

A Review of Occupational Stress Interventions in Australia

Natasha Caulfield, David Chang, Maureen F. Dollard, and Carol Elshaug
University of South Australia

The authors investigated empirical research into occupational stress interventions conducted in Australia within the past 10 years. They focused on evidence published and the quality of the evidence base. All intervention studies were conducted in the public sector. Only 1 study reached the gold standard in evidence-based research. Most interventions were individually focused, despite the preponderance of research identifying risky work environment stressors. Results suggest a paucity of published information regarding what works with occupational stress interventions in Australia and an urgent need for further research in the area, particularly focusing on the private sector, rural workers, and scientific evaluation.

KEY WORDS: work stress; stress research; public sector programs; work stress interventions; prevention

The impact of stress in the workplace is well recognized, with both human and financial costs investigated in the literature. In Australia, employees are entitled to workers' compensation for stress when the claimant's employment significantly contributes to stress; this does not include situations in which reasonable disciplinary action or failure to obtain a promotion, transfer, or other benefit in relation to employment occurred. Most states in Australia report an increasing number of stress claims per annum, and although the percentage relative to all other claims is low, the cost per claim is generally much higher, as is the time absent from work (Dollard, Winefield, & Winefield, 2001). The cost and prevalence of stress

Natasha Caulfield, David Chang, Maureen F. Dollard, and Carol Elshaug, School of Psychology, University of South Australia, Adelaide, South Australia, Australia.

Correspondence concerning this article should be addressed to Maureen F. Dollard, School of Psychology, University of South Australia, Adelaide 5000, South Australia, Australia. E-mail: maureen.dollard@unisa.edu.au

claims vary from state to state. National estimates of the cost of stress was around \$105.5 million in 2000–2001 (National Occupational Health and Safety Commission, 2003). During that time, there were a total of 6,063 claims with a mechanism of “mental stress”; these made up approximately 4% of all workers’ compensation cases. It is probable that these statistics do not fully reflect the incidence of work stress in Australia, considering that many people who experience stress at work do not report it or file a claim requesting compensation for it (Kendall, Murphy, O’Neill, & Burtnall, 2000). The 1995 Australian Workplace and Industrial Relations Survey (Mitchell & Mandryk, 1998) reported that 26% of people rate work stress as the second largest cause of work-related injury and illness, behind physical strains and sprains.

Various reasons have been posited for the increasing rates of claims in relation to workplace stress in Australia. As Dollard and Winefield (2002) suggested, under the pressure of economic rationalism, workforce numbers have been reduced even though the amount of work to be done has not. As a consequence, many workers in full-time jobs are experiencing *overemployment*, resulting in job intensification, increased work pressures, and longer hours, all of which may result in increased levels of work stress. Indeed, the WorkCover Corporation of South Australia (1999) reported that workload pressures account for 37% of work-related stress claims, and almost half of the claim costs, in this area. Even jobs that were once considered relatively stress free, such as university teaching, are becoming increasingly stressful (Winefield & Jarrett, 2001). In addition, there has been a decrease in the number of full-time jobs and an increase in part-time, casual, and contract labor. Organizational downsizing has resulted in reduced job security and stability for many people. A rapidly changing workplace through globalization and technological advances has caused the nature of work to become more fluid, with many workers expected to learn new skills, perform multiple tasks, and self-manage (Kendall et al., 2000). This in turn has led to increases in role ambiguity, possibly resulting in increased work stress and illness (Dunnette, 1998). The financial costs of work-related stress reported by organizations such as the National Occupational Health and Safety Commission are likely to be quite conservative given the loss in productivity, staff turnover, absenteeism, and industrial accidents and the additional costs associated with return-to-work programs or redeployment, which are not accounted for in these financial estimates (Cooper & Cartwright, 1994; Kendall et al., 2000). Also, the stigma associated with making a compensation claim on the basis of intangible causes, such as occupational stress, could mean that the real incidence of stress in the workplace is much greater than the statistics suggest (see Dollard et al., 2002). In all likelihood, only the most serious stress cases will result in the lodging of a worker’s compensation claim; workers who make claims may

do so as a last resort, often after all other leave entitlements have been taken.

The problems associated with work-related stress surpass financial considerations. The human costs in individual suffering and organizational morale cannot be reduced to quantitative terms. The stress of overwork has been associated with psychological problems such as depression, anxiety, and burnout; physiological health problems, such as hypertension and heart attacks; and organizational problems, including workplace violence and accidents (J. C. Quick, Quick, Nelson, & Hurrell, 1997). Workplace stress may also result in behavioral problems, such as increased alcohol consumption and smoking (Dollard & Winefield, 2002).

A common finding is that work stress has negative effects on families and home life (Muchinsky, 2000). It makes sense that the outcomes of occupational stress are not confined to work. As Repetti (1987) suggested, when negative affect develops as a result of stressors in one sphere, it subsequently transfers to other life spheres. Robinson, Flowers, and Carroll (2001), for example, reported that work stress negatively affects marital cohesion. In addition, Crouter and Bumpus (2001) highlighted the negative spillover effect of work stress into family life. They reported that work stress has detrimental implications on the quality of family interactions. Feelings of overload and strain predict increased family conflict, a withdrawal from family involvement, and even adjustment problems for children. Through their influence on family problems, mental health issues, and unemployment, the consequences of work stress may also be expected to affect the community at large (Kelly, 1995).

These observations provide a strong mandate for conducting research into the factors that precipitate occupational stress and to identify effective interventions that can be implemented to treat, manage, and, we hope, prevent the occurrence of this phenomenon.

Work stress appears to have multiple origins, and much of the reported research attempts to establish links among taxing aspects of the work environment (stressors); perceptions and appraisals of these; and manifestations of strain, including physiological, psychological, and behavioral changes (Baker, 1985; Greenhaus & Parasuraman, 1987). A number of theories have been developed to conceptualize the problem of occupational stress and to explain and predict when work stress will occur (Dollard, 2001b). Some of these theories concentrate on the *stressors* within the work environment (e.g., the demand-control/support model; Karasek & Theorell, 1990), some focus on the mismatch between organizational requirements and rewards (e.g., Siegrist's [1996] effort-reward imbalance model), some have a greater focus on the *resources* available to employees to cope with demands (e.g., the conservation-of-resources model; Hobfoll & Freedy, 1993), and others focus on appraisal and coping to explain

individual differences in reactions to stress at work (e.g., Lazarus and Folkman's [1984] cognitive phenomenological theory). Although all of these models have received some empirical support in the literature, the dominant view is that work stress and the resulting mental health outcomes are more strongly related to job factors or aspects of the work environment rather than to personal or biographical factors (Maslach & Schaufeli, 1993)—that is, work stress depends primarily on the way that jobs are constructed, constituted, and managed (Dollard & Winefield, 2002).

Depending on the emphasis of the theory, different implications for interventions result. Interventions in stress management are typically classified into *primary*, *secondary*, or *tertiary* approaches (Kendall et al., 2000). Primary approaches include strategies that aim to prevent the occurrence of work stress, secondary approaches are activities designed to change an individual's reaction to stressors (e.g., by means of relaxation training and team building), and tertiary approaches are those that are used to treat the symptoms of stress and strain after they have been identified. J. D. Quick, Quick, Campbell, and Nelson (1998) published a useful summary of preventive strategies and surveillance indicators for organizational stress. J. D. Quick et al. (1998) identified both organizational and individual strategies within each of the three levels of prevention.

De Jonge and Dollard (2002) presented a matrix of stress management approaches (see Table 1) that focus on the three levels of prevention (i.e., primary, secondary, and tertiary) and possible intervention strategies within each level, emphasizing the individual, the organization, or the in-

Table 1. Overview of Work Stress Interventions

Level	Primary prevention	Secondary prevention	Tertiary prevention
Organization	Improving work content, fitness programs, career development	Improving communication and decision making, conflict management	Vocational rehabilitation, outplacement
Individual–organization interface (e.g., team or group)	Time management, improving interpersonal skills, work/home balance	Peer support groups, coaching, career planning	Posttraumatic stress assistance programs, group psychotherapy
Individual	Preemployment medical examination, didactic stress management	Cognitive–behavioral techniques, relaxation	Rehabilitation after sick leave, disability management, case management, individual psychotherapy

Note. From *Stress in the Workplace: Australian Master OHS and Environment Guide*, by J. De Jonge and M. F. Dollard, 2002, Sydney, New South Wales, Australia: CCH Australia Ltd. Copyright 2002 by CCH Australia Limited. Reproduced with the kind permission of CCH Australia Limited. For more information, see www.cch.com.au.

terface between the two. In addition to this, there are national policy approaches and group-level approaches to stress prevention (Dollard, 2001a; Geurts & Grundemann, 1999).

The above theories and conceptualizations provide a complex macro-framework for delineating the phenomenon that is occupational stress. However, there is a considerable gap between postulating a descriptive theory and building a credible case for the allocation of resources to address stress in the workplace. As the push for evidence-based practice becomes stronger, there is a need for research to converge on evidence-based solutions to the strain experienced in the world of work. To establish a clear mandate for action, there is a need to identify not only the factors that affect occupational stress but also the effectiveness of specific interventions through empirical research. Recent research has focused on stress management interventions. Kompier and Cooper (1999) systematically evaluated 11 organizational case studies from 11 different European countries. A more recent review of United Kingdom-based stress management interventions evaluated studies published in the academic literature over the past 10 years (Giga, Noblet, Faragher, & Cooper, 2003) and identified 16 studies.

There is no such contemporary review of the Australian literature in this area. Hence, the aim of this study was to look at the empirical research that has been conducted on occupational stress interventions within an Australian context over the last 10 years and, in particular, to review the methodology, orientation, and effectiveness of interventions, as well as to summarize the results of the studies.

The purpose of this study was to take stock of peer-reviewed empirical research on occupational stress interventions conducted in Australia in the last 10 years. Similar to Kompier and Cooper (1999), our intention was to focus our efforts on research in which a specific intervention to reduce stress had been implemented and evaluated. It soon became apparent that there was but a handful of published studies (a total of six) of this kind that had been conducted in Australia within the last 10 years. The main objective of the study was to examine the quality of the evidence base for occupational stress interventions (within an Australian context).

METHOD

Stages

In Stage 1, we conducted a literature review using the EBSCO Host search engine. We used the limit options to narrow the search for articles that had been published in the last 10 years (i.e., since 1993).

In Stage 2, we selected only those articles in which an empirical study with an intervention had been conducted with Australian participants.

In Stage 3, we assessed the intervention studies on a range of criteria.

Review Procedure

Two reviewers independently reviewed the articles and then agreed on a descriptive framework to review the studies. Then, each reviewer independently assessed the articles against the descriptive frameworks. All studies were first assessed for scope of inquiry in the following areas:

Industry: the type of work examined in the research and whether this work was situated in a public or private sector context

Location: urban, rural, regional

Stressors: whether the focus of the research was on aspects of the work environment, resources, or individual differences

Strains: the stress experience of participants (e.g., psychological, interpersonal, physical) and the measures used

Participants: the type of participants recruited for the research (e.g., nurses)

Interventions: whether an intervention was implemented/evaluated

The reviews were checked for interrater agreement, and a consensus of ratings was reached through discussion. The interrater agreement was 95%.

We reviewed the intervention studies using the descriptive framework of Kompier and Cooper (1999; based on Murphy, 1996):

Preparation: motives for conducting research, how the research was organized

Problem analysis: instruments used, risk factors, risk groups

Choice of measures: work directed or person directed

Implementation: how the intervention was introduced in the workplace

Evaluation: objective effects, subjective effects, costs and benefits, obstructing and stimulating factors, timing of follow-up

As part of this framework, we assigned the research design of each intervention study a rating according to the following criteria (Kompier & Cooper, 1999):

* = evidence that is descriptive, anecdotal, or authoritative

** = evidence obtained without intervention but that might include

long-term or dramatic results from general dissemination of information or medical agent into a population

*** = evidence obtained without a control group or randomization but with evaluation

**** = evidence obtained from a properly conducted study with pre and post measures and a control group but without randomization

***** = evidence obtained from a properly conducted study with pre and post measures and a randomized control group.

These ratings were incorporated into the results reported below.

RESULTS AND DISCUSSION

Table 2 is a summary of results for intervention studies conducted between 1993 and 2003 using Australian participants. Of the six intervention studies, only one was given a five-star rating (Craig & Hancock, 1996). The study by Leonard and Alison (1999) was given a four-star rating because although it was a well-conducted study with a control group, it lacked randomization. The remaining four intervention studies were all given a three-star rating.

From the current review it is apparent that interventions have been primarily individually focused rather than organizationally focused. Only one intervention study was organizationally focused, compared with five that were individually focused. This is similar to results of other reviews, such as the one conducted by Van der Klink, Blonk, Schene, and van Dijk (2001), who found that organizationally focused interventions were implemented in only 5 out of 48 studies. The United Kingdom review study conducted by Giga et al. (2003), who used search parameters similar to those used in this study, found that, of all post-1990 studies reviewed that received a three-star rating or higher, only 19% were organization-level interventions. Such results are consistent with Kompier, Cooper, and Geurts's (2000) suggestion that work stress programs are predominantly reactive (i.e., secondary or tertiary approaches) and tailored to the individual. Kahn and Byosiére (1992) put it another way, suggesting that attempts to reduce workplace stress are generally Band-Aid approaches that focus on reducing the effect of stressors rather than lessening the occurrence of these stressors in the first place.

From the reviewed studies it appears that, overall, individually focused interventions do not seem to perform particularly well at lowering work stress. For example, Craig and Hancock (1996) aimed to teach university staff skills to self-manage stress through the implementation of a healthy

(text continues on page 161)

Table 2. Systematic Analysis of Intervention

Case (n)	Step 1: Preparation	Step 2: Problem analysis	Step 3: Choice of measures	Step 4: Implementation	Step 5: Evaluation
1: Craig & Hancock, 1996 (n = 143 completed 1 assessment, n = 41 completed 2 assessments, n = 21 completed 3 assessments) Participants: University staff Sector: Public Region: Unknown	Teach staff skills to self-manage stress. Organization: Overall goal to reduce risk of stress-related disease and improve quality of life. Funding: University of Technology, Sydney. Research design rating: *****	Risk factors: Occupational, interpersonal, and psychological strains. Risk groups: All teaching staff. Control condition: 143 staff who expressed interest in healthy lifestyle program but were unable to attend.	Instruments: Blood pressure, blood cholesterol, and height and weight measurements taken. Locus of Control of Behaviour, General Health Questionnaire, Bortner Type A Personality Scale and Lifestyle Appraisal Questionnaire, pretest, posttest (immediately after implementation), follow-up 2 years later. Work directed: Not specified. Person directed: University staff agreed to participate in health assessment. Following the health assessments they were invited to attend a 6-week healthy lifestyle program, which included relaxation training and biofeedback mechanisms (i.e., finger temperature and level of stress). Participants were assessed at the completion of the 6-week program and again 2 years later.	Initial health assessment, then 6-week healthy lifestyle program and a 2-year follow-up measure of stress levels. Participants educated in managing their own physical and psychological sources of stress. Responsibility: Individual staff members, voluntary participation.	Timing of follow-up: 2-year follow-up measure of stress. No significant difference between treatment and control group overall on psychological measures (although statistical trend toward treatment group improvements). Program not significantly effective at improving staff psychological health. Work commitments prevented some of interested staff from taking part in healthy lifestyle program. High attrition rate may have skewed the statistical results of the study.

Table 2. (continued)

Case (n)	Step 1: Preparation	Step 2: Problem analysis	Step 3: Choice of measures	Step 4: Implementation	Step 5: Evaluation
2: Dollard et al., 1998 (n = 419) Participants: Correctional officers Sector: Public Region: Urban & rural	Had highest incidence rate of workers' compensation claims compared to other government agencies Organization: Department of Correctional Services in response to problem. Funding: Department of Correctional Services. Research design rating: ***	Based on a previous organizational analysis of the work stress problem (see Dollard, 1996). Risk factors: Interpersonal, physical, and psychological strain. Risk groups: All staff.	Instruments: Staff counselors rated each original recommendation as clear implementation, developments in the spirit of the recommendations, or no clear evidence of implementation. Work directed: Job design to improve working conditions, surveillance of psychological disorders and risk factors, and enrichment of psychological health services. Person directed: Information dissemination, education, and training.	Responsibility: Management, counselor, and individual participants.	Timing of follow-up: Ongoing review of policies. Utilization of staff counselor increased to over 500 staff contacts in the 12 months. Significant reduction in the number of work stress claims over the past 7 years. Reduction of over \$2 million on the workers compensation budget over the past 2 years.

(Table continues)

Table 2. (continued)

Case (n)	Step 1: Preparation	Step 2: Problem analysis	Step 3: Choice of measures	Step 4: Implementation	Step 5: Evaluation
3: Leonard & Alison, 1999 (n = 60) Participants: Male police officers Sector: Public Region: Unknown	Important to monitor any assistance given because of concern for psychological and physical health of police officers. Organization: Department concerned with validity of CISD with its impact on coping strategies and levels of anger following debriefing and the well-being of its officers. Funding: not specified. Research design rating: ****	Instruments: Information on prior negative life experiences and details of critical incident shooting, support received from department, and quality of that support and any other social support received. Risk factors: psychological, physical, and occupational strain. Risk groups: All police officers. Control condition: 30 officers assigned to the no-debriefing (NOD) group.	CISD, Carver et al. Coping Scale, STAX-I Subscales from the Coping Scale (Carver, 1989) and STAX-I. Work directed: Not specified. Person directed: 30 CISD and 30 NOD. These were officers who refused to attend the debriefing—treatment group participants were matched to the control group.	Responsibility: Individual and organization. The organization coordinated the debriefing after a critical incident, but attendance was voluntary.	Timing of follow-up: Not known. The CISD group scored higher on active coping and positive reinterpretation and growth. The CISD group reported more help from colleagues than the NOD group. “16 of the 30 officers in the CISD group felt that debriefing had no effect on the way they coped with the incident” (p. 156). The NOD group obtained higher anger scores than the CISD group.

Table 2. (continued)

Case (n)	Step 1: Preparation	Step 2: Problem analysis	Step 3: Choice of measures	Step 4: Implementation	Step 5: Evaluation
4: Moran & Colless, 1995 (n = 747) Participants: Firefighters Sector: Public Region: Urban and rural	Current emphasis in fire brigades is on the management of critical events. Organization: New South Wales Fire Brigades. Funding: Not specified. Research design rating: ***	Instruments: Open-ended questions, yes/no questions, and questions that were rated using a Likert scale. Risk factors: Physical, interpersonal, and psychological strains. Risk groups: All members of the New South Wales Fire Brigades.	Work directed: Not specified. Person directed: Half-day stress management instruction during initial training, also a critical incident management program was offered to employees.	Responsibility: Individual and organization. Debriefing sessions mandatory. Individual and informal sessions voluntary.	Timing of follow-up: Not known. "The firefighters rated individual and informal sessions for dealing with stress as potentially more useful than the formal debriefing sessions now common in many emergency organizations" (p. 405).
5: Walter et al., 1995 (n = 24) Participants: Nurses Sector: Public Region: Urban	To provide coping strategies to deal with workplace stressors. Organization: Aged care nursing home facility conducted an in-service education program. Funding: Not specified. Research design rating: ***	Instruments: Blood pressure, evaluation sheet to give feedback on session, RME information and instructions stress symptom checklist, self-reported stress question. Risk factors: Physical, interpersonal, and psychological strains. Risk groups: All staff.	Work directed: In-service education program participants paid normal wage for attendance. Person directed: RME and self-report measures.	Responsibility: Organization and individual Those recruited were paid for their participation.	Timing of follow-up: 12 weeks after the last session, participants completed the stress symptom checklist and a self-report stress question. Significant reduction in stress symptoms. Significant reduction in blood pressure. No significant decrease in self-reported stress.

(Table continues)

Table 2. (continued)

Case (<i>n</i>)	Step 1: Preparation	Step 2: Problem analysis	Step 3: Choice of measures	Step 4: Implementation	Step 5: Evaluation
6: Winefield & Farmer, 1998 (<i>n</i> = 20) Participants: Female general practitioners Sector: Public Region: Urban	Recognition of the increase in work stress for medical professionals and to evaluate the effectiveness of a work stress management program for female general practitioners. Organization: Medical profession. Funding: Not specified. Research rating: ***	Risk factors: Physical, interpersonal, and psychological strains.	Work directed: Not specified. Person directed: Series of seminars. Instruments: 3 aspects of work-related psychological well-being, level of psychological distress, General Health Questionnaire (Goldberg & Williams, 1988), a slightly modified version of the Job Satisfaction Scale (Warr et al., 1979), Maslach Burnout Inventory (Maslach & Jackson, 1986).	Responsibility: Individual Voluntary participation—recruitment through newsletter and word of mouth. Continuing education points could be earned through participation. Seminars were free if participants agreed to complete the specified measures.	Timing of follow-up: Collected 4 weeks after the last seminar by mail. Decrease in psychological distress and emotional exhaustion following the program of seminars.

Note. CISD = critical incident stress debriefing; STAX-I = State-Trait Anger Expression Inventory (Spielberger, 1996); RME = relaxing mental exercises.

lifestyle program involving relaxation techniques and biofeedback mechanisms. The results of this study indicated no effect of these stress management skills in reducing the participants' physical or psychological ill health. These findings are supported by the research of Giga et al. (2003), who found that although individual-level interventions had some immediate benefits, the effects were less likely to be long term. Likewise, Walters, Bond, and Pointer (1995) examined the implications of providing an in-service education program to a group of nurses, teaching coping strategies to deal with workplace stressors (e.g., relaxing mental exercises). The findings indicated a reduction in stress symptoms, such as lowered blood pressure, although no reduction in self-reported stress. Thus, the nurses in this study continued to experience stress in the workplace, although they were better able to manage some of their symptoms. On a more positive note, the study by Winefield and Farmer (1998) examined the outcome of providing a program of stress management seminars to a group of female general practitioners. They found a decrease in the level of psychological distress and emotional exhaustion following the seminars.

Results of Australian intervention studies that have examined the effectiveness of critical incident stress debriefing (CISD) as a stress management tool have reported mixed results. For example, Leonard and Alison (1999) examined the success of CISD in a sample of police officers. Although the authors found that, compared to a control group, officers who received CISD displayed increased coping and positive growth, approximately 50% of these officers did not attribute their superior coping skills to the effects of the debriefing. Similarly, Moran and Colless (1995) examined the success of CISD with firefighters and found that voluntary, informal sessions were rated as more effective in reducing stress than were mandatory, formal CISD sessions.

The results of these individually focused intervention studies indicate that voluntary health programs aimed at teaching skills in stress management are not particularly successful in reducing the experience of workplace stress. On the other hand, seminar-based programs appear to procure better outcomes. However, these conclusions are made on the basis of only six intervention studies. There is an urgent need for more Australian intervention studies so that more valid conclusions can be drawn.

The results of the organization-focused intervention reported by Dollard, Forgan, and Winefield (1998) were more positive than the individual-focused interventions. Dollard et al. (1998) examined a sample of correctional officers and found that improving working conditions through job redesign, monitoring psychological disorders and risk factors, and improving psychological health services resulted in positive outcomes. These included a significant reduction in the number of work stress claims, reduction in expenditures on the worker's compensation budget, and increased

utilization of the staff counselor. However, the authors pointed out that these findings could well be due to government policy changes implemented during the observation period, which made it harder for workers to receive compensation, thereby reducing the overall expenditure.

The success of the organization-focused approach supports the view that work stress and resulting mental health may be more strongly related to job factors, or aspects of the work environment, than to individual factors (Dollard & Winefield, 2002; Maslach & Schaufeli, 1993). There may be a number of reasons for this. For example, with individual-focused interventions, such as voluntary health programs or relaxation training, it is possible that only some employees will take part in the program. In contrast, organization-focused interventions, such as modifying the demands on employees through job redesign or changing the organizational structure, increase the likelihood that more employees will benefit from the intervention.

Considering the implied influence that the work environment exerts, it is somewhat concerning that only one Australian intervention study focused on the organization. The lack of organization-based intervention studies is a real barrier to progress in reducing work-related stress (Griffiths, Cox, & Barlow, 1996). We reluctantly conclude that, at present, the state of knowledge regarding the effectiveness of stress management interventions in Australia is very limited. The results of European studies unfortunately do not seem to fare much better (Kompier et al., 2000), although Giga et al. (2003) indicated that there may be a recent U.K. trend to focus on more organization-based interventions. It appears that there would be value in future Australian research that not only explores the efficacy of various organizational interventions but also (stimulates and) evaluates combined individual- and organization-focused interventions (e.g., Kompier & Cooper, 1999; Munz, Kohler, & Greenberg, 2001).

One might also expect differences in the outcomes of stress interventions depending on who takes responsibility for stress management. The results of the Australian intervention studies indicated that in three out of the four studies in which both the organization and the individual assumed responsibility for stress management, positive outcomes were recorded. When the responsibility for stress management fell primarily on the individual, only one out of the two intervention studies reported positive outcomes. It may be possible that ensuring both organizational and individual responsibility can increase the likelihood of success in managing work stress. Alternatively, it may be that the choice of measure for the stress intervention is more important in reducing the stress experience than is the question of who takes responsibility, or possibly even a combination of both. The success of a stress intervention is likely to depend not only on what is done but also on how it is done (Kompier et al., 2000). Research on processes of implementation is generally lacking in the literature.

It is interesting that all of the six intervention studies were from the public sector. The participants most regularly included in the studies reviewed were police officers, public service workers, and nurses (see Table 2). Furthermore, a large proportion of the research incorporated workers from the health services more often than from other occupational fields. This may represent a greater concern within the public sector regarding the work stress experience, it may be a question of greater resource availability within the public sector to implement stress management programs, or it may perhaps reflect a greater likelihood of the public sector to publish results. The preponderance of focus on "stress in the public sector" in the media and in the literature has been previously highlighted (Lewig & Dollard, 2001). There is an obvious need for research and for the implementation and evaluation of intervention programs in the private sector as well (Macklin & Dollard, 2004).

The results indicate a paucity of research studies conducted in rural settings. Rural Australia is considered to be different from the urban sector in terms of health and well-being (Dollard, Winefield, & Winefield, 1999). With higher unemployment rates, a lack of mental health resources (Blank, Fox, Hargrove, & Turner, 1995), and higher turnover rates for professionals (Harvey & Hodgson, 1995), it is possible that differences exist in the stress experience of rural versus metropolitan workers. A greater emphasis on the private sector, as well as a more concerted effort to include rural Australia, would add to the knowledge base highlighting any differences between populations and informing best practice for intervention in these target populations.

Finally, our results indicate that the vast majority of empirical studies in Australia (as elsewhere) have relied on self-report measures to survey stress experienced by participants. Because of their subjective nature, self-report measures may not provide a full picture of the stress experience, and it may be useful to combine their use with more objective criteria. In addition, a greater focus on longitudinal research designs may give a better indication of the effects of a particular stress intervention over the long term and the sustainability of outcomes. This may help justify the cost of certain interventions or preventative measures.

Few would question the importance of occupational stress issues and the human and financial costs that this phenomenon incurs. For example, a recent survey among nearly 16,000 European workers showed that approximately 30% reported work activities as the main cause of their health problems (Merllié & Paoli, 2001). Thus, it would be reasonable to expect a large body of research to be available, particularly in regard to organizational interventions. However, it is apparent from our search strategy that there is a lack of published Australian intervention studies, and this pattern seems to be repeated overseas. In addition, the Australian inter-

vention studies we have reviewed in this article appear to be fraught with methodological flaws, with only one study qualifying for a five-star rating (Craig & Hancock, 1996). As a consequence, few definite conclusions can be drawn regarding the success of various work stress interventions.

The lack of published intervention research may be due to the sensitivity of issues surrounding organizational stress research. One might suspect that organizations have concerns about conducting stress research because exploring such issues within their workplaces could lead to an increase in work stress recognition and compensation claims. Another possibility is fear of giving the opposition a competitive advantage on handling work stress, and possibly increasing productivity, by publishing about successful processes.

The high cost of stress-related workers' compensation claims highlights the need to spend more time evaluating work stress interventions and publishing the findings so that other organizations can gain insight into programs of merit. As Kompier et al. (2000) suggested, there exists at present a large gap between theory and practice. Without further research, our knowledge of what works with regard to occupational stress will remain stunted. Questions surrounding the issue of whether stress prevention actually works; which interventions are most effective, and why; and the costs and limitations of various interventions need to be explored further. Future work in this area should focus on uncovering Australian intervention studies or programs that have not been published and delving into the gray area of work stress interventions to find out what industry is actually doing to tackle the work stress situation.

REFERENCES

- Baker, D. B. (1985). The study of stress at work. *Annual Review of Public Health*, 6, 367–381.
- Blank, M. B., Fox, J. C., Hargrove, D. S., & Turner, J. T. (1995). Critical issues in reforming rural mental health service delivery. *Community Mental Health Journal*, 31, 511–524.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 56, 267–283.
- Cooper, C. L., & Cartwright, S. (1994). Healthy mind, healthy organisation: A proactive approach to occupational stress. *Human Relations*, 47, 455–470.
- Craig, A., & Hancock, K. (1996). The influence of a healthy lifestyle program in a work environment: A controlled long-term study. *Journal of Occupational Health and Safety*, 12, 193–206.
- Crouter, A. C., & Bumpus, M. F. (2001). Linking parents' work stress to children's and adolescents' psychological adjustment. *Current Directions in Psychological Science*, 10, 156–159.
- De Jonge, J., & Dollard, M. F. (2002). *Stress in the workplace: Australian master OHS and environment guide*. Sydney: CCH Australia Ltd.
- Dollard, M. F. (1996). *Work stress: Conceptualisations and implications for research methodology and workplace intervention*. Unpublished doctoral dissertation, University of South Australia, Adelaide, South Australia, Australia.

- Dollard, M. F. (2001a, September). *Examination of relevant issues in the management of an injury*. Paper presented at the Stress Related Injury Conference: Measurement and Methodological Issues in Work Stress Research, Sydney, New South Wales, Australia.
- Dollard, M. F. (2001b). Work stress theory and interventions: From evidence to theory. In *The National Occupational Health and Safety Commission Symposium on the OHS implications of stress* (pp. 3–57). Commonwealth of Australia: National Occupational Health & Safety Commission.
- Dollard, M. F., Forgan, R., & Winefield, A. H. (1998). Five-year evaluation of a work stress intervention program. *Journal of Occupational Health and Safety*, 14, 159–165.
- Dollard, M. F., Knott, V., Galluccio, J., Robertson, M., Lawton, D., Winefield, A. H., et al. (2002). *Evaluation of psychologically based workers' compensation claims in the public sector*. Adelaide, Australia: Office for the Commissioner of Public Employment.
- Dollard, M. F., & Winefield, A. H. (2002). Mental health: Overemployment, underemployment, unemployment and healthy jobs. In L. Morrow, I. Verins, & E. Willis (Eds.), *Mental health promotion and work: Issues and perspectives*. Victoria, Australia: Aus-einet & VicHealth.
- Dollard, M. F., Winefield, H. R., & Winefield, A. H. (1999, April). Burnout and job satisfaction in rural and metropolitan social workers. *Rural Social Work*, 33–43.
- Dollard, M. F., Winefield, H. R., & Winefield, A. H. (2001). *Occupational strain and efficacy in human service workers*. Dordrecht, The Netherlands: Kluwer Academic.
- Dunnette, M. D. (1998). Emerging trends and vexing issues in industrial and organizational psychology. *Applied Psychology: An International Review*, 47, 129–153.
- Geurts, S., & Grundemann, R. (1999). Workplace stress and stress prevention in Europe. In M. Kompier & C. Cooper (Eds.), *Preventing stress, improving productivity: European case studies in the workplace* (pp. 9–33). London: Routledge.
- Giga, S. I., Noblet, A. J., Faragher, B., & Cooper, C. L. (2003). The UK perspective: A review of research on organisational stress management interventions. *Australian Psychologist*, 38, 158–164.
- Goldberg, D., & Williams, P. (1988). *A user's guide to the General Health Questionnaire*. Windsor: NFER-Nelson.
- Greenhaus, J. H., & Parasuraman, S. (1987). A work and non-work interactive perspective of stress and its consequences. In J. M. Ivancevich & D. C. Ganster (Eds.), *Job stress: From theory to suggestion* (pp. 37–60). New York: Haworth.
- Griffiths, A., Cox, T., & Barlow, C. (1996). Employer's responsibilities for the assessment and control of work-related stress: A European perspective. *Health and Hygiene*, 17, 62–70.
- Harvey, D., & Hodgson, J. (1995). New directions for research and practice in psychology in rural areas. *Australian Psychologist*, 30, 196–199.
- Hobfoll, S. E., & Freedy, J. (1993). Conservation of resources: A general stress theory applied to burnout. In W. B. Schaufeli & C. Maslach (Eds.), *Professional burnout: Recent developments in theory and research* (pp. 115–133). Philadelphia: Taylor & Francis.
- Kahn, R. L., & Byosiore, P. (1992). Stress in organizations. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (2nd ed., pp. 571–650). Palo Alto, CA: Consulting Psychologists Press.
- Karasek, R. A., & Theorell, T. (1990). *Healthy work: Stress, productivity and the reconstruction of working life*. New York: Basic Books.
- Kelly, S. (1995). The impact of the relationship and family stresses in the workplace. In P. Cotton (Ed.), *Psychological health in the workplace* (pp. 21–29). Melbourne: Australian Psychological Society.
- Kendall, E., Murphy, P., O'Neill, V., & Bursnall, S. (2000). *Occupational stress: Factors that contribute to its occurrence and effective management*. Canberra, Australia: Centre for Human Services, Griffith University.
- Kompier, M., & Cooper, C. (1999). (Eds.). *Preventing stress, improving productivity: European case studies in the workplace*. London: Routledge.
- Kompier, M. A., Cooper, C. L., & Geurts, S. A. (2000). A multiple case study approach to work stress prevention in Europe. *European Journal of Work and Organizational Psychology*, 9, 371–400.
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.

- Leonard, R., & Alison, L. (1999). Critical incident stress debriefing and its effects on coping strategies and anger in a sample of Australian police officers involved in shooting incidents. *Work & Stress, 13*, 144–161.
- Lewig, K. A., & Dollard, M. F. (2001). Social construction of work stress: Australian newsprint media portrayal of stress at work, 1997–98. *Work & Stress, 15*, 197–190.
- Macklin, D. S., & Dollard, M. F. (2004). *Public and private work stress*. Unpublished manuscript, University of South Australia, Adelaide, South Australia, Australia.
- Maslach, C., & Jackson, S. E. (1986). *Maslach Burnout Inventory* (2nd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Maslach, C., & Schaufeli, W. B. (1993). Historical and conceptual development of burnout. In W. B. Schaufeli, C. Maslach, & T. Marek (Eds.), *Professional burnout: Recent development in theory and research* (pp. 1–18). New York: Taylor & Francis.
- Merllié, D., & Paoli, P. (2001). *Ten years of working conditions in the European Union*. Dublin, Ireland: European Foundation for the Improvement of Living and Working Conditions.
- Mitchell, R., & Mandryk, J. (1998). *The 1995 Australian Workplace and Industrial Relations Survey (AWIRS 95)—an OHS perspective*. Canberra, Australia: National Occupational Health and Safety Commission.
- Moran, C. C., & Colless, E. (1995). Perceptions of work stress in Australian firefighters. *Work & Stress, 9*, 405–415.
- Muchinsky, P. M. (2000). *Psychology applied to work* (6th ed.). Belmont, CA: Wadsworth/Thomson Learning.
- Munz, D. C., Kohler, J. M., & Greenberg, C. I. (2001). Effectiveness of a comprehensive worksite stress management program: Combining organizational and individual interventions. *International Journal of Stress Management, 8*, 49–62.
- Murphy, L. (1996). Stress management in work settings: A critical review of the health effects. *American Journal of Health Promotion, 11*, 112–135.
- National Occupational Health and Safety Commission. (2003). *Compendium of workers' compensation statistics, Australia, 2000–2001*. Canberra, Australia: Author.
- Quick, J. C., Quick, J. D., Nelson, D. L., & Hurrell, J. J. (1997). *Preventative stress management in organisations* (2nd ed.). Washington, DC: American Psychological Association.
- Quick, J. D., Quick, J. C., Campbell, D., & Nelson, D. L. (1998). Preventive strategies and surveillance indicators for organisational stress. In C. Cooper (Ed.), *Theories of organizational stress* (p. 259). Oxford, England: Oxford University Press.
- Repetti, R. L. (1987). Linkages between work and family roles. *Applied Social Psychology Annual, 7*, 98–127.
- Robinson, B. E., Flowers, C., & Carroll, J. (2001). Work stress and marriage: A theoretical model examining the relationship between workaholism and marital cohesion. *International Journal of Stress Management, 8*, 165–175.
- Siegrist, J. (1996). Adverse health effects of high-effort/low-reward conditions. *Journal of Occupational Health Psychology, 1*, 27–41.
- Spielberger, C. D. (1996). *State-Trait Anger Expression Inventory manual*. Lutz, FL: Psychological Assessment Resources.
- Van der Klink, J. J. L., Blonk, R. W. B., Schene, A. H., & van Dijk, F. J. H. (2001). The benefits of interventions for work-related stress. *American Journal of Public Health, 91*, 270–275.
- Walters, H., Bond, M., & Pointer, S. (1995). A stress management program for nursing home staff: An evaluation of combined education and relaxation strategies. *Journal of Occupational Health Safety, 11*, 243–248.
- Warr, P. B., Cook, J., & Wall, T. (1979). Scales for the measurement of work attitudes and psychological well-being. *Journal of Occupational Psychology, 52*, 129–148.
- Winefield, H., & Farmer, E. (1998). Work stress management for women general practitioners: An evaluation. *Psychology, Health & Medicine, 3*, 168–171.
- Winefield, A. H., & Jarrett, R. J. (2001). Occupational stress in university staff. *International Journal of Stress Management, 8*, 285–298.
- WorkCover Corporation of South Australia. (1999). *Characteristics of open mental disorder claims*. Adelaide, South Australia, Australia: Author.