and cultural change management program and implementation plan to address the problem. This paper will also present preliminary results from the study. The study will use qualitative and quantitative methods (in the form of interviews and surveys, respectively) to evaluate the extent of the problem of alcohol and other drug use in this industry, to ascertain the feasibility of an industry-wide policy and cultural change management program, and to develop an appropriate implementation plan. The study will be undertaken in several construction organisations, at selected sites in South Australia, Victoria and Northern Territory. It is anticipated that approximately 500 employees from the participating organisations across Australia will take part in the study. The World Health Organisation's Alcohol Use Disorders Identification Test (AUDIT) will be used to measure the extent of alcohol use in the industry. Illicit drug use, "readiness to change", impediments to reducing impairment, feasibility of proposed interventions, and employee attitudes and knowledge regarding workplace AOD impairment, will also be measured through a combination of interviews and surveys. Among the preliminary findings, for 51% ($n = 127$) of respondents, score on the AUDIT indicated alcohol use at hazardous levels. Of the respondents

*Correspondence to: Herbert Charles Biggs, Centre for Accident Research and Road Safety, Queensland University of Technology, Brisbane, 4059 Queensland, Australia. Email: h.biggs@qut.edu.au

©2012 H.C. Biggs et al. This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License (<http://creativecommons.org/licenses/by-nc/3.0/>), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Vulnerable Groups & Inclusion. <http://dx.doi.org/10.3402/vgi.v3i0.17284>

who were using alcohol at hazardous levels, 76% reported ($n = 97$) that they do not have a problem with drinking and 54% ($n = 68$) reported that it would be easy to “cut down” or stop drinking. Nearly half (49%) of all respondents ($n = 122$) had used marijuana/cannabis at some time prior to being surveyed. The use of other illicit substances was much less frequently reported. Preliminary interview findings indicated a lack of adequate employee knowledge regarding the physical effects of alcohol and other drugs in the workplace. As for conclusions, the proposed study will address a major gap in the literature with regard to the extent of the problem of alcohol and other drug use in the construction industry in Australia. The study will also develop and implement a national, evidence-based workplace policy, with the aim of mitigating the deleterious effects of alcohol and other drugs in this industry.

Keywords: *Construction; occupational health and safety; alcohol and other drugs*

It is estimated that 640,700 persons suffered a work-related injury or illness in 2009–2010 (Australian Bureau of Statistics, 2010) and 444 persons lost their lives as a result of a work-related traumatic injury in 2008–2009 in Australia (Safe Work Australia, 2011). The economic cost of work-related injuries in Australia is estimated to be approximately \$38.3 billion, based on the number of work-related injuries for July 2005 to June 2006 (Australian Safety and Compensation Council, 2009). The proportion of injuries which are directly attributable to the effects of alcohol and other drugs (AODs) is unknown. There are nonetheless documented links between AOD consumption and subsequent declines in cognitive and behavioural performance (Elliot & Shelley, 2006). AOD use is associated with impaired coordination, judgement and the ability to perceive and respond to hazards (Gee et al., 2005; Miller, Zaloshnja, & Spicer, 2007; Seijts, Skarlicki, & Gilliland, 2002; Wickizer, Kopjar, Franklin, & Joesch, 2004). In the workplace, there is increasing concern about the impact of employees’ AOD consumption on workplace safety and performance, particularly within the con-

struction industry (Berry, Pidd, Roche, & Harrison, 2007). There are also concerns about the impact of AODs on: absenteeism, job performance and productivity, staff turnover, the associated costs of training replacement workers, increased incidence of lateness for work, machinery damage, and litigation costs (Banwell, Dance, Quinn, Davies, & Hall, 2006).

The prevalence, patterns and nature of AOD consumption in the Australian workplace, however, are not reliably or accurately understood. Contributing to this lack of understanding is the paucity of existing data regarding AODs in the workplace, which are problematic for several reasons. Firstly, data regarding the use, and harmful use of AODs by employed individuals, does not necessarily extrapolate to the use of AODs (and impairment) in the workplace (Frone, 2004; Frone, 2006; Pidd, Berry et al., 2006). Secondly, the evidence for the role of AODs in workplace injuries is inconclusive, fraught with methodological issues surrounding the interpretation of results and the under-reporting to employers by employees for fear of detection, and cannot be generalised across industries (Allsop & Pidd, 2001; Frone, 2004; Ryder, Walker, & Salmon, 2006).

These issues have contributed to limited and inconclusive evidence being gathered regarding both the extent of the AOD problem in the workplace and the impact of existing workplace AOD management programs, policies and practices, despite their increasing use. Such limitations have clear implications for the development of effective programs and highlight the need to gather accurate and reliable data on AOD use in the workplace.

While reliable data that provide an overall estimate of the prevalence of AOD use or impairment at work are not available; several studies have attempted to estimate the prevalence of workplace substance use in Australia. Pidd, Berry et al. (2006) report the results of the 2001 National Drug Strategy Household Survey which found that riskier patterns of alcohol consumption were associated with a higher prevalence of self-reported, negative, work-related behaviours and work absences. As the frequency of drinking at short-term risky or high-risk levels increased, so did the percentage of employed recent drinkers who reported having missed at least one work day in the past 3 months due to their alcohol use; attending work under the influence of alcohol in the past 12 months and missing at least one work day in the past 3 months due to illness or injury. Based on data from the National Occupational Health and Safety Commission's second Work-Related Traumatic Fatalities Study, alcohol was a contributing factor in an estimated 4% of work-related fatalities and drugs estimated to contribute to 2% of work-related fatalities (Work-related Fatalities Study Team, 1998).

In a study that aimed to assess the AOD consumption patterns of adolescent new entrants to the Australian workforce, it was found that more than 40% of apprentices surveyed (building and construction trades) reported cannabis and alcohol patterns that placed them at risk of potential harm. In addition, 19% reported drinking alcohol and 6.7% reported using cannabis during work hours (Pidd, Boeckmann, & Morris, 2006). Banwell et al. (2006) explored the prevalence of AOD problems among building workers in the Australian Capital Territory (ACT). High levels of tobacco, cannabis and methamphetamine use were reported and 19% reported self-diagnosed alcohol problems, 11.5% gambling problems and 18% problems in their family life. A study of recreational drug use among workers in the mariculture and seafood industry revealed high rates of cannabis and alcohol use during the shore-based fish farming season. Among the respondents, 50% had used cannabis in their lifetimes and 44.2% were using or had used cannabis within the preceding year. A concerning number of workers smoked "bongs" and consumed alcohol within the 48 hours prior to completing the questionnaire (Evans, Tait, Harvey, & Newbury, 2005). Davey, Obst, & Sheehan (2000a) examined the consumption patterns of 4,193 Australian police officers. While 26% of police reported occasionally drinking at work, nearly double (48%) reported drinking with colleagues after work. Each of these studies highlights the need for further investigation into the relationship between AOD and the workplace and indeed the development of industry-specific prevention and rehabi-

litation strategies. Such findings also support an underlying assumption that while there is no direct evidence that general AOD use extrapolates to AOD use/impairment in the workplace, we can assume that information about general AOD use can give us some idea about the extent of the problem for those employed in the Australian construction industry. How, and to what extent, this then impacts on safety and performance in the workplace remains unknown. It is expected, therefore, that reducing general AOD use and educating those workers about the effects and safety impacts of AOD will translate to a reduction in workplace accidents and incidents caused or influenced by AOD.

Notwithstanding the limited data on AOD consumption in the Australian workplace and the difficulties in interpreting the existing data, policies are being developed in an attempt to improve construction site safety by reducing employee impairment (Allsop & Pidd, 2001).

Preliminary research suggests that reductions in workplace AOD-related impairment may be associated with employee perceptions of the policy and the manner in which the policy was developed and implemented. Others have recommended consulting with employees and union representatives to establish agreements on the rationale for an AOD policy in order to maximise policy acceptability, and the corresponding perception of “fairness” may determine the impact of the policy (Brown, Bain, & Freeman, 2008). A range of questions remain regarding how interventions should be developed and implemented, and the corresponding effectiveness of the initiatives on key safety performance indicators (e.g. acci-

dents and “near misses”). Importantly, there appears considerable merit in examining the feasibility and effectiveness of more contemporary approaches that extend beyond traditional workshops and education-based methods and embrace techniques similar to internet e-therapy which have demonstrated positive preliminary results (Klein, Meyer, Austin, & Kyrios, 2011; Ritterband, Thorndike, Cox, Kovatchev, & Gonder-Frederick, 2009).

AUSTRALIAN CONSTRUCTION INDUSTRY

Anecdotal evidence from the infrastructure and building sectors highlights issues of drugs and alcohol and its association with safety risk on construction sites. The construction industry is high-risk for work-related death, injury and illness (Choudhry & Fang, 2008; Kines et al., 2010; Lingard, Cooke, & Blismas, 2009). It involves people working in a dynamic and ever-changing environment. Hazards and risks change frequently on a site as construction work progresses and as workers move from project to project. A large majority of the industry’s workforce is employed by sub-contractors who undertake work on many different sites managed by different contractors, and often within different sectors of the industry (Australian Safety Compensation Council, 2007; Laitinen & Paivarinta, 2010). The construction industry is governed by state-based workplace health and safety legislation that places a “duty of care” on the employer. As such, the adoption of an AOD management program is at the discretion of the employer, and is not

prescribed under any specific legislation. While many companies do maintain an AOD policy and associated procedures, questions remain as to what is the best approach.

Almost universal across the Australian construction industry is the adoption of the theoretical construct of organisational safety culture. There are a variety of definitions and academic interpretations of safety culture or other terms such as climate (Glendon, 2003; Guldenmund, 2000; Reason, 2000). When considering predominant pathways to create behavioural change in the workplace, there are two main pathways to ensure compliance: (1) the extrinsic pathway, governed by systems and rules with rewards and punishments; and (2) the intrinsic pathway, establishing voluntary compliance via individual commitment to safety (Glendon, 2003). While workplace alcohol and drug programs are common in industry, there is still tremendous variety across different types of industries and within industries in regards to content and outcomes. For example, in the mining industry the extrinsic pathway with a legislative framework governing mining operations and the implementation of AOD policy and programs has resulted in a heavy focus on testing. However, within the construction industry across Australia, there is generally not as extensive or explicit AOD workplace legislation and there is also wide variability between organisations, sites and practices. In general the construction industry relies heavily on an educative approach built around the intrinsic motivation of individuals to operate safely when it comes to AOD use (Guldenmund, 2000; Sully, 2001).

It is proposed that the development of such initiatives should firstly be grounded in an accurate understanding of the aetiology, impact and consequences of AOD within the construction workplace. This should then be followed by the development and implementation of tailored and effective interventions designed to specifically target the extent and severity of the problem within the cultural and operating context of the construction industry. It is argued that developing a nationally consistent, contemporary and collaborative approach across the construction workforce is needed to engender a cultural change in the workforce. Such an approach may take a similar form to the on-going initiative in securing a cultural change to drink-driving in our society where peer intervention and support is encouraged and appears integral to maintaining such change (Ferguson, Schonfeld, Sheehan, & Siskind, 2001).

The current research aims to scientifically evaluate the use of AODs within the Australian construction industry in order to reduce the potential resulting safety and performance impacts and engender a cultural change in the workforce—to render it unacceptable to arrive at a construction workplace with impaired judgement from AODs. A nationally consistent and collaborative approach across the construction workforce—involving government representatives; employers and employees; unions; and other key industry stakeholders and experts has been adopted. An evaluation of the extent and nature of the problem, through an AOD consumption and behaviour audit, and a series of structured interviews with key industry stakeholders, will inform

the development of an appropriate industry policy and cultural change management program. The current study builds on the credibility and networks developed through the CRC for Construction Innovation's landmark achievements in safety including the *Construction Safety Competency Framework* (Biggs & Biggs, 2012; Dingsdag, Biggs, Sheahan, & Cipolla, 2006); *Guide to Best Practice for Safer Construction* (Fleming, Lingard, & Wakefield, 2007); *A Practical Guide to Safety Leadership* (Biggs, Dingsdag, & Roos, 2008); and the *Safety Effectiveness Indicators* (Biggs, Dingsdag, & Kirk, 2009; Biggs, Dingsdag, Kirk, & Cipolla, 2010; Cipolla, Biggs, Dingsdag, & Kirk, 2009).

METHOD

This research was approved by the QUT Human Research Ethics Committee. Led by an Academic Project Leader in partnership with a senior Industry Project Leader from a major Australian construction company, the research team will collaborate with academic leaders and experts in applied research in the area and will be guided strategically by an Industry Steering Committee with membership comprising representatives from key government, industry and union groups. The project will be achieved through a four-step process:

National qualitative and quantitative assessment of the use of AOD

Participants

It is anticipated that data will be collected from at least 500 employees from

participating construction companies, at selected sites in South Australia, Victoria and Northern Territory. Operational sites will be selected by the Industry Project Leader, in consultation with the respective regional and safety management team. All employees at the selected sites and corporate headquarters will be invited to participate.

Measures

The World Health Organisation Alcohol Use Disorders Identification Test (AUDIT) will be used. The AUDIT, while originally designed for use with clinical populations, has been widely used and validated in a variety of populations and contexts, including the workplace (Boschloo et al., 2010; Davey, Obst, & Sheehan, 2000a; Davey, Obst, & Sheehan, 2000b; Donovan, Kivlahan, Doyle, Longabaugh, & Greenfield, 2006; Lennings et al., 1997; Nesvåg et al., 2010; Neumann et al., 2009; Obst, Davey, & Sheehan, 2001; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993; Younga & Maysona, 2010).

There are 10 items on the AUDIT which are classified into three domains. The first domain (Q1–3) measures the quantity and frequency of alcohol consumption and screens for possible risk of hazardous consumption. The second domain (Q4–6) examines abnormal drinking behavior, which may indicate early or established alcohol dependence. The third domain (Q7–10) probes for negative consequences related to alcohol consumption. Each question is scored from 0 to 4, with a cumulative range of 0–40. A score of 8–15 indicates a risk of harmful consumption, a score of 16 or

more indicates a high risk of alcohol problems and a score of 20 or above warrants further diagnostic evaluation for alcohol dependence. Although these thresholds were established on the basis of a study on a clinical population, they have also been widely used and validated in non-clinical populations, including those listed above. (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). Four additional questions were developed by the research team for the purpose of this study and are included in the survey. These relate to readiness to change (e.g. “do you think that you presently have a problem with drinking” and “in the next 3 months, how difficult would you find it to cut down or stop drinking?” and “other drug” consumption (e.g. “when have you most recently used marijuana/cannabis” and “when have you most recently used ecstasy or meth/amphetamine type substances”). Demographic details (age, gender, and job/role position) are also included.

Semi-structured interviews will also be conducted across a number of roles within the company to identify major issues and themes. These will be either one-on-one interviews with staff members/employees, or small group discussions. Interview questions will center on perceptions towards AOD use in the workplace (including perceived prevalence in the industry, how it affects you, your safety, performance and productivity, as well as that of your co-workers) and attitudes and perceptions towards existing AOD workplace policies (including knowledge of, perceived effectiveness and attitudes towards them as well as what could be improved). Information will also be collected (in semi-structured interview form) from appropriate man-

agers on (1) perceived effectiveness and feasibility of current policies and practices in relation to the impact of AOD on worker safety, (2) situations and work environments that are considered to be particularly challenging (with regard to AOD impairment), (3) characteristics of past incidents involving AOD and, (4) the feasibility of trialing some of the proposed initiatives. The research team will liaise closely with the relevant operational site and safety managers in order to access employees most efficiently, (i.e. through morning ‘tool box talks’ or ‘start up meetings’ and/or on breaks).

Procedure

Corporate headquarters and operational sites of the industry partner organisation will be visited to distribute the AUDIT survey and conduct semi-structured interviews with both management and employees.

The AUDIT survey will be distributed in hard copy to employees on-site along with the Participant Information Sheet as approved by the QUT Research Ethics Committee and a plain envelope to seal the completed survey in, before returning to the researcher. All surveys are confidential and anonymous and are kept in a secure, locked office. The researchers will clearly communicate to employees that participation is entirely voluntary, that no names are recorded and that the data remains with the researchers, not the construction company. The semi-structured interviews will take place at both corporate headquarters and operational sites in a private room. Detailed notes will be recorded by hand during the

semi-structured interviews and later thematically analysed.

Development of an appropriate industry policy

The development of the industry policy will be informed by the findings from the national qualitative and quantitative assessment of the use of AODs in the construction industry. It is intended that a policy will be developed which is based on a “just culture”, non-punitive and rehabilitative approach. The policy will be developed in consultation with employers, employees, and unions across the infrastructure and building sectors, with the aim being that the program will be adopted nationally for construction workplaces. Integral to this process will be a number of workshops designed to inform all stakeholders as to current research and best practice in the domain. This is essential so as all players in the policy development process have factual information and a similar content knowledge base to work from.

Development of a cultural change management program

Together with the Australian Government, lead industry associations and key stakeholder groups, the research team will initiate a cultural change management program. This program will take an industry-wide nationally consistent collaborative approach to reducing the risk of impaired performance on construction sites and increasing workers’ commitment to AOD safety. Previous work by Biggs et al. (2008, 2009, 2010), Cipolla et al. (2009), Dingsdag

et al. (2006) and Fleming et al. (2007), provides a significant starting point for developing a cultural change management program that is directly tailored to the construction industry. It is also anticipated that partnership arrangements with industry education and skills organisations may be developed to disseminate the outcomes of this industry research and cultural change program.

Development of an implementation plan

An implementation plan for the industry policy and cultural change management program will be based on and designed from the initial data collected from both managers and construction employees (as described in the step above, National qualitative and quantitative assessment of the use of AOD). This process will include the development of clear recommendations of this research for industry use (e.g. the form, content and process of implementing contemporary and targeted interventions.) The implementation plan would be educative in focus and will develop a range of comprehensive stepped interventions for use in the corporate organisational environment, including face-to-face delivery of work site programs and web-based programs.

PRELIMINARY RESULTS

The preliminary results are based on the collected data to date. The survey data were analysed using Statistical Package for the Social Science (SPSS). Interviews

were thematically analysed using the detailed notes taken.

Alcohol use disorder identification test (AUDIT)

Respondents ($n = 247$)

The majority of respondents ($n = 232$) were male, with a mean age of 36.9 years ($SD = 11.2$). Most respondents (214) were company employees, with the remaining 33 employed as a contractor. The survey was distributed across all roles within the company with the majority of respondents classifying themselves as a labourer (71), tradesperson (63), or administration/engineering staff member (31).

Scoring

Analyses were performed on total AUDIT scores as well as on each of the domains within the AUDIT. Of a possible maximum cumulative score of 40, respondents recorded an overall mean score of 9.03 ($SD = 6.2$). Scores ranged from 0 to 33 with a median score of 8. A total of 51% of respondents ($n = 127$) scored above the cut-off cumulative score for risk of hazardous alcohol use of ≥ 8 (see Table I).

Subsequent analysis focused on the three domains identified within the AUDIT. The mean score in domain 1

(consumption) was 5.79 ($SD = 3.1$) (with a maximum possible score of 12 and scores of 6 or 7 indicating a risk of alcohol-related harm). The mean score in domain 2 (dependency) was 1.13 ($SD = 1.8$) (with a maximum possible score of 12 and scores of 4 or more suggesting possible alcohol dependence). Lastly, the mean score in domain 3 (alcohol-related problems) was 2.11 ($SD = 2.6$) (with any scoring warranting further investigation to determine whether the problem is of current concern and requires intervention). These results indicate that the majority of scoring fell in domain 1 (consumption).

Four additional questions were included in the survey pertaining to readiness to change and past “other drug” use. Of those who scored above the cumulative score for hazardous alcohol use ($n = 127$), 76% of respondents ($n = 97$) reported that they do not have a problem with drinking and 54% ($n = 68$) reported that it would be either very easy or fairly easy to cut down or stop drinking. In terms of “other drug” use, a total of 49% of the total respondents ($n = 122$) had used marijuana/cannabis, with 12 respondents having used it in the last year and 21 respondents having used it in the last month. Twenty-seven per cent of the total respondents had used ecstasy or meth/

Table I. Mean overall and domain AUDIT scores.

Mean scores	Mean (SD)/maximum possible score
Overall mean	9.03 (SD = 6.2)/40 (cumulative)
Mean: domain 1	5.79 (SD = 3.1)/12
Mean: domain 2	1.13 (SD = 1.8)/12
Mean: domain 3	2.11 (SD = 2.6)/16

amphetamine type substances, with 19 respondents having used it in the last year and 11 respondents having used it in the last month. While many in the current sample appear to be at risk of hazardous alcohol consumption, a large proportion of these respondents claimed not to have a drinking problem. These respondents also indicated that it would be fairly easy to cut back or stop their drinking behaviour (see Table II).

Semi-structured interviews

Preliminary findings from the semi-structured interviews conducted to date provide support for the need for more comprehensive and tailored educational initiatives for employees in the construction workforce and highlight several major themes for consideration. Firstly, a lack of knowledge surrounding the physical effects of AOD was evident with clear implications for safety—despite the attitude that AODs are detrimental to workplace productivity, safety and the risks that it may pose both for one’s self and for co-workers. Suggestions and feedback were offered for more effective communication of AOD education to employees, at “tool box talks” in particular. These suggestions included the need for clear and simple visual hard copy brochures or

posters as well as videos about the effects and impacts of AOD. Furthermore, there was an overall positive response to the creation of a web-based resource—which would assist those who may find it difficult to seek help or advice about AOD at work. Indeed, job security was highlighted as a common fear among employees in regards to seeking help or advice about AOD issues.

Other issues that surfaced included the importance of management support, maintaining a strong supervisor relationship and with a commitment to AOD, and the consistent communication of policies and expectations from the start of the project. Related to this was the importance of ensuring that sub-contractors are subject to the same policies and practices that employees are subject to in their regular pre-start and tool box talks.

DISCUSSION

Preliminary results from data collected to date indicate that as in the general population, a proportion of those sampled in the construction sector may be at risk of hazardous alcohol consumption. Consistent with the assumption (for lack of sufficient evidence) that general AOD use does not necessarily extrapolate to workplace AOD use and impairment, results do not tell us about

Table II. Other drug use (total respondents $n = 122$).

	Marijuana/ cannabis	Ecstasy or meth/ amphetamine
Percentage of total respondents who have used	49%	27%
In the last year (no. of respondents)	12	19
In the last month (no. of respondents)	21	11

when those in the “at risk” group are drinking. A proportion of those “at risk” will consume alcohol in private, in their own time, whereby their behaviour has no relevance to their performance at work. For others, of course alcohol risk will translate into workplace risk. This evidence does not allow any accurate indication of what this risk might be.

These results do, however, suggest that those who may be at risk are unaware that a problem may exist, further highlighting the need for tailored educational programs to increase knowledge and awareness of the effects of AOD. Consideration of the culture of specific occupational groups also appears to offer great value in that the nature and pressures of a job (with specific skills and hazards) have a major effect on employees’ lives and relationships. Educating younger employees about how to cope with the “lifestyle” that can accompany a high-salary, project-to-project, transient type job and “getting in before we have to deal with the aftermath” is also an important consideration—acknowledging the differentiation between the “career workers” vs. the “it’s just a job workers”. The use of a mentoring type initiative was suggested as one way of contributing towards this form of education.

Results support the need for evidence-based, comprehensive and tailored responses in the workplace, and in the broad community, so that those who may be “at risk” are provided with accessible and relevant information and/or help if necessary and any environmental or structural contributors to risk are addressed. Once risk is identified, the next step is to identify factors that might contribute to risk and then to design specific interventions based on

each organisation’s/location’s need. The evidence base is limited but includes strategies to reduce workplace factors that increase risk (e.g. low levels of supervision; easy access to alcohol; stress; workplace cultures that encourage risky alcohol use); strategies that support low risk use (e.g. investment in safety cultures and systems); online brief interventions for those at risk; peer support programmes and access to rehabilitative support (Science Group of the European Alcohol and Health Forum, 2011). Encouragingly, there is an overall support for the need for more comprehensive and tailored educational initiatives for those in the industry. Several major themes have emerged, providing valuable insight for the subsequent phases of the research. Upon completion of data collection in Phase 1, an appropriate industry policy will be developed in consultation with employer, employee and union groups. A cultural change management program and implementation plan will then follow.

CONCLUSION

This is the first known study to scientifically evaluate the use of AOD and potential workplace safety impacts in the construction sector. Furthermore, little scientific research has investigated effective approaches to embed AOD workplace interventions within the theoretical field of safety culture while simultaneously considering appropriate intrinsic and extrinsic environmental factors. As a result, there has been only limited adoption of nationally coordinated strategies that are supported by both employers and employees to render

it socially unacceptable to arrive at a construction workplace with impaired judgement from AOD. This research will make an evidence-based evaluation of the extent of (general) AOD use by workers in the Australian construction workforce; determine policy and practise and develop a cultural change management program to improve the safety of Australian construction sites. As well as enhancing safety outcomes for construction workers, it is anticipated that the project, through an educational and web-based support intervention, will lead to a reduction in the economic, health and social costs associated with injuries to workers, not only within the industry partner and the industry as a whole, but also in other industrial sectors as information and intervention programs developed in this project will be made available to other sectors with much of the anticipated outcomes being highly applicable across the workforce. Importantly, it is anticipated that the project will result in an overall enhancement of the internal safety culture both within the industry partner's workforce and more broadly among the general infrastructure and building construction workforce.

ACKNOWLEDGEMENTS

This research was undertaken with the benefit of a grant from the Sustainable Built Environment National Research Centre.

REFERENCES

Allsop, S., & Pidd, K. (2001). The nature of drug-related harm in the workplace. In S. Allsop, M. Phillips, & C. Calogero

(Eds.), *Drugs and work: Responding to alcohol and other drug problems in Australian workplaces* (pp. 5–19). Melbourne: IP Communications.

Australian Safety Compensation Council. (2007). *National Code of Practice for Induction for Construction Work*. Canberra: Australian Safety and Compensation Council.

Australian Safety and Compensation Council. (2009). *The Cost of Work-related injury and illness for Australian Employers, Workers and the Community*. Canberra: Australian Safety and Compensation Council.

Australian Bureau of Statistics. (2010). *Work-related Injuries Australia 2009–10* (ABS catalogue number 6324.0). Canberra: Australian Bureau of Statistics. Retrieved from [http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/189182D4C8EF0518-CA2577F5000C53DE/\\$File/63240_2009-10.pdf](http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/189182D4C8EF0518-CA2577F5000C53DE/$File/63240_2009-10.pdf)

Babor, T.F., Higgins-Biddle, J.C., Saunders, J.B., & Monteiro, M.G. (2001). *The alcohol use disorders identification test. Guidelines for use in primary care* (2nd ed.). Geneva: World Health Organisation Department of Mental Health and Substance Dependence.

Banwell, C., Dance, P., Quinn, C., Davies, R., & Hall, D. (2006). Alcohol, other drug use, and gambling among Australian Capital Territory (ACT) workers in the building and related injuries. *Drugs: Education Prevention and Policy*, 13(2), 167–178.

Berry, J.G., Pidd, K., Roche, A.M., & Harrison, J.E. (2007). Prevalence and patterns of alcohol use in the Australian workforce: Findings from the 2001 National Drug Strategy Household Survey. *Addiction*, 102, 1399–1410.

Biggs, H.C., Dingsdag, D.P., & Roos, C.R. (2008). *A practical guide to safety leadership: Implementing a construction safety competency framework*. Cooperative Research Centre for Construction Innovation. Brisbane: Icon.Net Pty Ltd, ISBN 978-0-9804262-4-3. 1–34.

Biggs, H.C., Dingsdag, D.P., & Kirk, P.J. (2009, October). *Development of safety effectiveness indicators for use in the construction*

- sector. Proceedings of the CIBWO99 Conference 2009: Working together; Planning, designing and building a healthy and safe construction sector, Hyatt Hotel, Melbourne, Australia.
- Biggs, H.C., Dingsdag, D.P., Kirk, P.J., & Cipolla, D. (2010). Safety culture research, lead indicators, and the development of safety effectiveness indicators in the construction sector. *International Journal of Technology Knowledge and Society*, 6(3), 133–140.
- Biggs, H.C., & Biggs, S.E. (2012). Safety culture research in the construction sector: Interlocked projects in safety competency and safety effectiveness indicators. *Safety Sci.* (2012), <http://dx.doi.org/10.1016/j.ssci.2012.03.014>
- Boschloo, L., Vogelzangs, N., Smit, J.H., van den Brink, W., Veltman, D.J., Beekman, A.T.F., & Penninx, B.W.J.H. (2010). The performance of the alcohol use disorder identification test (AUDIT) in detecting alcohol abuse and dependence in a population of depressed or anxious persons. *Journal of Affective Disorders*, 126, 441–446.
- Brown, S. K., Bain, P., & Freeman, M. (2008). Employee perceptions of alcohol and drug policy effectiveness: Policy features, concerns about drug testing, and the key role of preventative measures. *Drugs: Education Prevention and Policy*, 15, 145–160.
- Cipolla, D, Biggs, H.C., Dingsdag, D.P., & Kirk, P.J. (2009). *Safety effectiveness indicators project workbook*. Cooperative Research Centre for Construction Innovation. Brisbane: Icon.Net Pty Ltd, ISBN 978-0-9804262-2-9 Building the Education Revolution.
- Choudhry, R.M., & Fang, D. (2008). Why operatives engage in unsafe work behaviour: Investigating factors on construction sites. *Safety Science*, 46, 566–584.
- Davey, J., Obst, P., & Sheehan, M. (2000a). Work demographics and officers' perceptions of the work environment which add to the prediction of at risk alcohol consumption within an Australian police sample. *Policing: An International Journal of Police Strategies and Management*, 23(1), 69–81.
- Davey, J., Obst, P., & Sheehan, M. (2000b). The use of AUDIT as a screening tool for use in the workplace. *Drug and Alcohol Review*, 19(1), 49–54.
- Dingsdag, D.P., Biggs, H.C., Sheahan, V.L., & Cipolla, D.J. (2006). *A Construction Safety Competency Framework: Improving OH&S performance by creating and maintaining a safety culture*. Cooperative Research Centre for Construction Innovation. Brisbane: Icon.Net Pty Ltd, ISBN 978-0-9775282-9-5.
- Donovan, D.M., Kivlahan, D.R., Doyle, S.R., Longabaugh, R., & Greenfield, S.F. (2006). Concurrent validity of the alcohol use disorders identification test (AUDIT) and AUDIT zones in defining levels of severity among out-patients with alcohol dependence in the COMBINE study. *Addiction*, 101, 1696–1704.
- Elliot, K., & Shelley, K. (2006). Effects of drugs and alcohol on behaviour, job performance, and workplace safety. *Journal of Employment and Counselling*, 43, 130–134.
- Evans, A.R., Tait, R., Harvey, P., & Newbury, J. (2005). Recreational drug use within the employees of the mariculture and seafood industry in South Australia. *Drug and Alcohol Review*, 24, 67–68.
- Ferguson, M., Schonfeld, C.C., Sheehan, M., & Siskind, V. (2001). *The impact of the "Under the Limit" drink driving rehabilitation program on the lifestyle and behaviour of offenders* (ATSB Monograph, CR187). Canberra: Australian Transport Safety Bureau.
- Fleming, T., Lingard, H., & Wakefield, R. (2007). *Guide to best practice for safer construction principles*. Cooperative Research Centre for Construction Innovation. Brisbane: Icon.Net Pty Ltd, ISBN 978-0-9803503-64.
- Frone, M.R. (2004). Alcohol, drugs, and workplace safety outcomes: A view from a general model of employee substance use and productivity. In J. Barling, & M.R. Frone (Eds.), *The psychology of workplace safety*. Washington, DC: APA.
- Frone, M.R. (2006). Prevalence and distribution of alcohol use and impairment in the

- workplace: A US national survey. *Journal of Studies on Alcohol*, 67, 147–156.
- Gee, G.C., Curbow, B., Ensminger, M.E., Griffin, J., Laflamme, D.J., McDonnell, K., LeGrande, D., Agnew, J. (2005). Are you positive? The relationship of minority composition to workplace drug and alcohol testing. *Journal of Drug Issues*, Fall 2005, 755–778.
- Glendon, A.I. (2003). Managing safety risks. In: M. O’Driscoll, P. Taylor, & T. Kalliath (Eds.), *Organisational Psychology in Australia and New Zealand* (pp. 212–238). Australia: Oxford University Press.
- Guldenmund, F.W. (2000). The nature of safety culture: A review of theory and research. *Safety Science*, 34, 215–257.
- Kines, P., Andersen, L., Spangenberg, S., Mikkelsen, K., Dyreborg, J., & Zohar, D. (2010). Improving construction site safety through leader-based verbal safety communication. *Journal of Safety Research*, 41, 399–406.
- Klein, B., Meyer, D., Austin, D.W., & Kyrios, M. (2011). Anxiety Online—a virtual clinic: Preliminary outcomes following completion of five fully automated treatment programs for anxiety disorders and symptoms. *Journal of Medical Internet Research*, 13(4), e89.
- Laitinen, H., & Paivarinta, K. (2010). A new-generation safety contest in the construction industry—a long term evaluation of a real-life intervention. *Safety Science*, 48, 680–686.
- Lennings, C.J., Feeney, G.F., Sheehan, M., Young, R.McD., McPherson, A., & Tucker, J. (1997). Work-place screening of mine employees using the alcohol use disorders identification test (AUDIT) and alcohol breathalyzation. *Drug and Alcohol Review*, 16, 357–363.
- Lingard, H.C., Cooke, T., & Blismas, N. (2009). Group-level safety climate in the Australian construction industry: Within-group homogeneity and between-group differences in road construction and maintenance. *Construction Management and Economics*, 27, 419–432.
- Miller, T.R., Zaloshnja, E., & Spicer, R.S. (2007). Effectiveness and benefit-cost of peer-based workplace substance abuse prevention coupled with random testing. *Accident Analysis and Prevention*, 39, 565–573.
- Neumann, T., Gentilello, L.M., Neuner, B., Weiß-Gerlach, E., Schürmann, H., Schröder, T., Müller, C., Haas, N.P., Spies, C.D. (2009). Screening trauma patients with the alcohol use disorders identification test and biomarkers of alcohol use. *Alcoholism: Clinical and Experimental Research*, 33(6), 970–976.
- Nesvåg, R., Lange, E.H., Færden, A., Barrett, E.A., Emilsson, B., Ringen, P.A., Andreassen, O.A., Melle, I., Agartz, I. (2010). The use of screening instruments for detecting alcohol and other drug use disorders in first-episode psychosis. *Psychiatry Research*, 177, 228–234.
- Obst, P., Davey, J., & Sheehan, M. (2001). Does joining the police drive you to drink? A longitudinal study of the drinking habits of police recruits. *Drugs: Education, Prevention and Policy*, 8(4), 347–357.
- Pidd, K., Berry, J.G., Harrison, J.E., Roche, A.M., Driscoll, T.R., & Newson, R.S. (2006). *Alcohol and work: Patterns of use, workplace culture and safety*. Injury Research and Statistics Series Number 28 (AIHW cat no. INJCAT 82). Adelaide: AIHW.
- Pidd, K., Boeckmann, R., & Morris, M. (2006). Adolescents in transition: The role of workplace alcohol and other drug policies as a prevention strategy. *Drugs: Education Prevention and Policy*, 13(4), 353–365.
- Reason, J. (2000). Human error: Models and management. *Western Journal of Medicine*, 172(6), 393–396.
- Ritterband, L.M., Thorndike, F.P., Cox, D.J., Kovatchev, B., & Gonder-Frederick, L. (2009). A behavior change model for internet interventions. *Annals of Behavioral Medicine*, 38, 18–27.
- Ryder, D., Walker, N., & Salmon, A. (2006). *Drug use and drug-related harm: A delicate balance*. Melbourne: IP Communications.
- Safe Work Australia. (2011). *Work related traumatic injury fatalities, Australia 2008–2009*. Canberra: Safe Work Australia.

- Saunders, J.B., Aasland, O.G., Babor, T.F., De La Fuente, J.R., & Grant, M. (1993). Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption—II. *Addiction*, 88, 791–803.
- Scientific Opinion of the Science Group of the European Alcohol and Health Forum. (2011). Alcohol, work and productivity. Retrieved from http://ec.europa.eu/health/alcohol/docs/science_02_en.pdf
- Seijts, G.H., Skarlicki, D.P., & Gilliland, S.W. (2002). Reactions to managing counter-productive behaviour through the implementation of a drug and alcohol testing program: Americans and Canadians are more different than you might expect. *International Journal of Selection and Assessment*, 10(1–2), 135–142.
- Sully, M. (2001). *When rules are not enough: Safety regulation and safety culture in the workplace*. Paper presented at the Insurance Commission of Western Australia Road Safety Conference, August. Perth, WA.
- Wickizer, T.M., Kopjar, B., Franklin, G., & Joesch, J. (2004). Do drug-free workplace programs prevent occupational injuries? Evidence from Washington State. *Health Services Research*, 39(1), 91–110.
- Work-Related Fatalities Study Team. (1998). *Work-related traumatic fatalities in Australia, 1989 to 1992: Summary report*. Sydney: National Occupational Health and Safety Commission.
- Younga, C., & Maysona, T. (2010). The Alcohol Use Disorders Identification Scale (AUDIT) normative scores for a multiracial sample of Rhodes University residence students. *Journal of Child & Adolescent Mental Health*, 22(1), 15–23.