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on the OHS Implications of Stress

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NOHSC SYMPOSIUM OF THE OHS IMPLICATIONS OF STRESS

OHS Implications of Stress at Work – the New Zealand perspective

Paper Presented by: Dr Alison Drewry Auckland University

Introduction

Differing opinions on the nature and implications of workplace stress are held by many of the New Zealand stakeholders, and this phenomenon has the potential to compromise the effective implementation of strategies to address the issue. This paper describes the health and compensation systems in New Zealand, the drivers for the medicalisation of stress, and the elements necessary for a comprehensive strategy to manage an issue of this complexity.

Interpretation of definitions and terminology

From a psychophysiological perspective, stress is a perceived physical, mental, or emotional demand; and a stressor is therefore any life event that can cause changes in behaviour or biology. In this context, the stress response is a normal, protective reflex with psychophysiological consequences, and it is whether or when these are interpreted as causing discomfort or disability that is controversial.

From a medical perspective, stress is viewed as occurring along a continuum, with the potential to produce optimisation of performance in some situations, and being detrimental to performance in others. The term 'situation' here refers to the characteristics and circumstances of the individual experiencing the 'stress', and it varies between individuals and over time. However, stress has been defined for the purposes of Health and Safety in Employment legislation in New Zealand as an entirely detrimental phenomenon:

Stress: 'the awareness of not being able to cope with the demands of one's environment, and when this realisation is of concern to the person, in that both are associated with a negative emotional response' – from the OSH publication, 'Stress and fatigue – their impact on health and safety in the workplace, 1998.

This corresponds to what most people imply when they refer to 'occupational stress', and there is therefore a widespread misapprehension that all 'stress' is harmful. It has also been reinforced by two recent court judgements for employees, who claimed that workplace stress caused their ill-health. Review of the judicial opinion in these cases reveals that the awards were made for negligent management of the employees by their employers, and did not in fact establish that workplace stress caused their disability, but the judgements have been widely misrepresented in the media, and the public's perception is that occupational stress is now a compensable condition. This interpretation is perpetuated in changes to the legislation currently before parliament that will make employers liable for the 'stress' experienced by their employees.

Discomfort vs disability

However, aside from the nature of stress itself, there is an equally compelling issue that is also neglected by the legislation: when does a stress response produce

discomfort, and when does it produce disability? What degree of vocational disability will be compensated, and what should be the nature of any remedial intervention?

Stressors are ubiquitous, and the stress experience is universal, so the induction of discomfort and consequent disability is somewhat arbitrary; what appears to be a potent 'stressor' for one person may have a negligible effect on another, or ironically have had no effect previously. Stress is therefore a stochastic effect, and it is nonsensical to propose that stressors can be objectively identified or quantified, or that minimising them will eliminate the stress response. In fact, reducing stressors may well have the paradoxical effect of reducing performance, and the implications of the proposed legislation will place employers and insurers in an invidious position. Instead of focussing on the stressors themselves employers need to use surrogate measures of stress such as: absenteeism, staff turnover, customer satisfaction, and productivity; and use these statistics to guide interventions to reduce excessive workplace stress.

Insurance and Compensation

In New Zealand, physical injury (work-related and non work-related) is addressed differently from other health problems. Accident insurance is compulsory by default, through the ACC (now called the Accident Compensation, Rehabilitation and Insurance Corporation). This was introduced in 1975 to provide comprehensive treatment, rehabilitation, and wages compensation for victims of accidental injury, regardless of fault, and in exchange New Zealanders forfeited the right to sue. The system is funded by a combination of levies from employers, workers, drivers, and taxpayers, and although some accredited employers run their own injury management and compensation schemes, the minimum benefits of the ACC system effectively apply to all workers.

To date, 'stress' has not been eligible for cover by ACC. The Accident legislation defines that 'mental injury' is only recognised and compensated if it arises directly from a compensable physical injury, which has effectively limited compensation decisions to Post Traumatic Stress Disorder resulting from an 'accident'. In fact, 'normal emotional responses' are specifically excluded from cover.

However, it is not plausible that the prevalence of stress-related phenomena is lower amongst workers in New Zealand than in other societies, and it is concluded that such cases are occurring, but being manifested and labelled as physical injury. Therefore it is possible to look at injury trends and interpret these as stress trends.

The somatisation of stress

There are at least two mechanisms by which psychological distress may be represented as physical injury: it may be experienced as physical symptoms, which is known as somatisation; or it may reduce the individual's tolerance for co-existing physical symptoms. These phenomena have been observed and documented in several studies of so-called 'occupational overuse syndrome', when they may occur as an epidemic in the context of dysfunctional workplace management. In these situations, the symptoms presented as 'injury' either had no plausible biomechanical basis, or were recognisable pre-existing medical conditions that did not previously impose any vocational disability. These findings suggest that stress is about management or interpersonal relationships rather than about ergonomic s or work intensity. The driving factor for labelling these symptoms as 'injury' is often cynically assumed to be access to worker's compensation, and therefore time off work, and subsidised medical and surgical care. However, there are other potent contributory factors that will need to be addressed as part of any attempt to control access to compensation for 'stress', which will be as vulnerable, if not more so, to misdiagnosis than any physical condition.

Attitudes to psychological illness

From a claimant's perspective, the most important drivers for representing psychologically-based conditions as musculoskeletal injury appear to be both access to compensation, and the profound and widespread rejection by society of psychological and psychiatric conditions. This latter is embedded in Maori culture, which interprets psychological phenomena differently from conventional medicine; but is also characterised in Pakeha society by a relative neglect in the provision of psychological health services. Typical data to support this view are that the prevalence of disabling conditions identified as psychologically-based amongst serving police officers is zero, but amongst those leaving the force (4% per annum) is 75 per cent. This implies that psychological illness is either not socially acceptable, or that it is regarded as incurable and an inherent aspect of police employment.

From a primary carer's perspective, there are several factors that will influence their decision to register a condition as musculoskeletal in jury in preference to psychological illness. Their position as a patient advocate, and their recognition that there is a dichotomy of access to health services between those with injury and those without, means that they will tend to apply for accident insurance cover, for which physical injury is a pre-requisite. This inequity is profound and widespread: for example, in New Zealand, it is now impossible to get an inguinal hernia repaired in the public health system, but with private or accident insurance it is freely available in private. Therefore, any condition that might be attributable to an accident will be registered as such.

In addition, differentiating a primarily 'stress-based' condition that presents with somatic symptoms from a physical condition requires time, information, and expertise, all of which a general practitioner may lack. The current subsidy from ACC amounts to a six-minute consultation, during which it would be impossible to take an adequate symptom and occupational history, and examine the patient, which reinforces the requirement for a superficial assessment and cursory diagnosis.

General practitioners are also acutely aware of the unacceptability of a psychological diagnosis to the patient, and the absence of health services to which patients can be referred, which effectively discourages them from identifying such problems.

This tendency towards misdiagnosis results in a cascade of inappropriate and ineffective medical interventions that legitimises and perpetuates the claimant's disability, and often results in prolonged time off work. But a musculoskeletal injury label suits patients, GPs, employers, and insurers, since a physical problem obviously has a physical solution, which is relatively easy to implement. The response usually includes ergonomic adjustments, referral to a physical therapist or orthopaedic surgeon, or simply 'rest', but these will actually have no impact on any underlying feelings of emotional distress, and may even result in greater disability due to immobility, medication, surgical procedures, deconditioning, or skill regression.

It has been suggested that increasing the access to early expert opinion on the true nature of a condition presenting as a work-related physical syndrome will improve the accuracy of the diagnosis, and therefore the outcome for the patient. Paradoxically, it is proposed that this strategy will 'demedicalise' the stress phenomenon, but while the inequity in compensation, and paucity of access to specialist psychological health care persist, it is unlikely to reduce the total lost time due to stress-related conditions.

It is also unlikely that changes to the compensation system itself will achieve any improvement in lost-time statistics. There are few data available from New Zealand to analyse the effects of different compensation systems on claims. Recently, worker's accident insurance was privatised for an 18-month period, and the apparent trend is that the total number of claims for work-related conditions decreased, presumably including a proportion of stress-related conditions. However, this trend is thought to be artefactual and due to the obvious financial incentives for employers to lower their premiums by reducing injury claims. This resulted in claims not being registered (either by the employer or the insurer); re-coded as non-work-related injury; and a focus on pre-employment assessment that amounted to overall discrimination against disability in the workplace. It is expected that now that workers' insurance has been returned to central control under ACC, those claims not registered previously will resurface.

Systematic influences

The underlying reason for this pattern is that any injury-compensation system is only a part-funder of health care. At present, discriminating between those whose conditions are compensable by an insurer, and those whose are not, simply transfers society's burden of disability between one government department and another. A worker disabled from employment by ill-health is either off work and receiving an income-related benefit from the taxpayer-funded insurer, ACC, or off work and receiving a benefit from the taxpayer-funded body, Work and Income New Zealand. The common goal of both should be return to independence, but instead interventions or improvements to ACC, which has a virtual monopoly on vocational rehabilitation, appear to be focussed on transferring liability to the other agency. This does not benefit the country overall, but consumes resources for a negligible outcome.

Addressing the issues of introducing compensation for stress, and limiting its adverse effects, will therefore require comprehensive changes to the health system in New Zealand, and adaptation of the national, cultural perception of psychological influences on health and disability. The competencies of employers, health professionals, and government agencies are critical to achieving any reduction in vocational disability, and all the stakeholders need to be adequately resourced to manage stress-related phenomena in the workplace.

Conclusion

It is clear that the implications of stress in the workplace are profound. The stress response is a normal, adaptive reflex to emotional, mental, or physical stressors that can enhance or detract from performance depending on the individual's vulnerability. Their vulnerability will depend on their personality and coincident factors, and the nature and intensity of the stress response varies accordingly. In some cases, the stress response results in actual disability, but it is not possible to measure a stressor, or predict its effect. Attempts to exclude 'stress' from compensation encourages relabelling of symptoms so that a compensable condition is diagnosed, but that this misdiagnosis results in medical mismanagement of the condition, and prolonged vocational disability. However, alterations to the compensation system alone will be ineffective due to societal prejudice, lack of expertise and resources to diagnose and treat stress-related conditions, and disparity between the desired outcomes of insurers and other government agencies. Further research is needed into the hierarchy of factors that drive the misdiagnosis of stress-related conditions, and what interventions will be effective to ensure that vocational capacity is retained.

Statistical Data to Accompany Jurisdictional Activity

The following information and tables were sourced from the National Data Set (NDS). Which provides the most up to date information on the number, incidence and frequency rate of stress related data for Australia involving five days or more time lost based on workers' compensation statistics. However, it does not include data on injury costs.

'Mental Stress' by Jurisdiction

The data for stress claims reported in the NDS tend to be quite volatile with the result that year-to-year movements can fluctuate substantially. The following graph indicates the number of compensated cases for Mental Stress among jurisdictions (excluding Victoria and the ACT) between the years 1994-95 to 1999-2000. The graph has been divided into two parts relating to the actual number of claims reported in order to highlight trends among the jurisdictions within the lower data range.





For NSW year-to-year variations were relatively stable until 1998-99 when there was a drop from 2382 to 1642 cases. The number of cases rose slightly again in 1999-2000 to 1838. Oueensland showed a steady decrease from a high in 1994-95 of 1335 to its low of 421 in 1997-98. There has been a comparable increase again to 778 in the year 1999-00. The Commonwealth has showed a steady decrease over the periods reported in this table from a high of 1376 cases in 1994-95 to a low of 155 cases in 1999-00. South Australia has remained relatively stable with 496 cases reported in 1994-95 to 378 in 1999-00. By comparison, Western Australia has shown a slight increase over the corresponding period from 287 cases in 1994-95 to 439 in 1997-98 and then a slight decrease from that level so that in 1999-00 there were 402 cases reported. The Northern Territory has remained virtually stable with very minor fluctuations upwards from its low in 1994-95 of 58 cases to 1999-00 when 75 cases were reported. However it should be noted that the number of claims reported by a jurisdiction will also be influenced by other factors (in addition to the actual numbers of claims submitted). This might include the numbers of person in employment at any one time, guidelines used for accepting claims etc.

'Mental Stress' Incidence Rate by Jurisdiction

Incidence Rate is the number of occupational injuries and disease occurrences expressed as a rate per 1,000 wage and salary earners employed. The Victorian threshold for workers' compensation cases is greater than the other jurisdictions making comparisons with them difficult and as no data for the ACT was available, and hencethese jurisdictions were excluded from this analysis.



It can be noted from the graph above that the Western Australia has had the lowest comparable rate over the six -year period reported, except between 1997-98 to 1998-99 when Queensland had the lowest overall incidence rate. New South Wales has shown a steady decrease over the period from a high of 1.2 1994-95 to its current low in 1999-00 of .7. Tasmanian started the reporting period with the highest incidence rate of 1.8 but the reported a significant decrease until 1997-98 when the rate fell to .6, then the following year to .8 but again fell slightly to .7 in 1999-00. The Northern Territory incidence rate has fallen fro its high of 1.4 in 1995-96 to –9 in 199-00 but still remains the jurisdiction with the highest incidence rate.

Duration of Absence

In Table 1 below it can be observed that mental disorders make up 6.5 percentage reported injuries and disease. On average 'Mental Disorders' result in the longest duration of absence from the worksite of any condition. Duration of absence is closely related to the eventual cost of the claim.

Nature of Injury or Disease	Average Weeks	Percentage
Injury & poisoning	8.8	83.0
Diseases of the nervous system & sense organs	2.2	1.4
Diseases of the musculoskeletal system & connective tissue	14.6	5.8
Diseases of the skin & subcutaneous tissue	7.0	0.5
Diseases of the digestive system	7.7	1.9
Infectious & parasitic diseases	5.7	0.2
Diseases of the respiratory system	9.5	0.3
Diseases of the circulatory system	12.6	0.2
Neoplasms (cancers & benign tumors)	3.7	0.0
Mental disorders	16.6	6.5
Other diseases	9.6	0.2
Total	8.8	100.

Table 1. Nature of Injury or Disease and Duration of Absence 1998-1999¹

¹ Only 1998-99 data was available at the time of reporting for this statistics.

NOHSC Symposium on the OHS Implications of Stress Melbourne, Dec 2001

Work Stress Theory and Interventions: From Evidence to Policy

Maureen Dollard, PhD



The University of South Australia

Overview

- 1. Current evidence of health impacts of stress
- 2. Evaluation of the major models of work stress
- 3. Sources of work stress
- 4. Interventions
- 5. Policy and practical implications



Stressor? Stress? Strain

How physiological responses affects health (strain)

Initial reaction is adaptive ~ energy resources mobilised (increased heart rate, increased blood pressure, more rapid breathing).

A state of a sustained physiological arousal

Repeated exposure ~ a stage of exhaustion is reached where organic damage, or even death can occur

Psychological & Psychiatric Effects

Cognitive

Somatic

Emotional

- eg job satisfaction, lack concentration
- eg depression, anxiety
 - eg headaches, dizziness
- Behaviour change eg alcohol, drugs, work performance, absenteeism, industrial accidents, marital issues
- ✓ Longer term

eg classifiable disorders, suicide, post-traumatic stress disorder



Physical Health Effects

Cardiovascular disease

Other health effects are thought to result from work stress

- asthma
- peptic ulcers
- rheumatoid arthritis
- obesity
- musculoskeletal disorders



The common assumption of a relationship between stressors, the experience of stress and poor health appears to be justified?

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Work Stress Defined

Much disagreement about what stress means-as much a social and political problem as a health problem

"The harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury" (NIOSH, 1999).

Work Stress Theories

- Numerous theories of job stress
 Theories overlap and complement each other
 Theories can be grouped in different categories:
 Stimulus/response combinations
 Interactional vs. transactional models
 - Sociological vs. psychological paradigms
 - Environmental vs. individual emphasis

Demand-Control Support Model





Burnout

- Emotional exhaustion
- Lack of personal accomplishment
- Depersonalisation from chronic exposure to difficult clients
- Strain results more from operational and organisational aspects of the job, rather than dealing with difficult clients

Burnout

Factors involved in the development of strain are seen in this model to include:

- work overload
- lack of control
- insufficient reward
- *breakdown of community*
- ? absence of fairness
- value conflict



Effort Reward Imbalance Model



Cognitive Phenomenological Model

Stressor? Cognitive appraisal? Coping? Strain

- Emphasises personal appraisal and coping responses
- Individual perceives a situation as stressful, and appraises their own resources for coping with it
- Strain results if they feel their ability to cope is not adequate to resolve or deal with the situation

Overall Evaluation

- Each explain some aspect of the work stress picture
- Models differ in emphasis on the work environment, the individual, the individual's coping strategies
- DCS and ERI models provide key elements in major international work stress policy frameworks,
- DCS and ERI clearly evidence based

Even when personal disposition is implicated, work characteristics exert a strong influence on health and productivity outcomes



Towards local theory and participatory approaches

- Difficulties emerging from testing the theories and organisational problems
- Given rise to more active, participatory, research methodologies (PAR)
- Approaches that use multiple theories and intend to develop new local theory



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Risk factors/conditions

Job characteristics and nature of the work

Job contents/ demands	e.g. High physical, mental and or emotional demands, lack of variety, short work cycles, fragmented or meaningless work, under-utilization, high uncertainty, continuous exposure to people through work
Workload/workplace	Work overload or underload, machine pacing time pressure, deadlines
Work schedule	Shift working, inflexible work schedules, unpredictable hours, long or unsocial hours
Job control	Low participation in decision making, lack of control over workloads
Physical environment and equipment issues	Inadequate or faulty equipment, poor environmental conditions (space, light, thermal etc)

Social and organisational context of work

Organisational culture and function	Poor communication, low levels of support for problem-solving and personal development, lack of definition on organisational objectives.
Interpersonal relationships at work	Eg poor relationships with superiors, interpersonal conflict
Role in organisation	Eg Role ambiguity, role conflict, responsibility
Career development	Career stagnation and uncertainty, underpromotion or overpromotion, poor pay, job insecurity, low social value to work.

Individual risk factors

Individual differences	Coping styles, personality, hardiness	
Home-work interface	Conflicting demands of work and home, low support at home, dual career problems.	Cox et al, 2000

Sources of Work Stress

Range of sources of work stress including

- the role of the supervisor
- gender differences
- socio-economic status
- job control
- workplace violence
- globalisation



Post-traumatic Stress (PTSD)

Stressors may be experienced in the work environment as intense, acute events, beyond normal expectations.

For example

- the experience of violent incidents
- witnessing a robbery
- working with abused clients
- dealing with road accidents
- chronic stressors i.e. Bullying



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Change the Job or the Worker?

- Most commentators hold work environment should primary focus of research and intervention
- Supported by studies of work stress interventions
- Individual interventions are important, organisational level interventions may provide far reaching changes in health, well-being and productivity
 - Significant links between work environment, strain and productivity

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Implications for Policy and Practice

- Strategies for identifying, assessing and managing stress in the workplace may be implemented at the:
 - national level
 - organisational level
 - individual level



1. National Level Philosophy and Focus

- A national position statement on work stress
- Promote whole of organizational approaches, healthy organizations, sustainable organizations and ethical action
- Establish a national monitoring system for identifying risk factors and risk groups in the working populations
- Make a systematic attempt to benchmark organisational performance on work stress management

National Level Support

Support and funds to enable greater dialogue between all stakeholders

National engagement ~ Convene further national conferences and workshops on work stress in which government, social partners, workers and researchers can participate

Enable participation in international discussion about work stress and its solutions

National Level Knowledge Development

- National risk factors and risk groups
- Positive or productive aspects of work such as morale and engagement
- Explore emerging issues eg. Emotional and cognitive demands and workplace violence, its causes and consequences
- Examine effect of legislation/ organisational climate on rates/ claims & acceptance or rejection of stress claims
- Compare Australian regulations, policies and practices with those in other countries

National Level Knowledge Development cont'd

- Systematically identify gaps between research evidence and policy
- Most Australian case studies have focused on individual approaches in comparison to European efforts
- Research on organisational interventions
- Urgent need to conduct an evidence based meta-analysis of Australian work stress prevention and interventions
- Urgent need for national longitudinal studies of work stress

National Level Active Transfer of Knowledge

- Clearing house for all relevant information
 Educational materials to be placed on WWW
- Work stress research a priority for National Health and Medical Research Council
- A national network of work stress researchers
- More comprehensive national databases

National Level Education

- Government, social partners, and researchers participate in television programs and videos on identification and prevention of stress at work
- Provide more education and training on work stress and interventions for all stakeholders to enable fuller participation in prevention
- Amend education of various professions to promote modernisation of work and prevention of work related stress

2. Organisational Level

- Focus on primary prevention eg changing personnel policies
- Promote "internal control" approaches (see best practice approaches)
- Ensure proper training and career development for improved P-E fit
- Ensure optimum conditions for the introduction of new technologies-integrate with health promotion
- Worker involvement in planning and change
- Equal opportunities and fairness- including selection, promotion and re-entry

Organisational Level Interventions to improve work design Improve communications and staff involvement to improve control over work and team work 360° evaluation of supervisors'/managers' styles Develop a culture in which staff are valued Promote formal and informal social support Evaluate work demands and staffing levels

Organisational Level Interventions to improve work design

Reduce violent exposures

Define roles more clearly

- Avoid job security & career development ambiguity
- Design work schedules to be more compatible for non-work responsibilities
- Design forward, stable rotating shifts

Organisational Level

- Use local information to inform the exploration of stress
- Provide secondary and tertiary support as necessary (with high regard to confidentiality)

Guidelines for Best Practice in Organisational Implementation

- Need to be stepwise and systematic
- Require an adequate diagnosis or risk analysis
- Combine both worker-directed and person-directed measures
- ✓ Use a PAR (worker involvement)
- Have top management support
- Evaluated for costs and benefits of the intervention and in terms of health and productivity outcomes (guidance on work related stress)

We would do well to remember . the "job" concept has only a 200 year history .. jobs themselves and their inherent structures are human constructions, not immutable, but capable of continuous improvement.

As demands for quality and productivity increase, and new demands emerge, ... work management will require change. Workers will require more varied organisational responses to assist them to cope with old, new, and emerging risks as well as high performance.

Policies and strategies for continuous monitoring and dialogue between the full range of stakeholders is imperative.

Multi-level approaches to Stress

David Morrison University of Western Australia

Outline

- Industries, jobs & people where does most of the stress lie?
- Stress as a multi-level problem
 - Practical: how and where should the intervention occur?
 - Statistical considerations
 - dancing on the head of a pin hurts can be a waste of time and wrong statistics lead to wrong conclusions
- The causality problem: the Achilles heel of stress research.
- Some Empirical Studies
- Conclusions: Stress is all about perceptions and how they are managed.

Where is all the stress?

Disease	Social Class						
	1	2	3n	3m	4	5	
Circulatory	69	80	102	108	113	151	
Cancers	69	77	89	113	117	154	
Suicide	89	80	95	86	114	198	
Car Accids.	65	79	81	106	118	181	

Standardised mortality rates 100=average risk

Stress and Jobs

Occupation	Disease				
	Cancers	Circuly.	Respty.		
Chefs	125	125	137		
Process workers	140	107	136		
Machine tool	52	46	55		
Aircraft fitters	19	21	22		
Foremen (Rubber)	39	74	109		
Foremen (Steel)	388	474	290		
Foremen(Engineering)	161	136	88		
Foremen (Rail)	986	963			

Standardised mortality rates 100=average risk

Partitioning the variance

- There appears to be large variation in the community for illness
- Within social class there appears to be large variation in disease incidence
- Within Occupational groups there appears to be large variation in incidence
- But how much is due to individual, occupational and industry effects?

How much variance in strain does each level account for

AWIRS Study 1: N= 19155 (15062)						
	Mental Health			Job Satisfaction		
	Variance estimate	Z	Sig.	Variance estimate	Z	Sig.
Industry	5%	3.9	<.001	1.5%	3.3	<.001
Occupation	3%	5.2	<.000	3%	5.6	<.000
Individual	95%	83.9	<.000	95.5%	83.6	<.000

How much variation at each level in affect can be explained?

	Baseline	Industry	% var	Occuptional	% var	Individual	% vars
Industry	.180	.120	33	.156	13	.155	13
Occupatn	.139	.140	0	.083	40	.122	12
Indiv	5.54	5.39	2	5.48	1	5.00	10
% Model		4		6		10	

Study 2: National Health Service (n=6771)

	Variance explained	Individ. Variance	Job Variance
JOB			
SATISFACTION			
Variance to explain		94.6	.054
Individual level job characteristics	.328	.332	.259
Job Level Job Characteristics	.353	.332	.722
MENTAL HEALTH			
Variance to explain		.98	.02
Individual job characteristics	20.6	19.4	83.3
Job level job characteristics	20.8	19.4	94.4

Conclusions (so far)

- Variance in strain at the job, occupation, industry level is significant but relatively small
- A small number of variables account for a large proportion of the variance beyond the individual level.
- What is the best intervention strategy?

Pick the most effective?But how?

- No consistency in measures or approaches
 - <u>Measures</u>: ad hoc context specific making it difficult to compare studies and to know where the sample lies in terms of stress exposure. Large samples that contain the full range of stress experiences are desirable.
 - <u>Study Design</u>: predominantly cross sectional samples of convenience containing very few stressed people, data analysed at the individual level. This is a BIG problem.

Inflation of alpha level in the presence of intra class correlation (Barcikowski 1981)

		?		
Ν	.01	.05	.20	
10	.06	.11	.28	
25	.08	.19	.46	
50	.11	.30	.59	
100	.17	.43	.70	

Individual level approach

- Proactive
 - Job Design (improve skills on the job)
 - Selection
 - Personality
 - Skill levels
- Reactive
 - Stress intervention post breakdown

Proactivity (Skills) Study 3: Meat Processing Plant (n=190)



Chi-Square=224.08, df=216, P-value=0.33868, RMSEA=0.015

Proactivity: Skills Study 4 Water Treatment Plant: (initial n=271):Longitudinal Model Testing



*Modified model ?*²(12)=21.05 p>.05; *RMSEA*=0.08 Proactivity: Selection on Individual Differences

- Type A, Neuroticism, Trait Anxiety, Locus of Control.
- Negative Affect: Vulnerability to stress
 - Nuisance variable for substantive effect?
- Perhaps individuals and jobs interact giving a mixed level effect (in other words a substantive effect)

Proactivity Selection on individual differences: Study 5: Meat Processing Plant (n=197)

• If negative affect is an indicator of susceptibility to stress, then the adverse impact of job demands will be felt first by these people especially in the absence of control and opportunity to learn.

Demand and Negative Affect Interaction under Low Control



Summary: Proactive Interventions

- <u>Organisational interventions</u>, are concerned with reducing workplace stress by addressing factors that operate at the macro level such as changing aspects of the job or organisational structure.
 - Not a lot of variance to explain but it is systematic and predictable by a small number of variables
- <u>Individual focused interventions</u> are concerned with extending the physical and psychological resources of employees to enable them to deal more effectively with stress.
 - A lot of variance to explain and it it unrealistic to expect a large and general effect

Reactive Interventions: Employee Assistance programs

- Few long term effects observed
- Few well controlled studies
- At best the jury is still out especially with respect to work related problems
- One drawback of individual interventions is that they do not contribute to the resolution of problems that originate in the workplace
- Individual-organisational interface are likely to address relationships at work, role issues, person-environment fit, participation and autonomy.

Study 6: A mixed level analysis of stress management

- Social Support and Job Control have been found to moderate stress reaction.
- The benefits of control and support should be found in the long term and help to maintain the effects of counselling (which is often found to be effective in the short term but dissipated with time)

Interaction between job characteristics and time having controlled for severity



Summing up

- A common theme is emerging: A mixed level approach seems logical (person and job, intervention and job).
- But ... should we change the job or the persons perception of it? We argue the latter

In support of perceptions

- Van der Doef and Maes (2000) report none of the studies that use objective measures of job characteristics support the most vaunted model of job stress (Karasek, 1979)
- Lischeron and Wall (1977) showed employees were just as happy with psychological participation as objective participation.
- Morrison and Payne (2001) (study 2 here) have shown perceptions are more important than objective job characteristics (an analysis also supported by study 1 here)
- <u>Study 7</u>: Morrison, Upton and Cordery (1996) have shown how leader behaviour affects perceptions of jobs and climate.
Study 7: Windshield Factory (n=111)



Conclusions

- The effects of exposure to stress can be explained with reference to the industry, the job and the individual.
- The variance explained by differences in industries and jobs is relatively small compared to individual differences.
- Small effects of job and industry may be important the asprin effect
- The variance in observed strain is accounted for mostly by individual level variables that are perceptions of job characteristics.
- Managers and supervisors are pivotal in the management of perceptions.

Conclusions

• Stress is a management problem

- Management's problem is to manage the perceptions of individuals with regard to their jobs.
- Perceptions are important as how else do we explain the phenomenon that abattoir workers and office workers report their jobs and their reactions to be more similar than different.
- Companies might better spend stress intervention money indirectly on employees through the modification of management behaviour especially with respect to perceptions of job control and support!

Individual Differences in reactions to stress Jim Bright, Phd University of New South Wales Jim Bright & Associates

Genetic and Acquired Individual difference factors

- In the case of Genetic and Acquired Individual difference factors such as age, gender, education or social support there is good evidence that these contribute to differences in vulnerability to stress.
- I have not covered the acquired differences in any depth, because there is a huge literature on topics such as social support and education which I believe to be beyond the scope of this paper.
- (Further coverage of these topics can be found in Jones and Bright (2001).

Genetic and Acquired Individual difference factors

- Although some of the reasons why these differences exist are not well understood, policies and practices that enhance social support in the workplace and education may reduce levels of workplace stress and hence claims.
- Other issues such as wealth of the individuals and families would seem to be beyond the scope of OH&S interventions or policies.

recruiting staff who are "stressresistant"

The evidence for reliable dispositional difference factors is so confused and beset with methodological problems on the one hand, and so small in practical significance on the other, that recruiting staff who are "stress-resistant" or compensating staff for stress on the basis of psychological traits is not going to be very reliable or supported by existing evidence.

self-selection, motivation, and interventions

•Clearly there are organizations that relatively successfully select psychologically robust staff e.g. SAS in the Military. However this selection probably has more to do with self-selection, motivation, and interventions aimed at the acquisition of stress resistant qualities – e.g. physical fitness, social support through teamwork and bonding, and so on, than it has on any underlying reliable individual difference that we know of.

stronger focus on situational factors

 In the realm of compensation, a stronger focus on situational factors such as the work environment, levels of social support, training, etc are likely to be more reliable than a focus on the individual.

funding of further well designed research

Finally, in terms of policy, it should be clear that funding of further well designed research investigating some of these issues in a more sophisticated way would be a highly recommended. However, this research will only be successful if unions and employer organizations provide a supportive environment in which these studies can be conducted.

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Evaluation of Occupational Stress Interventions: An Overview of Findings and Implications for Policy and Practice

Dr. Tony LaMontagne

Senior Lecturer

Department of Epidemiology & Preventive Medicine

Monash Medical School

anthony.lamontagne@med.monash.edu.au



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Paper Overview

- Review of relevant peer-reviewed literature
- Organizing frameworks
 - Work stress & broader OHS principles: primary, secondary, & tertiary prevention
 - OHS intervention research
- Work stress intervention & evaluation methods
- Findings: work stress framework
- Findings: OHS intervention research framework
- Implications for policy & practice

Examples of Intervention and Evaluation Strategies: Aust et al 1997

Intervention Type

Individual-level, Secondary Prevention

(with some Organizational-level, Primary Prevention) Intervention Strategy

Theory-based (ERI) 12-week stress management class for German inner-city bus drivers: including:

- ?? Relaxation?? Coping with anger
- ?? Reduction of "need for control" (related to Type A personality)
- ?? Suggestions for structural changes, communicated to OHS Committee

Evaluation Strategy

~Experimental: 54 volunteers for program (randomly?) assigned to intervention (n = 26) or control (n = 28)

Controls offered same intervention at end of 12-week period (for ethical reasons)

Key Findings

- ?? "Need for control" significantly reduced in intervention versus control group
- ?? Effect persisted for 3 months or more
- ?? No significant effect on mood or symptoms
- ?? "Need for control" has been previously shown to predict CVD risk factors and outcomes

Examples of Intervention and Evaluation Strategies: Cornell Worksite AmBP Study

Intervention Type

Individual and Organizationallevels, Primary and Secondary Prevention

Intervention Strategy

Natural experiment tracking changes in: 22 Job strain (DCM)

- ¹¹₂₂ Blood pressure
- $\frac{1}{22}$ Health behaviours

Evaluation Strategy

Prospective Longitudinal Follow-Up:

285 healthy men aged 30-60 at eight NYC worksites

Data collected at 0, 3, and 6 years

Key Findings

- ?? Job strain related to AmBP at each time point
- ?? Changes in job strain predict changes in AmBP, controlling for
 - ~10 other factors
- ?? Decreasing job strain predicted higher smoking quit rates

Examples of Intervention and Evaluation Strategies: Israel et al 1992

Intervention Type

Intervention Strategy

Individual, Organizational, and Environmental Primary, Secondary, and Tertiary Prevention

Theory-based comprehensive intervention directed by Joint labour managementresearcher 'Stress & Wellness Committee'

Evaluation Strategy

Participatory Action Research: US auto manufacturing plant of ~1,000 employees, 1985-1992

On-going qualitative, and periodic employee surveys

Key Findings

- ?? Increased trust between hourly and salaried employees
 22 Increased co-
- ?? Increased coworker social support
- ?? Decreased job security (downsizing and company split)
- ?? Overall negative feelings and some symptoms increased

Summary of Findings

- Individual-level interventions have favorable effects at the individual level
 - Interventions mostly stress management training:
 - Cognitive-behavioural skill training
 - Relaxation techniques
 - Combinations or multi-modal programs
 - Outcomes include symptoms, physiological measures, psychological measures
- Individual-level interventions not consistently effective in changing organizational or environmental-level outcomes
 - Outcomes include absenteeism, turnover, injury rates, productivity

Summary of Findings

- Interventions targeting organizational or environmental levels (primary prevention) have more far-reaching favorable effects than individual-directed
 - Interventions include:
 - Work reorganization/job redesign/job enrichment
 - Changes in management/supervisory methods
 - Ergonomic
 - Outcomes include individual-level plus absenteeism, turnover, productivity, injury rates
- Comprehensive programs (combined work-directed & worker-directed) show best results across levels
- Participatory organizational change interventions particularly effective

Implications for Policy & Practice

- Comprehensive programs best (work- plus workerdirected interventions)
- Frequency of types of intervention programs needs to be reversed or balanced
- Findings from worker-directed programs need to be fed back to specific work-directed intervention
- Lack of theory-based intervention and individualistic bias reflected in OHS intervention research—need sound theory/rationale to do most useful evaluation



Implications for Policy & Practice

- Support is needed for broad-based processes to develop, implement, and evaluate work stress interventions on a broad scale
- Comprehensive, participatory interventions appear to achieve best results for both employees and employer further studies of this sort should be a priority
- Development of economic studies in parallel with effectiveness studies should be a priority—favorable results will facilitate diffusion of effective strategies

Implications for Policy & Practice

- These recommendations for P&P consistent with and extended by the recent:
 - European Heart Network report (1998)
 - Tokyo Declaration on Work-Related Stress (1999)





Stress, Arousal & Fatigue in Repetitive Blue-collar Work



Wendy Macdonald Centre for Ergonomics & Human Factors LA TROBE UNIVERSITY w.macdonald@latrobe.edu.au

Project Framework

WORK ENVIRONMENT Physical P

Psychosocial

ORGANISATION OF THE WORK



JOB DESIGN

1/3 of variation in STRESS was explainable by:

- ? High Workload: task demands, time pressure, effort, frustration, need to work carefully
- ? Poor Job Design
- ? Short cycle time
- ? Little control over work pace: paced by machine, process or line speed

2/3 of variation in FATIGUE was explainable by:

- ? High Workload: task demands, time pressure, effort, frustration, need to work carefully
- ? Low Job Satisfaction
- ? No orders or deadlines to meet
- ? Targets or line speeds 'too high'

Implications for Workplace Management

Need improved:

? Industrial engineering and system management

- Industrial engineering & system management
 - s fewer tasks with short cycle times
 - individuals able to vary work pace, choose when to pause
 - ✓ fewer machine breakdowns, process delays, poor quality materials
 - Iess time spent waiting, or working at sub-optimal rate.

Implications for Workplace Management

Need improved:

? Industrial engineering and system management

? Job design, communications and supervision practices

- Job design, communications
 & supervision practices
 - Better understanding of required quality/speed balance - supervisors & employees
 - Ensure that employees have enough:
 - ? variety in work tasks
 - ? 'say'
 - ? feedback on own performance
 - ? current information on issues, problems
Implications for Workplace Management

Need improved:

- ? Industrial engineering and system management
- ? Job design, communications and supervision practices

? Identification and assessment of task demands & workload

- Identification & assessment of task demands & workload
 - systematic task descriptions and simple rating scales
 - *employee input and participation*
 - if necessary, occasional input from specialist analysts

Potential Benefits

- improved work methods, greater efficiency
- more information available, better
 decisions on range of issues
- more equitable management of workload issues, basis for optimising employee numbers
- resolution of speed/quality issues, improved product quality

Potential Benefits (cont.'d)

better communications, morale
 greater job satisfaction
 reduced risk of MSDs, accidents
 reduced stress & fatigue

NOHSC SYMPOSIUM 2001

Queensland Public Sector – Occupational Stress Case Study

Malcolm Douglas Director, Information and Research Branch Department of Industrial Relations

Occupational Stress caused by both individual and environmental factors

Work environment factors more conducive to change than other stressors

Five strategies

Risk assessment

Corganisational change processes

Manager/supervisor training

Individual employee services

Claims management, including rehabilitation

Most effective were:

Risk assessment

Claims management and rehabilitation

BALANCED SCORECARD

Financial - % return on revenue, budget objectives

Customer - customer satisfaction, returns

∝ Internal - cost per unit

Learning and growth - employee satisfaction, core competencies

ORGANISATIONAL HEALTH

Organisational health replaced learning and growth quadrant

Pathology measures such as absenteeism and turnover

Wellness measures such as sustainability and capacity to deliver outcomes

ORGANISATIONAL HEALTH

Organisational health quadrant drives performance across financial, customer and internal quadrants

Key dimension within organisational health quadrant is climate and morale

DATA INTEGRATION

Technical architecture to integrate data such as:

- ABS
- HRIS absenteeism, turnover, demographic profiles
- Occupational health and safety
- Climate and morale
- Performance outcome information

POLICY & PRACTICE IMPLICATIONS

Independent of preferred approach, without well developed risk assessment approach collecting data on predictive, correlative & incidence factors

Management strategy unlikely to be developed & evaluated

POLICY & PRACTICE IMPLICATIONS

integrating HR measurements & linking them by balanced scorecard approach

possible to mainstream range of HRM practices including occupational health and safety

HR practices then clearly linked to costs and business outcomes.

OHS implications of stress at work

NOHSC symposium

Dr Alison Drewry New Zealand

Definitions and terminology

- Stress a perceived physical, mental, or emotional demand
 - produces changes in behaviour and biology
 - a psychophysiological phenomenon
- OHS definition 'the awareness of not being able to cope with the demands of one's environment'

Occupational stress

- Widely interpreted as detrimental

 may have both positive and negative effects on performance
- Court judgements in New Zealand
 - police officer (IHD), videographer (not coping)
 - awards for negligent management
 - reported and interpreted as 'stress' compensation



- Ubiquitous
- Universal
- A normal, adaptive response
 - when does awareness of response become discomfort?
 - when does discomfort become disability?

- Response to stressor varies between individuals, and over time
- A stochastic effect
- Stressors cannot be objectively identified, measured, or manipulated to control effects
- Reducing stressors may be counterproductive
 - ? measure <u>effects</u> in workplace -
 - absenteeism, staff turnover, customer satisfaction, productivity, etc

Stress and vocational disability in NZ

- Injury compensation universal ACC
 mental injury not covered
- Injury statistics therefore include 'stress'
- Stress-related conditions are currently registered as musculoskeletal injury
 - somatisation
- Evidence from workplace 'OOS' epidemics
 - conditions had no biomechanical basis, or were preexisting but not disabling

Drivers for stress to be registered as musculoskeletal injury

 Physical diagnosis is preferable for patients, doctors, employers, and insurers

Drivers contd.....

- Patients:
 - access to 'treatment' and wages compensation
 - societal prejudice against psychological illness
- Doctors:
 - access to 'treatment' for physical conditions
 - lack of diagnostic expertise
 - lack of treatment resources for psychological conditions
 - inadequate consultation subsidy
 - societal prejudice against psychological illness
- Employers and insurers:
 - physical conditions easier to 'manage'
 - physical remedies easier to provide

Systematic influences

- Changes to insurance systems will not address the problem
 - claims not registered
 - claims re-coded as non-work-related
 - emphasis on pre-employment screening
- Insurance is only a part-funder of health Care (sickness benefit / unemployment benefit vs compensation)
- Insurers have monopoly on vocational rehabilitation

Summary

- Stress is a normal, adaptive reflex
- Stressors may enhance or detract from performance
- Excluding stress from compensation produces misdiagnosis and mismanagement of the problem
- Claimants, doctors, employers, and insurers prefer physical diagnoses
- Need research on drivers and effective interventions