

Final Report

Work and depression/anxiety disorders – a systematic review of reviews

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Contents

Funding and Acknowledgements	5
List of Abbreviations	6
Executive Summary	7
Chapter 1 – Introduction.....	15
Chapter 2 - Method Section	21
2.1 Meta-review methodology	21
2.2 Search Strategy	21
2.2.1 Database Searches	22
2.2.2 Grey Literature.....	24
2.2.3 Additional Searches.....	24
2.3 Inclusion and Exclusion Criteria	24
2.4 Selection Process	25
2.5 Appraisal of Quality	26
Chapter 3 - Results of Overall Search.....	28
Chapter 4 - How does work contribute to the development of depression and anxiety disorders?	32
4.1 Psychosocial Risk Factors	32
4.1.1 The Job Demand-Control-Support (JDACS) Model	33
4.1.2 Effort/Reward Imbalance (ERI) Model	36
4.1.3 Organisational Justice Model.....	37
4.2 Organisational change	38

4.3 Employment Status.....	40
4.3.1 Temporary Employment.....	40
4.3.2 Shift and casual work.....	41
4.4 Perceived Job Satisfaction.....	42
4.5 Traumatic Events	42
4.6 Discussion.....	45
 Chapter 5 - What interventions have been effective in addressing depression and anxiety disorders in the workplace?	 57
5.1 Primary Prevention Strategies	59
5.1.1 Increase employee control.....	60
5.1.2 Physical Activity	62
5.1.3 Workplace health promotion	64
5.1.4 Resilience training for high-risk occupations.....	66
5.1.5 Debriefing	68
5.2 Secondary Prevention Strategies.....	69
5.2.1 Counselling.....	69
5.2.2 Stress management programs.....	70
5.2.3 Screening.....	73
5.3 Tertiary Prevention Strategies.....	75
5.3.1 Cognitive Behavioural Therapy.....	75
5.3.2 Exposure Therapy	77
5.3.3 Medication	80

5.3.4 Return to work (RTW) programs.....	81
5.4 Discussion.....	83
Chapter 6 - What are the costs associated with depression and anxiety disorders in the workplace?	108
6.1 Cost of depression and anxiety.....	108
6.2 Cost and potential economic benefit of Interventions.....	110
6.3 Discussion.....	111
Chapter 7 - How does work protect against, and contribute to the recovery from, depression and anxiety disorders?.....	114
7.1 How does work protects against depression/anxiety?	114
7.2 How does work contribute to the recovery of depression/anxiety	118
7.3 Discussion.....	119
Chapter 8 – Conclusions and recommendations.....	125
8.1 Overall conclusions.....	125
8.2 Future research Priorities.....	128
9. References.....	131
10. Appendix	142
Appendix A: Experts that responded to grey literature request.....	142
Appendix B: AMSTAR; Measurement tool to assess the methodological quality of systematic reviews.....	143
Appendix C: Evidence gaps and methodological limitations identified.....	145

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List of Abbreviations

ACT = Acceptance and Commitment therapy

AMSTAR = A measurement tool for the assessment of multiple systematic reviews

CBT = Cognitive Behavioural therapy

CMD = Common mental disorder

EAP = Employee assisted programs

ERI = Effort reward imbalance

JDCS = Job demand-control support

LOT = Length of treatment

OCD = Obsessive Compulsive disorder

PTSD = Post-traumatic stress disorder

RCT = Randomised controlled trial

RTW = Return to work

SIT = Stress inoculation training

SNRI = Serotonin norepinephrine reuptake inhibitor

SSRI = Selective serotonin reuptake inhibitors

TCA = Tricyclic anti-depressions

WHP = Workplace health promotion

Executive Summary

1. Work and Mental Health

- 1.1 Mental disorders are now the leading cause of sickness absence and long term work incapacity in most developed countries.
- 1.2 The majority of mental illness seen in the workplace is attributed to common mental disorders, namely depression and anxiety.
- 1.3 Depression and anxiety disorders result in significant economic, social and personnel costs to employees, employers and society.
- 1.4 In recent years there has been increasing research interest in the relationship between work and mental health among policy makers, academics and health professionals.
- 1.5 There has also been a surge in the commercial activity within the area of workplace mental health, with specific organisations specialising in the occupational rehabilitation of employees with depression and anxiety disorders.
- 1.6 To date there is no overarching systematic review that addresses all relative topics on workplace mental health.

2. The aims of this meta-review

- 2.1 To complete a detailed systematic meta-review on work and the most common mental illnesses, specifically depression and anxiety disorders
- 2.2 To systematically assess the methodological quality of the research completed to date.

2.3 More specifically the meta-review aims to answer the following questions:

2.3.1 How does work contribute to the development of depression and anxiety disorders?

2.3.2 What interventions have been effective in addressing depression and anxiety disorders in the workplace?

2.3.3 What are the costs associated with depression and anxiety disorders in the workplace?

2.3.4 How does work protect against, and contribute to the recovery from depression and anxiety disorders?

3. Method

3.1 A meta-review is a method of systematically sourcing and appraising the results of existing reviews. It includes within its scope systematic literature reviews, narrative literature reviews and meta-analyses and excludes primary research articles.

3.2 A search strategy was created in order to systematically search the electronic databases of Medline, PsychInfo and Embase using key search terms. Grey literature was also considered.

3.3 All reviews found via the search strategy were subsequently screened by two independent researchers and were included in the meta-review if they met the inclusion criteria. In order to achieve consensus, any disagreement about a study's inclusion at any stage was referred to a third researcher for consideration.

3.4 A measurement tool for the assessment of multiple systematic reviews (AMSTAR) was employed to appraise the methodological research quality of the included reviews.

4. Results

4.1 A total of 144 reviews were included, although only 31 of these were deemed of at least moderate quality. Of the 144 included reviews, 21 were meta-analyses, 46 were systematic reviews and 77 were non-systematic narrative reviews.

The contribution of work in the development of depression and anxiety disorders

4.2 There is a substantial body of evidence that in certain situations an individual's work environment can contribute to the onset of depression and anxiety disorders.

4.3 A number of themes were identified that explain how work may contribute to the development of depression and anxiety disorders. These include psychosocial risk factors, organisational change, employment status, exposure to workplace trauma and job dissatisfaction.

4.4 There was good evidence suggesting that the psychosocial risk factors of high job demands, low job control, high effort-reward imbalance and low social support in the workplace are associated with a greater risk of developing depression and anxiety disorders.

4.5 There was some evidence that job dissatisfaction is associated with a greater risk of developing depression and anxiety disorders

- 4.6 There is some research to support the idea that good quality social support in the workplace may serve as a buffer against the adverse effects of other psychosocial risk factors on employee mental health.
- 4.7 While no reviews were found that address how work-related trauma contributes to the development of mental disorders within the general working population, a number of occupation specific reviews suggest workplace traumatic incidents can be a risk factor for both depression and post-traumatic stress disorder (PTSD).

Interventions in the workplace that address depression and anxiety disorders

- 4.8 The majority of studies examining workplace interventions for depression or anxiety disorders have solely focused on reducing symptoms, with few studies additionally examining the interventions' ability to improve occupational outcomes, such as improved work functioning and reduced absenteeism.
- 4.9 There were significant methodological limitations in much of the primary research evaluating workplace interventions that prevents comprehensive conclusions being drawn regarding their effectiveness.
- 4.10 The evidence for the effectiveness of primary prevention interventions based in the workplace is mixed and limited by methodological drawbacks. There is preliminary evidence, backed up by a sound theoretical underpinning that strategies which increase employee control may result in positive psychological outcomes. There is also preliminary evidence that interventions which aim to increase employees' level of physical activity may reduce depressive and anxiety symptoms, although the impact of

such interventions on sickness absence levels and work performance in unknown.

4.11 In contrast, the limited evidence available for workplace health promotion activities suggest they have very limited effect on employee symptom levels, but may reduce sickness absence levels via other pathways such as improved employee engagement.

4.12 Amongst the variety of interventions designed for employees reporting stress in the workplace, those utilising cognitive behavioural techniques, such as such as traditional cognitive behavioural therapy (CBT), stress inoculation training (SIT), acceptance and commitment therapy (ACT), rational-emotive therapy and online CBT, had moderate levels of evidence for their effectiveness in reducing self-reported stress and symptoms of both depression and anxiety. There was some suggestion that other simpler interventions, such as relaxation and meditation techniques, may have some positive effects, but the impact of these appeared to be less than cognitive behavioural techniques.

4.13 The use of workplace counselling (in house or externally delivered via EAP) is widespread and may have individual and organisational benefits. However, to date there is very little good quality evidence supporting its effectiveness and the relative benefits of different forms of counselling remains unknown.

4.14 There is strong evidence against the use of routine debriefing following potential traumatic incidents in the workplace. If a traumatic incident occurs in the workplace, employees should be offered psychological first aid including support, comfort, immediate needs being met, emotional and

instrumental support and ongoing monitoring. Additional assistance should be provided in a step-wise fashion according to need.

4.15 Once a depressive or anxiety disorder has been established, there is moderate evidence for the effectiveness of workplace-based CBT in terms of symptomatic improvement. However, reviews which have examined the use of standard CBT or antidepressant treatment in the workplace were not able to find a benefit in terms of occupational outcomes such as reduced sickness absence.

4.16 There was moderate evidence for the effectiveness of workplace based exposure therapy (in-vivo and imaginal) for workers who have developed PTSD following a work-related injury, on both individual and organisational outcomes.

4.17 There is also moderate evidence that modified CBT delivered as part of a return to work program may have positive organisation outcomes such as reduced sickness absence in addition to the known individual symptom reduction benefits of CBT.

The cost of depression and anxiety disorders in the workplace

4.18 The main costs of depression and anxiety disorders to an organisation are absenteeism, presenteeism and increased staff turnover

4.19 An Australian report estimated that the total employer cost for depression in the workplace over one year is \$8025 per effected individual, which equates to a total annual cost for Australian employers of \$12.3 billion. This report did not consider the costs of anxiety disorders.

4.20 A variety of work-based mental health care interventions are likely to be cost effective.

How work protects against, and contributes to the recovery from, depression and anxiety disorders

4.21 Work is perceived by employees as being protective against depression and anxiety disorders. Employees report that good quality work increases feeling of personal wellbeing, facilitates peer interactions and provides access to economic resources.

4.22 The health benefits of work appear to be somewhat dependent on the quality and type of work, yet there is limited evidence of what constitutes a “good” workplace or a “good” job in terms of mental health outcomes.

4.23 Positive workplace supervision appears to have some beneficial outcomes for workers and may help reduce symptoms of depression and anxiety amongst some workers.

4.24 Work may contribute to the prevention and recovery of depression and anxiety disorders through the implementation of primary, secondary and tertiary prevention interventions, although further research is required to establish the most effective strategies.

5. Research gaps and future research priorities

As a result of this meta-review, we have identified a number of key research priorities which need to be addressed:

- 5.1 Detailed prospective cohort studies are required to examine the interaction between individual and workplace risk factors in the development of mental health and occupational outcomes.
- 5.2 High quality randomised controlled trials are required to examine whether preventative programs based in the workplace can be effective.
- 5.3 Given the evidence that standard mental health treatments, which are known to result in symptomatic improvements, have limited effectiveness in improving occupational outcomes, modified work-focused mental health interventions need to be developed and trialled. Such interventions should be built around evidence-based interventions such as the cognitive behavioural therapies and could be directed at individual workers, managers or the organisation.
- 5.4 Observational studies are required to examine the role of work as a protective factor in terms of employee mental health and to better define healthy work.
- 5.5 Research is required to establish the true cost of anxiety and depression amongst the working age population of Australia.

Chapter 1 – Introduction

One of the most dramatic ways in which mental illness leads to social exclusion, financial disadvantage and impaired wellbeing is via its impact on occupational function (Henderson, Harvey et al. 2011). In recent decades, mental disorders have replaced musculoskeletal disorders as the leading cause of sickness absence and long term work incapacity in most developed countries (Moncrieff and Pomerleau 2000; Shiels, Gabbay et al. 2004; Black 2008; Cattrell, Harris et al. 2011; Murray, Vos et al. 2012). As a result, mental illness is one of the main contributors to the global prevalence of disability (Vos, Flaxman et al. 2012) and accounts for 35% of disability benefits within Organization for Economic Cooperation and Development (OECD) countries (comprising much of Europe, the United States, Canada, Mexico, Australia, New Zealand, Japan and Korea) (OECD 2003). The majority of mental illness difficulties seen in the workforce are attributed to the most common psychiatric disorders, specifically depression and anxiety, which while highly prevalent are usually treatable (Lelliott, Tulloch et al. 2008). Within Australia, the cost of workers' compensation claims for stress-related mental disorders is estimated at \$200 million per annum (National Occupational Health and Safety Commission 2003). However, compensation claims and sickness absence form only part of the economic costs associated with depression and anxiety disorders. There is mounting evidence that mental illness is also associated with high levels of presenteeism, a situation where an employee is symptomatic and underperforming, but nevertheless goes to work (Stewart, Ricci et al. 2003; Wang, Beck et al. 2004; Vingard, Alexanderson et al. 2004b; Harvey, Glozier et al. 2011). Economic analyses from both Europe and the United States suggest that for depression,

presenteeism is more common than absenteeism, meaning the overall financial cost of presenteeism is between two and four times the cost of absenteeism (Stewart, Ricci et al. 2003; Sainsbury Centre for Mental Health 2007; Lelliott, Tulloch et al. 2008).

The importance of the relationship between work and mental health extends well beyond the economic consequences. Mental illness has a notable influence upon every stage of an individual's occupational trajectory. In one study, fifty percent of employers reported they would "never" or "rarely" employ someone they knew had a psychiatric disorder (Manning and White 1995). Individuals with mental illness who manage to secure work are more likely to be employed in low status or poorly remunerated jobs, or employed in roles which do not adequately match their skills or level of education (Stuart 2006). These findings demonstrate that stigmatisation and fear of disclosure remain significant barriers that individuals with mental illness are likely to encounter when attempting to enter or return to the workplace (Brohan, Henderson et al. 2012). However, there are a number of important reasons why individuals pursue work in the face of such challenges and why promoting work amongst those with mental illness is important. First, work is central to self-identity and the way an individual is viewed by society, provides a daily structure and a sense of purpose. Second, those without work are often financially dependent upon family members or social services and are subsequently prevented from playing an active role in society. Third, being in work appears to be associated with greater mental wellbeing, with a lower prevalence of depression and lower incidence of suicide (Claussen, Bjorndal et al. 1993; Boardman, Grimbaldeston et al. 1999). Finally, the adverse economic and health effects of unemployment are felt not only by the individuals who are not working, but also by their children (Reinhardt

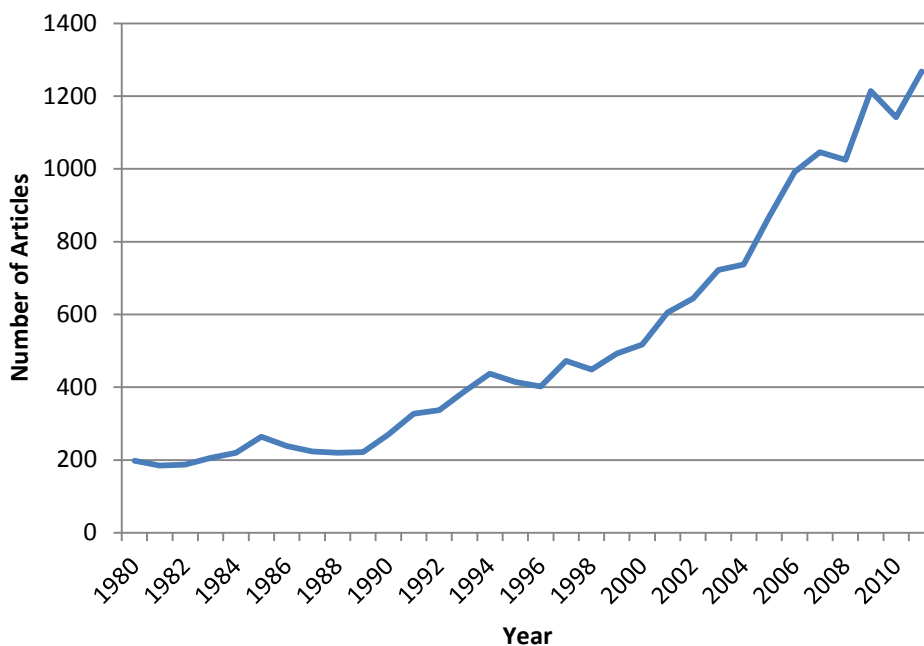
Pedersen and Madsen 2002). Together these findings indicate that for most individuals, the mental and physical health benefits of work outweigh any risks (Waddel and Burton 2006).

The apparent increase in mental health issues among the working population over recent decades is likely to be the result of a combination of interconnected sociological, psychological and economic factors. One possibility is that some aspects of the modern work environment are 'toxic' to workers' mental health and have contributed to a significant increase in the prevalence rates of mental illness. However, there is substantial research evidence to suggest that the prevalence of mental illness has not increased in the general population over the previous decade (Goldney, Fisher et al. 2005; Kessler, Demler et al. 2005; Goldney, Fisher et al. 2007). Therefore, the apparent increase in mental health problems amongst the working age population may be more related to increased detection and a change in labelling than any true increase in morbidity. From a sociological perspective, in comparison to twenty years ago, there is now a greater understanding and acceptance of psychiatric disorders on the part of employers and organisations (Henderson, Harvey et al. 2011). The increased recognition of mental illness in the workplace may have also been driven by an increased understanding of economic costs associated with presenteeism and absenteeism and legal changes, such as worker's compensation schemes.

As a result of all of these changes, workplace mental health has become an important point of discussion amongst policy makers, academics and clinicians. This is reflected in the growing number of articles published on work and mental health since 1980, as demonstrated in Figure 1. There has also been a surge in commercial activity in this area, with many organisations specialising in occupational

rehabilitation and workplace health with the purpose of preventing and minimising the economic cost of mental illness in the workplace.

Figure 1: The number of academic papers published per year from 1980-2011 on the topic of workplace mental health. Data derived from Medline.



The key issue underlying the increasing public health issue of mental ill-health in the workplace is the likelihood of a bi-directional relationship between work and mental health. The question of how work may contribute to the development of depression and anxiety, and vice-versa, is crucial to any consideration of workplace mental health. Over the last 30 years, work stress models (Karasek 1979; Siegrist 1996) have aimed to elucidate the complex relationship between psychological well-being and the workplace. While these models propose that a particular type of work 'stress' leads to an increase in common mental disorders (CMDs) such as depression, anxiety, the literature has continued to expand to include other potential causal

factors, including type of work environment, level of job satisfaction, level of job security as well as the worker's coping strategies and the availability of adequate social support (Stansfeld 2002; Kivimaki, Elovainio et al. 2003; Kivimaki, Virtanen et al. 2003; Henderson, Hotopf et al. 2009; Henderson, Harvey et al. 2011).

It is apparent, however, that a consensus regarding the various aspects of workplace mental health has not been reached. While there are numerous reviews addressing specific sub-topics (causal factors, costs, interventions etc), an overarching systematic review that links all relevant topics on workplace mental health has yet to be conducted. To address this issue, the present study aims to complete a detailed systematic meta-review on work and the most common mental illnesses, specifically depression and anxiety disorders. The study further aims to systematically assess the methodological quality of the research completed thus far. To the best of our knowledge, this is the only meta-review to date that considers the entire field of academic research relating to work and common mental disorders.

Specifically this report aims to answer the following questions:

1. How does work contribute to the development of depression and anxiety disorders?
2. What interventions have been effective in addressing depression and anxiety disorders in the workplace?
3. What are the costs associated with depression and anxiety disorders in the workplace?
4. How does work protect against, and contribute to the recovery from depression and anxiety disorders?

Summary of Key Points

- Mental disorders are now the leading cause of sickness absence and long term work incapacity in most developed countries.
 - The vast majority of mental illness seen in the workplace is due to common mental disorders, namely depression and anxiety.
 - Mental illness in the workplace results in significant economic, social and personnel costs to employees, employers and society.
 - The question of a bi-directional relationship between work and mental health has led to a proliferation of interest in workplace mental health.
 - To date there is no overarching systematic review that addresses all relative topics on workplace mental health.
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Chapter 2 - Method Section

2.1 Meta-review methodology

A meta-review is a method of systematically appraising the results of existing reviews (Ryan, Kaufman et al. 2009). It includes within its scope systematic literature reviews, narrative literature reviews and meta-analyses and excludes primary research articles. Meta-reviews are a relatively new form of collating research evidence and are particularly useful in appraising the evidence base across a broad field or a range of questions.

2.2 Search Strategy

As with any systematic review, it is imperative that the search strategy in a meta-review is systematic, minimises bias, and is described in a transparent manner that allows researchers to replicate the process. Published academic literature was the primary focus in the present meta-review, although “grey literature” was also considered. Grey literature refers to material that is produced on all levels of government, academic, business and industry, but which is not controlled by commercial publishers (Christensen, Griffiths et al. 2008). The inclusion of grey literature, in addition to standard academic literature, in our meta-review encourages the accumulation of a greater range of unique material to draw on when addressing the various research questions. This strategy is also likely to reduce the publication bias inherent in most search strategies.

2.2.1 Database Searches

Databases that were systematically searched include Medline, a bibliographic database of life sciences and biomedical information, PsychInfo, a database of abstracts of literature in the field of psychology and Embase, a major biomedical and pharmaceutical database of published literature. Different search strategies were created for Medline, PsychInfo and Embase and displayed in Table 1. The final search run in all databases was completed on the 03/10/2012.

Table 1: Search strategies for academic databases

Medline	PsychInfo	Embase
1. mental health.ti.	1. mental health.ti.	1. mental health.ti.
2. mental illness.ti.	2. mental illness.ti.	2. mental illness.ti.
3. mental disorder*.ti.	3. mental disorder*.ti.	3. mental disorder*.ti.
4. psychiatric.ti.	4. psychiatric.ti.	4. psychiatric.ti.
5. anxiety.tw.	5. anxiety.tw.	5. depress*.tw.
6. depress*.tw.	6. depress*.tw.	6. anxiety.tw.
7. mood disorder*.tw.	7. mood disorder*.tw.	7. post-traumatic stress disorder.tw.
8. post-traumatic stress disorder.tw.	8. post-traumatic stress disorder.tw.	8. ptsd.tw.
9. ptsd.tw.	9. ptsd.tw.	9. mood disorder*.tw.
10. traumatic stress disorder*.tw.	10. traumatic stress disorder*.tw.	10. traumatic stress disorder*.tw.
11. exp Anxiety Disorders/	11. exp Affective Disorders/	11. exp adjustment disorder/
12. exp Depressive Disorder/	12. exp Anxiety/	12. exp depression/
13. adjustment disorders.sh.	13. exp Anxiety Disorders/	13. exp emotional disorder/
14. affective symptoms.sh.	14. exp "Depression (Emotion)"/	14. exp major depression/
15. anxiety.sh.	15. exp Major Depression/	15. exp mental health/
16. depression.sh.	16. exp Mental Disorders/	16. exp neurosis/
17. mental disorders.sh.	17. exp Neurosis/	17. exp psychotrauma/
18. mental health.sh.	18. exp Posttraumatic Stress Disorder/	18. exp posttraumatic stress disorder/
19. neurotic disorders.sh.	19. mental health.sh.	19. mood disorder.sh.
20. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19	20. adjustment disorders.sh.	20. anxiety.sh.
21. employment.ti.	21. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20	21. anxiety disorder.sh.
22. job.ti.	22. employment.ti.	22. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21
23. unemploy*.ti.	23. job.ti.	23. employment.ti.
24. worker*.ti.	24. unemploy*.ti.	24. job.ti.
25. absenteeism.tw.	25. work.ti.	25. unemploy*.ti.
26. disability pension.tw.	26. worker*.ti.	26. work.ti.
27. occupational intervention*.tw.	27. absenteeism.tw.	27. worker*.ti.
28. occupational therap*.tw.	28. disability pension.tw.	28. absenteeism.tw.
29. occupational health.tw.	29. occupational intervention*.tw.	29. disability pension.tw.
30. organisational justice.tw.	30. occupational therap*.tw.	30. occupational intervention*.tw.
31. presenteeism.tw.	31. occupational health.tw.	31. occupational therap*.tw.
32. sick leave.tw.	32. organisational justice.tw.	32. occupational health.tw.
33. sickness absence.tw.	33. presenteeism.tw.	
34. work stress.tw.		

<p>35. work functioning.tw. 36. workplace.tw. 37. work place.tw. 38. vocation.tw. 39. exp Employment/ 40. exp Insurance, Disability/ 41. exp Psychology, Industrial/ 42. "Cost of Illness"/ 43. health benefit plans, employee.sh. 44. occupational diseases.sh. 45. occupational exposure.sh. 46. occupational health.sh. 47. occupational health services.sh. 48. occupational medicine.sh. 49. organizational culture.sh. 50. sick leave.sh. 51. rehabilitation, vocational.sh. 52. retirement.sh. 53. work.ti.sh. 54. workload.sh. 55. 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 56. meta-anal*.tw. 57. metaanal*.tw. 58. systematic review*.tw. 59. meta-analysis.pt,sh,ti. 60. review.pt,sh,ti. 61. 56 or 57 or 58 or 59 or 60 62. 20 and 55 and 61 63. limit 62 to (english language and yr="1990 -Current")</p>	<p>34. sick leave.tw. 35. sickness absence.tw. 36. work stress.tw. 37. work functioning.tw. 38. workplace.tw. 39. vocation.tw. 40. exp "Work (Attitudes Toward)"/ 41. exp Occupational Stress/ 42. exp Organizational Climate/ 43. exp Personnel/ 44. exp Working Conditions/ 45. employee absenteeism.sh. 46. employee attitudes.sh. 47. employee assistance programs.sh. 48. employee efficiency.sh. 49. employee engagement.sh. 50. employee productivity.sh. 51. "Industrial and Organizational Psychology"/ 52. job satisfaction.sh. 53. occupational health.sh. 54. occupational safety.sh. 55. occupational stress.sh. 56. occupational therapy.sh. 57. occupational neurosis.sh. 58. occupational adjustment.sh. 59. organizational behavior.sh. 60. reemployment.sh. 61. supported employment.sh. 62. quality of work life.sh. 63. vocational rehabilitation.sh. 64. work adjustment training.sh. 65. work load.sh. 66. work related illnesses.sh. 67. 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 68. meta-anal*.tw. 69. metaanal*.tw. 70. review.ti. 71. systematic review*.tw. 72. meta-analysis.sh,ti. 73. 68 or 69 or 70 or 71 or 72 74. 21 and 67 and 73 75. limit 74 to (english language and yr="1990 -Current")</p>	<p>33. organisational justice.tw. 34. presenteeism.tw. 35. sick leave.tw. 36. sickness absence.tw. 37. work stress.tw. 38. work functioning.tw. 39. workplace.tw. 40. work place.tw. 41. vocation.tw. 42. exp absenteeism/ 43. exp employee attitude/ 44. exp job adaptation/ 45. exp job performance/ 46. exp job satisfaction/ 47. exp job stress/ 48. exp medical leave/ 49. exp occupational hazard/ 50. exp occupational therapy/ 51. exp productivity/ 52. exp vocational rehabilitation/ 53. exp work disability/ 54. exp work environment/ 55. employment.sh. 56. occupation.sh. 57. occupational exposure.sh. 58. occupational health.sh. 59. occupational psychology.sh. 60. occupational safety.sh. 61. quality of working life.sh. 62. unemployment.sh. 63. work.sh. 64. workload.sh. 65. workplace.sh. 66. work resumption.sh. 67. 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 68. review.pt,ti. 69. meta-analysis.ti. 70. meta-anal*.tw. 71. metaanal*.tw. 72. systematic review*.tw. 73. 68 or 69 or 70 or 71 or 72 74. 22 and 67 and 73 75. limit 74 to (english language and yr="1990 -Current")</p>
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2.2.2 Grey Literature

In order to systematically examine the grey literature, the literature database “Open Grey” was searched by combining the keywords mental health, depression and anxiety with work, job and occupation. The Australian Federal Department of Education, Employment and Workplace Relations and the Australian Federal Department of Mental Health and Aging, as well as the appropriate agencies for each Australian state and territory were also electronically searched. The website of the Australasian Faculty of Occupational and Environmental Medicine was also searched.

In addition, email contact was made with persons, who were identified as experts in the field of mental health, with a request for any sources of grey literature reviews which they thought may be relevant to our research questions. See Appendix A for list of contributors.

2.2.3 Additional Searches

Cochrane Summaries, a database of systematic reviews and meta-analyses which summarize and interpret the results of medical research, was searched by examining the articles that were identified with the search term ‘mental health’. The reference lists of all the included reviews were also scrutinised in order to identify any relevant academic reviews, or grey literature, that had not been considered.

2.3 Inclusion and Exclusion Criteria

The criteria used for inclusion in this meta-review were:

- a) Paper considered mental disorder, in particular depression and/or anxiety disorders and;
- b) The role of work or the workplace was considered and;
- c) Was a literature review, systematic review or meta-analyses and;
- d) Published in the English language and;
- e) Published after 1/1/1990

Papers excluded were:

- a) Primary research
- b) Considered only mental disorders other than depression or anxiety disorders
- c) Considered only volunteer work
- d) Considered only interventions aimed at supporting individuals entering the workforce
- e) Reviews that only considered a single occupational group

2.4 Selection Process

Two researchers (MM and NY) independently analysed each individual title and abstract in order to exclude papers which did not meet the above inclusion criteria. Of the remaining studies, the full text was obtained and analysed independently by the two researchers in order to establish their relevance in regard to the inclusion/exclusion criteria. In order to achieve consensus, any disagreement about a study's inclusion at either stage was referred to a third researcher (SH) for consideration.

2.5 Appraisal of Quality

The methodological quality of a review is vital. Reviews which do not have adequate methodological rigor surrounding their searching, interpreting or reporting of the available evidence are more likely to produce biased or false results. In order to consider these issues in our meta-review, a measurement tool for the assessment of multiple systematic reviews, the AMSTAR (Shea, Grimshaw et al. 2007), was employed to assess the methodological quality of each review selected for inclusion in the final report. This checklist evaluates scientific quality and consists of 11 questions with 1 mark given for a 'yes' response and 0 marks for a 'no', 'can't answer', and 'not applicable' response. Each question comprises set criteria which instruct the rater on how to assign a point for the specific question with the aim of reducing subjective scoring (See Appendix B). A score of 0-4 reflects low quality research, 5-8 moderate and 9-11 high quality (See Table 2 for a general description of each category). Given that this tool comprises questions specific to meta-analysis (questions 9 and 10), it was decided that systematic reviews would have adjusted cut off scores to reflect the fact that they would typically not receive points on these two questions. For systematic reviews, a score of 0-3 was deemed low quality, 4-7 moderate and 8-9 high quality. The AMSTAR has been shown to have excellent reliability ($R^2=.96$) and construct validity (Shea, Bouter et al. 2007).

Table 2: Description of low, medium and high quality studies

Low	No research question, failed to conduct a systematic search or a quality assessment addressing the methodology of the included papers.
Moderate	Poorly defined research question, an adequate systematic search within at least two academic databases. Quality assessment completed yet either poorly explained or assessment findings failed to be integrated meaningfully into the results/discussion section.
High	A clear research question with an excellent systematic search that could be easily replicated. A quality assessment with clear details on scoring criteria provided. Results of the quality assessment were incorporated into the results/discussion section and used to inform limitations and future research.

Two authors (MM and SJ) independently assessed the quality of each review that met the inclusion criteria using the AMSTAR. When overall quality assessment scores differed between the authors, agreement was reached on the basis of discussion. If agreement could not be reached, the review was then referred to a third author (SH).

Chapter 3 - Results of Overall Search

A total of 5179 reviews were identified in the systematic search of Medline, PsychInfo and Embase. Of these, 158 reviews were identified as relevant to the research questions following review of the title and abstract. A further appraisal of the full text version of these articles resulted in 121 reviews meeting the criteria for inclusion in the study.

Electronic searching of appropriate websites for grey literature resulted in the additional inclusion of 5 reviews. Email consultation with experts in this field resulted in an additional 14 reviews being identified from grey or unpublished literature. A detailed search of the Cochrane Database identified one review for inclusion. Finally, four additional reviews were identified by analysing the reference lists of the included reviews.

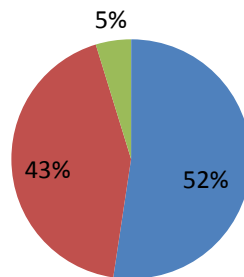
All 144 reviews that met the inclusion criteria underwent a quality assessment using the AMSTAR rating tool (Shea, Grimshaw et al. 2007). Following this process, 30 reviews were deemed to have at least moderate research quality, with scores ranging from 0-10. A distribution of quality scores for all reviews can be seen in Figure 2. The majority of reviews that scored 'Low' were narrative, non-systematic reviews.

Figure 2: Pie chart of quality scores for included reviews N=144

Meta-analyses

N=21

■ Low ■ Moderate ■ High

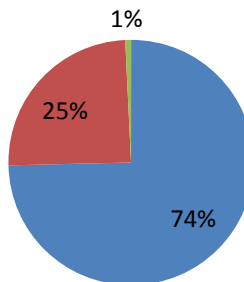


Narrative Reviews

(both systematic and non-systematic)

N=123

■ Low ■ Moderate ■ High



Of the 144 included reviews, 21 were meta-analyses, 46 were systematic reviews and 77 were non-systematic narrative reviews. Reviews of at least moderate quality took precedence when answering the research questions. However, as demonstrated in Figure 3, there were insufficient moderate and high quality reviews

that addressed questions 3 and 4 (as listed on page 11). Therefore relevant reviews that did not meet the quality criteria were still considered in order to answer these specific questions. The complete study selection process is summarised in figure 4.

Figure 3: Column graph displaying distribution of moderate-high quality reviews across questions 1-4 N=31.

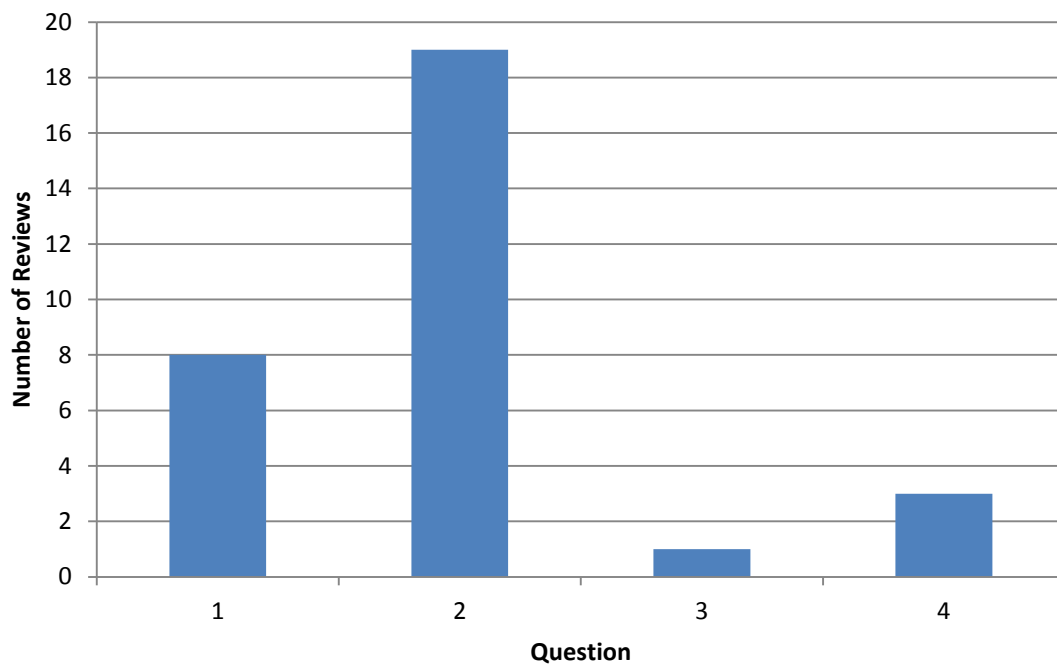
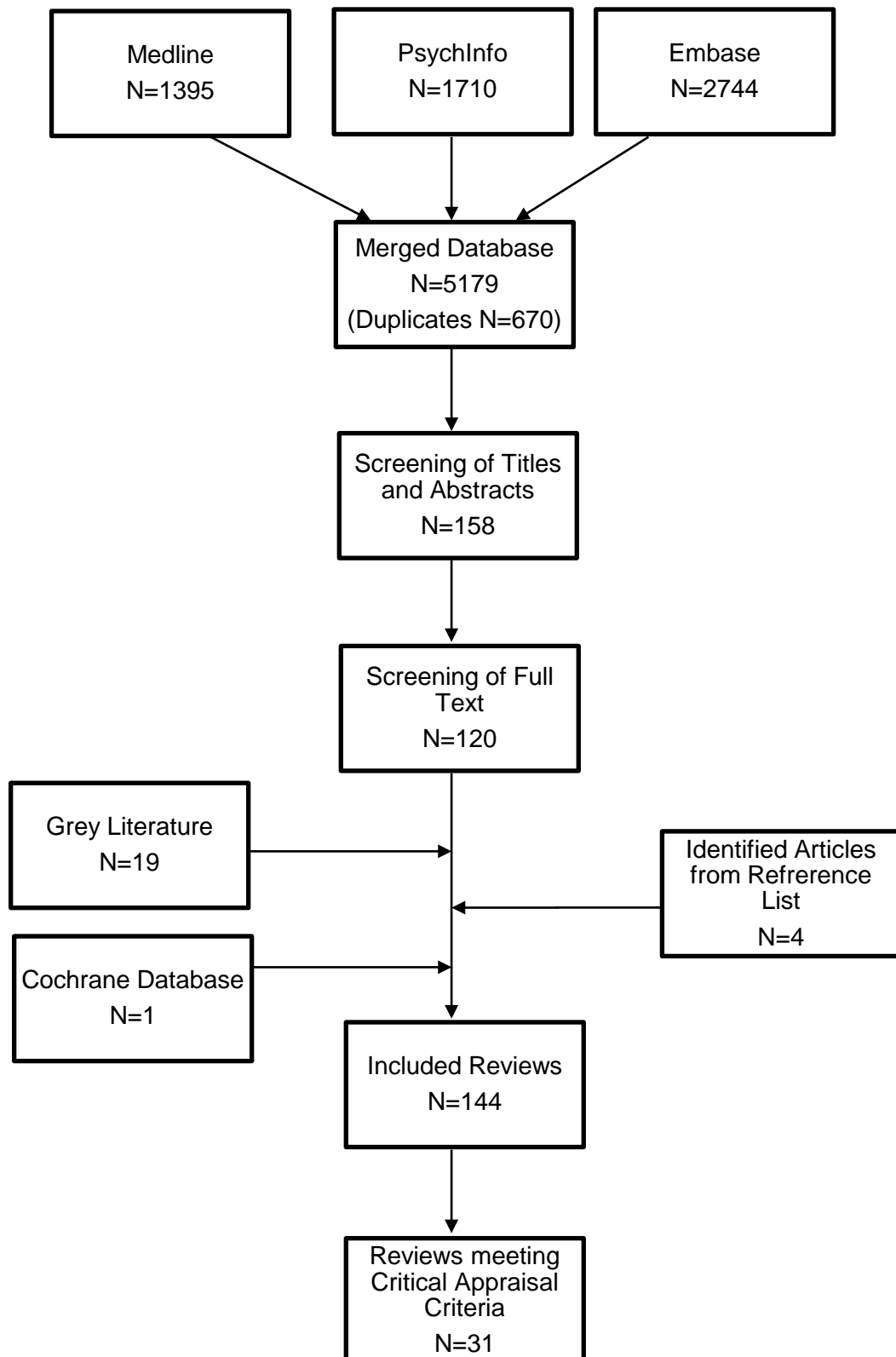


Figure 4: Flowchart of study selection



Chapter 4 - How does work contribute to the development of depression and anxiety disorders?

The present meta-review identified a number of themes relating to how work may contribute to the development of mental illness in the workplace. Eight review studies met the quality assessment criteria, six of which were deemed of moderate quality. In total, these reviews analysed 585 studies. Five main groups of work factors which may be important in the development of depression and anxiety were identified amongst the included reviews; psychosocial factors, organisational change, employment status, perceived job satisfaction and traumatic events.

4.1 Psychosocial Risk Factors

Four reviews explored the implications of psychosocial stressors in the workplace and the potential for these factors to have a detrimental impact upon employee mental health. The psychosocial factors discussed most commonly in the literature were job demands, job control, effort-reward imbalance and social support at work. These factors relate to the models that are typically used to examine the effects of psychosocial factors on workers' health; the Job Demand-Control-Support (JDCS) model (Karasek 1979) and the Effort-Reward-Imbalance (ERI) model (Siegrist et al., 1996). More recently a third model, the Organisational Justice model, has been proposed (Elovainio, Kivimaki et al. 2002). In this section, a brief overview of each model is provided followed by a discussion of the research findings regarding these psychosocial risk factors on mental health.

4.1.1 The Job Demand-Control-Support (JDCS) Model

The JDCS model (previously termed the Job Demand-Control model) proposes that job demands and job control are important factors that influence well-being. The factor of social support was later integrated into the model as a significant characteristic of the work environment (Johnson 1988; Johnson 1989). Job demands are often described in terms of workload and time pressure (Karasek, 1985) and can include the physical and emotional demands of work (Karasek et al., 1998). Job control (also termed decision latitude), describes the extent to which a worker is capable of controlling their tasks and general work activity. Karasek argues that jobs high on demands and low on control (termed “high strain jobs”) bear the highest risk of illness and reduced well-being (Karasek 1979). Conversely, individuals in jobs that are low on demands and high on control (“low strain jobs”) are less likely to experience adverse reactions. This model is shown in Figure 4. Prospective observational studies have shown that individuals with high strain jobs have increased rates of a range of physical ill health outcomes such as cardiovascular disease, with a suggestion they may also have increased levels of psychiatric disorders (Belkic, Landsbergis et al. 2004; Sanne, Mykletun et al. 2005).

Some researchers have extended this model further to suggest that high social support in the workplace is thought to moderate the adverse impact of high strain jobs on a workers’ well-being (Sanne, Mykletun et al. 2005).

Figure 5: Karasek Job Demand Control Model

		Decision Latitude (Control)	
		HIGH	LOW
Psychological Demands	HIGH	“Active”	“High strain”
	LOW	“Low strain”	“Passive”

Of the four reviews exploring psychosocial risk factors in the workplace, three reviews described good evidence for a prospective association between high job demand, low job control and low social support and future workers' mental ill health (Stansfeld and Candy 2006; Netterstrom, Conrad et al. 2008; Nieuwenhuijsen, Bruinvels et al. 2010).

A meta-analysis of 11 studies by Stansfeld and Candy found that low job control, high job demands and low occupational social support were associated with a moderate risk of common mental disorders (Stansfeld and Candy 2006). Despite the small number of studies in this meta-analysis (n=11), the reviewers included only longitudinal studies with high quality methodology which adds strength to their overall findings. Similarly, the review by Nieuwenhuijsen et al. concluded that high job demands, low job control and low support from colleagues/supervisors predicted the occurrence of stress related disorders and adjustment disorders (Nieuwenhuijsen, Bruinvels et al. 2010).

One review focused specifically on how these factors may contribute to the development of depression (Netterstrom, Conrad et al. 2008). Of the 14 studies examined, the reviewers found inconsistent results regarding the influence of job control and job demands on the development of depression. The study reported that these factors are frequently measured in different ways across studies, thus limiting interpretation and generalisability of findings. Despite these limitations, the study did find that low social support and high *psychological* demands on the job were the strongest and most consistent factors associated with increased risk of depression. However, psychological demands were not clearly defined and the reviewers did not include a quality assessment thus limiting the methodological quality of this review. Despite this, the decision to restrict their inclusion criteria to longitudinal studies comprising sample sizes greater than 100, lends support to validity of their overall findings (Netterstrom, Conrad et al. 2008).

All three reviews identified perceived social support as a significant factor that may either contribute to the development of mental health issues or may serve as a protective buffering factor against such problems (Stansfeld and Candy 2006; Netterstrom, Conrad et al. 2008; Nieuwenhuijsen, Bruinvels et al. 2010). These reviews did not comment on whether improving support levels would lead to meaningful improvements (in symptomology or functionality) among employees already diagnosed with work related mental health difficulties. Further research is required to investigate the role of social support in these situations.

In summary, a number of moderate quality reviews suggest that perceived high job demands, low job control and low social support are associated with a greater risk of common mental disorders and adjustment disorder. These findings lend support to the Demand-Control-Support Model, although how these factors contribute to the

development of specific disorders such as depression remains uncertain. The main criticism of research examining work-related psychosocial factors such as job strain is the reliance on self-reported data. When an employee describes the characteristics of their own job, their appraisal will also incorporate their beliefs, perceptions, and attitudes to work (Harvey and Henderson 2009). One primary piece of research has previously suggested that when objective, rather than self-reported, assessments of work demands are included, the association between the psychosocial work environment and psychiatric disorder become less prominent (Stansfeld, Feeney et al. 1995). It may be that an individual's background, personality and opinions regarding work and their own health are important mediators of any relationship between job strain and ill health (Stansfeld 2002).

4.1.2 Effort/Reward Imbalance (ERI) Model

The ERI model is based on the worker's experience of the balance between the effort made and the reward received (Siegrist 2004). The underlying concept is that work-related benefits are dependent upon a reciprocal relationship between efforts and rewards at work. This model proposes that the most stressful work condition is one in which the work reward does not match the effort made. Efforts refer to job demands and responsibilities expected of the employee. Examples of rewards (distributed by the employer) consist of esteem rewards such as recognition for good work, financial rewards such as bonuses and pay rises as well as career opportunities and job security.

Only two included reviews, both of moderate quality, explored the influence of high effort-reward imbalance on the mental health of workers. In their meta-analysis,

Standfield and Candy concluded that high effort-reward imbalance is strongly associated with an increased risk of common mental disorders (Standfield and Candy 2006). While this finding was based on only two included studies, these primary studies were longitudinal in nature and had a combined sample of over 12,000 employees which lends considerable weight to their conclusions. Similarly, Nieuwenhuijsen et al. (2010) included 7 studies found that a significant association between high-effort reward imbalance and stress related disorders (including adjustment disorder) in the workplace.

These findings support a body of primary research which suggests that increased effort-reward imbalance in the workplace is associated with a greater risk of developing depression and anxiety disorders (de Jonge, Bosma et al. 2000; Niedhammer, Tek et al. 2004; Niedhammer, Chastang et al. 2006). Despite these findings, few studies have explored the impact of ERI on the development of depression and anxiety disorders individually rather than the broad grouping of common mental disorders.

4.1.3 Organisational Justice Model

Organisational justice refers to the fairness of rules and social norms within companies, specifically in terms of resources and benefits distribution (distributive justice), the methods and processes governing that distribution (procedural justice) and interpersonal relationships (interactional justice) (Elovaini 2002). Interactional justice comprises two elements: relational justice, the level of respect and dignity received from management and informational justice, the presence or absence of adequate information from management about new workplace procedures.

It has been proposed low organisational justice will have adverse outcomes on employee mental health. However, only two moderate quality reviews explored this relationship (Nieuwenhuijsen, Bruinvels et al. 2010; Ndjaboue, Brisson et al. 2012). These reviews highlight that the majority of studies examining this relationship focus mainly on relational justice (the level of respect and dignity received from management) and procedural justice (the methods and processes governing that distribution of resources and benefits in the workplace).

Nieuwenhuijsen et al., (2010) found that low relational justice and low procedural justice were strongly associated with increased likelihood of stress related disorders including adjustment disorders. Similarly Ndjaboue et al. found that low procedural justice and low relational justice were associated with increased likelihood of mental health problems among employees (Ndjaboue, Brisson et al. 2012). They also found that this relationship existed independently of factors examined in the DCS and ERI models thus highlighting organisational justice as a unique and important construct that may influence the mental health of employees. Currently there is limited primary research on the effects of low distributive justice and low informational justice on the mental health of workers.

4.2 Organisational change

In today's work environment, employees may be increasingly subjected to organisational change that can range from technology and management changes to downsizing or restructuring. It has been proposed that such events may have a negative impact on an employee's mental health (Meltzer, Bebbington et al. 2010) and this may be exacerbated if an employee perceives they have limited control over these changes (Karasek 1979). However, the current research lacks consensus

regarding the association between exposure to organisational change and workers' mental health. One systematic review of moderate quality examining organisational change was identified by our search strategy (Bamberger, Vinding et al. 2012), which reported that 11 out of 17 included studies observed a negative relationship between organisational change and mental health. This association was weaker in the longitudinal studies included in this review suggesting that a time-effect may exist and/or that confounding psychosocial factors may be influencing the relationship between organisation change and mental health. For example, given the finding that social support may prevent the development of depression and anxiety disorders in the workplace (Stansfeld and Candy 2006; Netterstrom, Conrad et al. 2008; Nieuwenhuijsen, Bruinvels et al. 2010), future research needs to consider how this factor may influence the relationship between organisational change and the mental health of employees.

The lack of available reviews examining organisation change is surprising, given the variable nature of today's work environment after the Global Financial Crisis and the trend of employees to change jobs every 5 years (Mumford and Smith 2004). It is also surprising to not find a more consistent association between organisational change and mental health. These inconclusive findings may also be attributed to an individual's perspective of change. An employee may not see organisational change as a threat depending on perceived social support, job satisfaction, job insecurity and job control (Bamberger, Vinding et al. 2012). Further research is required to determine the effects of organisational change and how it may contribute to the development of depression and or anxiety. Furthermore, the confounding impact of more established psychosocial risk factors such as social support, coping skills, and

job demands need to be taken into consideration when examining the nature of any association.

4.3 Employment Status

4.3.1 Temporary Employment

Temporary employment arrangements, which included fixed contracts and subcontracted jobs, are increasingly common in developed countries (Virtanen, Kivimaki et al. 2005). Thus the effects of this type of employment status on mental health are becoming more pertinent in today's work environment. A meta-analysis, of moderate quality, examined the association between temporary employment and mental health and reported that temporary employees have higher psychological morbidity compared with permanent employees (Virtanen, Kivimaki et al. 2005). However, limited inferences can be drawn from this finding due to the high levels of discrepancy between the included studies on measures such as health outcomes, type of temporary employment and contextual factors (study's origins). In addition, the review did not clearly define what was meant by psychological morbidity.

It is likely that there are other factors associated with temporary employment contract that may be relevant for the risk of mental disorder. For example, individuals with low level symptoms or certain types of personality may be less likely to be offered permanent jobs. Such factors cause there to be an association between temporary employment and mental illness without there being causal link. As noted above, considering the role of these confounding factors is vital when considering the role of potential risk factors. In addition, it is also feasible that employees with temporary employment contracts may have greater perceived job insecurity and reduced

rewards compared to permanent employees. Alternatively, temporary employment may also lead to increased control over working hours and the opportunity to sample different jobs. More research is required to ascertain the effects of temporary employment and given the methodological limitations of the included review, it can be concluded that currently there is insufficient evidence to link temporary employment with the development of depression and/or anxiety.

4.3.2 Shift and casual work

Only one review was obtained that addressed shift work and how it may contribute to the development of depression and/or anxiety, but was of low quality (Richter, Acker et al. 2010). This narrative review reported that the association between shift-work and depression and anxiety disorders is due to higher rates of sleep disorders among shift workers. Night time employment can reduce sleep time and quality and the accumulation of sleep deprivation may result in a higher vulnerability to stress impacts and depression and anxiety disorders (Richter, Acker et al. 2010).

No reviews were found that assess the impact of casual or part-time work on the development of depression and anxiety disorders in the workplace. Given the fact that 2.2 million Australians are employed in work other than full time work (Australian Council of Trade Unions 2012), the effect that this form of employment status (which may be positive or negative) has on employee's mental health needs to be investigated further.

4.4 Perceived Job Satisfaction

A meta-analysis of moderate quality by Faragher, Cass and Cooper found that a significant moderate relationship exists between job satisfaction, depression and anxiety (Faragher, Cass et al. 2005). This effect size was greater than that between job satisfaction and physical health. These findings were originated from a combined sample size of over 250 000. The review concluded that dissatisfaction at work contributes significantly to the development of depression and/or anxiety at work. Despite only one included review exploring this association, it's very large sample and moderate quality score gives weight to the review's conclusion. However the causes of perceived dissatisfaction among the sample remain unclear. It is possible that psychosocial risk factors (e.g. job demands, social support) as well as organisational changes and job status may impact on the level of job satisfaction an individual experiences in the workplace. Consequently, a combination of these factors may influence job satisfaction and subsequently increase an employee's likelihood of developing depression/anxiety.

4.5 Traumatic Events

Despite including post-traumatic stress disorder (PTSD) and traumatic stress disorder in our search strategy of the academic databases, no reviews of at least moderate quality were found that addressed the question of how work contributes to the development of PTSD. This is surprising given that PTSD is the diagnosis made in a significant number of work-related injury claims and was associated with an average of 3.6 lost working days per month per affected individual in the United

States (Kessler and Frank 1997). While certain occupations are at higher risk of developing PTSD due to the nature of the job (Gates, Holowka et al. 2012), traumatic incidents can occur in any occupation. Non-work focused studies have established that there are certain types of trauma which appear to increase the risk of PTSD. These trauma-related risk factors include intentional acts of interpersonal violence, such as assault, prolonged or repeated events, uncontrollable or unpredictable events, exposure to pain, heat or cold, events associated with high levels of perceived threat or actual wounding or loss (Yehuda 2002; Australian Centre for Posttraumatic Mental Health 2007).

As part of the exclusion criteria, the present meta-review excluded reviews that only consider a single occupation group, such as the military or health care providers. With the aim of providing a brief overview of the current research for these high risk occupations, Table 3 describes a number of occupations, specific risk factors for PTSD accompanying these occupations as well as selected references (McCafferty, Domingo et al. 1990; Badenhorst and Van Schalkwyk 1992; Robbins 1999; Bor, Field et al. 2002; Creamer and Forbes 2004; Donoghue 2004; Penalba, McGuire et al. 2008; Whealin, Ruzek et al. 2008; Donnelly and Siebert 2009; De Boer, Lok et al. 2011; Gade and Wenger 2011; Hourani, Council et al. 2011; Gibbons, Hickling et al. 2012).

Table 3: Occupations which may be at higher risk of PTSD

Occupation	Occupation Specific Risk Factors for PTSD	Selected References
Health Care providers (i.e. Doctors, Nurses, Paramedics)	Dying patients. Patients with severe injuries. Possible assault from patients.	Robbins; Whealin, Ruzek et al; Donnelly and Siebert; De Boer, Lok et al.
Military professionals	War. Torture. Increased risk of physical injury. Death or injury of others.	Creamer and Forbes; Whealin, Ruzek et al; Gade and Wenger; Hourani, Council et al; Gibbons, Hickling et al.
Miners	Explosions. Higher risk of occupational accidents (e.g. exposure to hazardous gases, heat stroke, etc.).	Badenhorst and Van Schalkwyk; Donoghue
Pilots (not including military pilots).	Terrorism. Airplane accidents.	Bor, Field et al
Emergency workers	Threat of violence. Witnessing violent scenes.	McCafferty, Domingo et al; Penalba, McGuire et al.

While incidents of trauma in the workplace can occur, repeated studies have shown that the majority of people exposed to such traumas will not meet the diagnostic criteria for a PTSD diagnosis (Australian Centre for Posttraumatic Mental Health 2007) . Many individuals will have some symptoms in the immediate aftermath of a traumatic incident, but in the vast majority these will resolve. Studies of military

personnel have suggested that when mental health problems occur after exposure to traumatic incidents, they are more likely to be depression, anxiety or alcohol misuse than PTSD (Hotopf, Hull et al. 2006). Despite this, it is likely PTSD will be a significant issue for a minority of employees following a traumatic workplace event.

4.6 Discussion

The included reviews in this meta-review demonstrate that work may contribute to the development of depression and anxiety disorders. Five main themes that address this topic were identified; psychosocial risk factors, organisational change, employment status, perceived job satisfaction and traumatic events. The effect of psychosocial factors in the workplace has received considerable research attention. These factors are typically defined by the JDCS model, the ERI model and more recently the organisational justice model. The findings from the present meta-review suggest that psychosocial factors such as low control, high demand, high effort-reward imbalance and low social support in the workplace significantly increases the likelihood of an employee developing a depression and anxiety disorder. In addition, high job dissatisfaction has been identified as a notable risk factor for depression and anxiety disorders among employees, although further research is required to establish this relationship with respect to the potential confounding role of other factors.

Some research suggests that high quality support in a workplace may serve as a protective factor against the contribution of other psychosocial factors (low control, high demand) to the development of depression and anxiety. Further research is

required to establish the exact influence that social support may have upon employees' mental health the workplace.

There is a relative paucity of research examining the effects of other potentially influential factors on workplace mental health including organisational change, employment status and perceived job satisfaction. Furthermore, due to methodological limitations (e.g. lack of standardised and valid measures of anxiety and depression utilised, impact of confounding factors, etc.) even when research has been reviewed, limited inferences can be made.

While this meta-review did not identify any reviews examining the role of traumatic events in the general working population, studies of high risk occupational groups provide some evidence that traumatic work-related incidents can increase the risk of a range of mental disorders, including common mental disorders and PTSD.

It is important to note that the risk factors identified herein are not the sole aspects of work that may lead to depression and anxiety disorders. For example bullying has been associated with increased depression and anxiety in the workplace (Samnani and Singh 2012), but surprisingly our search strategy found no reviews on this subject.

Finally, there is limited consideration of the interactional effects of the above factors on employees' mental health, i.e., it is unclear whether a combination of different risk factors produce an increased likelihood of developing depression and anxiety disorders (e.g., low support, low control, high job demands and low justice). In addition, all of the models described above tend to rely on self-report of work situations and to assume that an individual employee is relatively passive in their work environment, with the 'toxic' elements of work causing them to become ill.

However, many people work in very stressful environments without becoming unwell. There is a growing evidence base which suggests that the temperament of individual workers may be a key determinant in their vulnerability to various workplace factors (Henderson, Hotopf et al. 2009).

While more high quality research is needed, there is growing evidence that certain work factors may lead to an increased likelihood of depression and anxiety disorders. Consequently, there are related costs to both the individual and the organisation. In response to this there has been a heightened level of research exploring and examining various interventions that may address these conditions. The next chapter considers these interventions and their effectiveness in addressing mental health problems in the workplace.

Summary of Key Points

- A number of themes were identified that explain how work may contribute to the development of depression and anxiety disorders. These include
 - psychosocial risk factors
 - organisational change
 - employment status
 - job dissatisfaction
 - traumatic events
 - There is good evidence suggesting that the psychosocial risk factors of high job demands, low job control, high effort-reward imbalance and low social support in
-

the workplace are associated with a greater risk of developing depression and anxiety disorders.

- High job dissatisfaction appears to be moderately associated with a greater risk of developing depression and anxiety disorders.
 - There is some research supporting the hypothesis that good quality social support in the workplace may serve as a buffer against the adverse effects of other psychosocial risk factors on employee mental health.
 - There was a limited number of good quality reviews examining the relationship between the factors of organisational change and employment status and depression or anxiety disorders among employees.
 - No reviews were found that address how work contributes to the development of PTSD within the general working population, but a number of occupation specific reviews suggest workplace traumatic incidents can be a risk factor for both depression and anxiety disorders and PTSD.
 - More research is required to further determine what combination of work factors produces the greatest risk to an employees' mental health and the role of individual factors in influencing both subjective appraisal of and psychological outcomes from various work situations.
-

Table 4: Studies that address how work contributes to the development of depression and anxiety disorders

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Beauregard, Marchard, & Blanc	2011	To examine the relative contribution of non-work determinants to the prediction of worker's mental health	Canada	13	S	7	<p>Found insufficient evidence for any effects on worker's mental health of family or community/society level factors</p> <p>Evidence of moderate strength for the association between social support from other workers and workers mental health.</p>	<p>Conducted a good quality assessment that included both conceptual and methodological considerations. Main conclusions were interpreted in respect to high-quality findings.</p> <p>Good systematic search strategy resulted in 13 community based longitudinal studies.</p> <p>This is a relatively under-researched area which requires further investigation particularly in regards to type of social support available.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Bamberger et al.	2012	Aim to explore the associations between organisational change and employee mental health problems	Denmark	17	S	4	Limited evidence supporting an association between exposure to organisational change and decreased mental health among employees in 11 of the 17 studies.	<p>A quality assessment was not carried out.</p> <p>Search strategy was comprehensive.</p> <p>Findings from longitudinal studies were less likely to reflect the reported association. Authors appropriately caution that there is insufficient evidence to conclude an association between organisational change and elevated risk of mental health problems.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Faragher, Cass, & Cooper.	2003	Aimed to examine the research evidence linking job satisfaction to physical and mental wellbeing.	UK	485	M	5	<p>Job satisfaction was more strongly associated with mental health problems than with physical problems.</p> <p>Significant moderate relationships found between job satisfaction and depression, anxiety and burnout.</p> <p>A modest decrease in job satisfaction level was associated with an increase in risk of employee burnout considered to be of clinical importance.</p>	<p>A quality assessment was carried out with results of this assessment considered when formulating conclusions.</p> <p>A systematic search was completed yet key words and MESH terms were not provided. The meta-analysis had a very large sample size (n = 267,995) which gives weight to the moderate effect sizes reported. Methods used to combine the results were appropriate.</p> <p>Despite the robust finding linking job satisfaction to both depression and anxiety inferences regarding causality are not possible due statistical analyses employed. Perceived job satisfaction is a potential modulating factor between the relationship of burnout and absenteeism due to mental health issues. Unclear as to whether included studies employed suitable measures of anxiety/depression.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Ndjabour, Brisson, & Vezina.	2012	To investigate the association between organisation justice and mental health and whether this exists independently of the Demand-Control-Support (DCS) and Effort-Reward-Imbalance (ERI) models.	Canada	11	S	4	Within the realm of organisational justice, procedural and relational justices were associated with mental health. This association was found to exist independently of the DCS and ERI models of workplace stress.	<p>A quality assessment was carried out but results of the assessment were not considered when formulating conclusions.</p> <p>Search strategy was comprehensive and inclusion criteria deemed that only studies with a sample size of 100+ were included.</p> <p>Easy to read article that identifies the need for a systematic review on organisational justice and its effect on mental health. Results limited to discussing procedural and relational justice due to little or no current research exploring the association between interactional justice and distributive justice and mental health.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Netterstrom et al.	2008	To explore the effects of psychosocial working conditions on the risk of depression.	Denmark	14	S	5	<p>Psychological strain at work is associated with future depression.</p> <p>Moderate evidence for an association between psychological demands in the job and development of depression.</p> <p>Social support at work was associated with a decrease in the risk for future depression.</p>	<p>Did not conduct a quality assessment.</p> <p>Conducted a systematic search that only included longitudinal research with a sample of greater than 100.</p> <p>Updates past reviews by focusing on the relationship between psychosocial working conditions and only depression. Conducted funnel plots, and after detecting high publication bias, decided not to pool the point estimates by a meta-analysis procedure.</p> <p>Levels of research evidence were not discussed which reduces clarity of study's conclusions.</p> <p>The psychological and psychosocial factors examined were not clearly defined.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Nieuwenhuisen, Bruinvels & Frings-Dresen.	2010	To assess which work-related psychosocial risk factors may contribute to the occurrence of Stress related disorders (SRDs).	Netherlands	7	S	6	Strong evidence was found that high job demands, low job control, low co-worker support, low supervisor support, low procedural justice, low relational justice and high effort-reward imbalance predicted the occurrence of stress related disorders (which includes adjustment disorders).	<p>A quality assessment was carried out with results of this assessment considered when formulating conclusions.</p> <p>Conducted a comprehensive systematic search.</p> <p>Evidence was summarized using levels of evidence, a process that can be subjective.</p> <p>Provided clear descriptions of psychosocial risk factors as outlined in work-stress models.</p> <p>Included studies that only employed valid measures of fatigue, stress, mental illness or adjustment disorder (e.g., DSM-IV or ICD diagnostic criteria)</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Stansfeld and Candy	2006	To clarify the associations between psychosocial work stressors and common mental disorders.	UK	11	M	6	<p>The meta-analysis provides summary evidence for causal effects of high job strain and effort-reward imbalance on common mental disorders.</p> <p>The summary statistics showed that low decision authority, low decision latitude, high job demands, low occupational social support, and job insecurity were associated with a moderate risk of common mental disorder.</p>	<p>Specifically reviewed longitudinal studies only to address research question</p> <p>A quality assessment was conducted with only 'high-quality' papers considered when formulating conclusions.</p> <p>Conducted a systematic search strategy with methods used to combine the results carried out appropriately.</p> <p>An informative paper that provides good evidence for the association between psychosocial work stressors and common mental disorders.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Virtanen et al.	2005	Aim to explore the relationship between temporary employment and health. Also aim to determine whether this association is dependent on health outcome, level of employment instability or contextual factors (e.g., unemployment rates).	Finland	27	M	5	<p>Higher levels of psychological morbidity among temporary workers compared with permanent employees.</p> <p>Morbidity may be higher in temporary jobs with high employment instability.</p> <p>Contextual factors modified the association between temporary employment and psychological morbidity; the morbidity was stronger the lower the unemployment rate.</p> <p>Higher unemployment rate was related to a high proportion of temporary employees within a country.</p>	<p>A quality assessment was conducted with only 'high-quality' papers considered when formulating conclusions.</p> <p>Conducted a systematic search strategy with methods used to combine the results carried out appropriately</p> <p>Psychological morbidity is vaguely defined in this study, i.e., it is unclear as to whether this phrase is used to describe the ongoing difficulties experienced by people with mental health issues in the workplace.</p>

Chapter 5 - What interventions have been effective in addressing depression and anxiety disorders in the workplace?

The present meta-review identified a number of interventions that address depression and anxiety disorders in the workplace, with varying degrees of effectiveness. Twenty seven review studies met the quality assessment criteria, twenty six of which were deemed to be of moderate quality with one study rated as high quality. In total, these reviews analysed 709 studies.

The overall levels of evidence for each particular intervention were assessed by considering the both methodological quality of the review paper and the type of primary studies included. The rating system used can be seen in Table 5.

Table 5: Levels of Evidence

Levels of Evidence	Definition	Rating System
Strong Evidence	High or moderate quality systematic reviews/meta-analyses demonstrating consistent results from multiple RCTs	***
Moderate Evidence	High or moderate quality systematic reviews/meta-analyses demonstrating consistent evidence from non-RCT intervention trials or less consistent evidence from RCTs	**
Preliminary Evidence	Mixed or inconclusive evidence from low or moderate quality reviews	*

In the realm of public health, interventions are often classified as primary, secondary or tertiary prevention (Lamontagne, Keegal et al. 2007; Bhui, Dinos et al. 2012). Primary prevention is proactive in the sense that it aims to prevent exposure to psychological and physical risk factors in the workplace among healthy employees. These interventions may also aim to equip employees with adequate coping strategies to deal with stressors in an adaptive manner thus reducing the likelihood of mental health issues. Secondary prevention aims to manage symptoms and, in the context of the workplace, is typically implemented after an employee develops symptoms or begins to complain of stress. Finally, tertiary prevention is reactive and aims to minimise the impact that a diagnosed disorder has on functioning.

These categories of interventions can be focused at different levels; the organisational, the individual or the organisational-individual level (DeFrank and Cooper 1987; Lamontagne, Keegal et al. 2007). The organisational level targets policies and work conditions in order to minimise the potential impact of risk factors across the organisation. Generally, primary preventions occur at the organisational level although more recently there has been trend toward individual primary preventions focused on the worker and the development of adaptive coping skills (often termed resilience training). Secondary and tertiary preventions are usually conducted at the level of the individual. Interventions that focus on both the organisational and individual level aim to influence both the worker (e.g., beliefs, attitudes, coping style) and workplace (work environment, job demands, level of role autonomy). Examples of these intervention categories are outlined in table 6.

Table 6: The different levels and stages of workplace interventions

	Definition	Examples
Primary Prevention	Aimed at reducing the incidence of mental disorders by limiting exposure to workplace risk factors and/or enable coping skills.	Job redesign Resilience training Physical activity Health promotion CBT based prevention programs
Secondary Prevention	Manage symptoms and reduce progression of a disease with early detection and intervention	Screening Stress management training Counselling
Tertiary Prevention	Reduce the impact of an established disorder on work and social functioning.	Psychotherapy Medication Disability management Vocational rehabilitation

5.1 Primary Prevention Strategies

Primary prevention strategies can have a universal or selective approach. Universal preventive interventions are targeted to entire populations while selected preventive interventions are targeted at subgroups of the population considered a higher risk (Cuijpers, van Straten et al. 2008; Munoz, Cuijpers et al. 2010). The majority of primary prevention interventions included in this meta-review used a universal approach. Additional interventions considered, such as resilience training and debriefing, can be considered as either universal or selective preventative intervention, depending on the way in which they are utilised within each organisation.

5.1.1 Increase employee control

Job control is an important factor in the JCDS model (Karasek 1979) and in this meta-review it has been identified as an individual risk factor for mental health difficulties. Two studies of moderate quality were included in the present meta-review each of which assessed interventions that aimed to increase employee control (Egan, Bambra et al. 2007; Joyce, Pabayo et al. 2010).

Egan, Bambra, et al. included studies that evaluated organisational level interventions (Egan, Bambra et al. 2007). These interventions included participatory or problem solving committees, short education workshops and stress reduction working committees. Eight of the eighteen included studies were controlled (but not randomised) studies and reported psychosocial health improvements when employee control improved. However, a number of methodological issues limit the conclusions that can be drawn from this review. First, most of the measures were self-report and consequently may reduce the accuracy of the results due to response biases (e.g., socially desirable responding, a tendency for people to report what they believe a researcher/employer may want). Second, as noted by the authors, the included studies tended to overlook the potential confounding influence of concurrent interventions on the health effects of employees.

Joyce, Pabayo et al. also assessed the effects of increased employee control and choice on health outcomes via flexible working interventions (Joyce, Pabayo et al. 2010). This Cochrane review included 10 controlled before and after studies but as with Egan et al.'s review the authors were unable to identify any randomised control trials (RCTs) evaluating these interventions. RCTs are considered the gold standard

for testing interventions, meaning high quality systematic reviews utilising RCTs should be considered high level evidence for the effectiveness of an intervention. RCTs are considered the best source of evidence for effects of interventions as the process of randomisation minimises biases that can occur when individuals are simply allocated to the intervention or control groups under investigation (NHMRC 2000).

In their review, Joyce et al found that flexitime, overtime and fixed-term contracts did not have a significant effect on self-reported psychological health outcomes. Conversely, self-scheduling of shifts by employees and the process of gradual/partial retirement were associated with significant improvements in mental health. This lends support to the idea that certain strategies which increase employee control may serve as a protective factor against mental health issues. Furthermore, these findings also support the theory that engagement of the workforce may serve as a protective factor against the development of depression and anxiety disorders difficulties (Harter, Schmidt et al. 2002). Despite this study only including studies of high quality, the authors point out a number of methodological limitations (samples that are not necessarily representative, misclassification bias, poor follow up rates, etc) the authors warn that the review's conclusions should be interpreted with caution.

It should be noted that there is a sound theoretical underpinning to the idea that improving employee control may reduce rates of depression and anxiety disorders. Included studies in this meta-review have identified low job control as being associated with reduced mental health and a greater risk of stress related disorders (see chapter 4) (Stansfeld and Candy 2006; Netterstrom, Conrad et al. 2008; Nieuwenhuijsen, Bruinvels et al. 2010). These findings, which are in line with the

JDCS model, indicate that primary workplace preventions should focus on increasing employee control.

** Overall the results provide preliminary evidence that strategies aimed at increasing employee control, specifically interventions that involve self-scheduling of shifts and gradual/partial retirement may improve and maintain mental health in the workplace. However further primary research, addressing the methodological limitations discussed above, is required to validate these findings as well as to inform the development of future primary preventions strategies.*

5.1.2 Physical Activity

The positive effects of physical activity on mental health have been well documented (Wiles, Haase et al. 2007; Hsu, Hoffmann et al. 2008; Teychenne, Ball et al. 2008) yet the impact of workplace promoted physical activity is less clear. Three systematic reviews of moderate quality were included that assessed interventions that aimed to encourage physical activity (Kuoppala, Lamminpaa et al. 2008; Brown, Gilson et al. 2011; Bhui, Dinos et al. 2012).

Brown, Gilson et al. included 13 intervention (eight RCTs and five comparison trials) and seven observational studies which examined the impact of physical activity (e.g. onsite exercise programs, stretch breaks) on both the individual (employee well being) and organisational level (presenteeism) (Brown, Gilson et al. 2011). It was reported that aerobic exercise and a combination of exercise and relaxation reduced anxiety and burnout among employees. However, the intervention trials reviewed found that physical activity had no impact on the organisational level outcomes considered, particularly rates of absenteeism. A limitation of this review was that only

3 of the RCTs used tools with reasonably sound psychometric properties when assessing psychological symptoms. Kuoppala, Lamminpaa et al.'s review also examined the impact of physical activity on mental health in the broader context of workplace promotion. This review identified seven studies (four RCTs, one clinical trial and two observational) demonstrating a weak association between exercise and mental health. A notable strength of this review was that it only included studies with high methodological quality and those that measured mental health with appropriate psychometric tools. A limitation of this review was that the type of exercise was not operationalized and it was unclear how overall well-being was measured.

In addition, Bhui, Dinos, et al. conducted a meta-review considering a range of interventions in the workplace (Bhui, Dinos et al. 2012). Within this, one meta-review was identified which examined how physical activity programmes (e.g. providing fitness facilities at work) can reduce the organisational outcome of absenteeism. They conclude there were benefits in terms of absenteeism, but they did not consider individual mental health outcomes.

While it is feasible that certain exercise programs may be effective, a common limitation of all studies was that it was not clearly specified what was the best types of activity (cardiovascular vs. resistance), intensity (e.g., mild vs. vigorous) and time required to produce meaningful benefits. Some recent studies examining the links between physical activity and common mental disorders more generally have found that the type and level of activity required to gain any psychological benefits may be very different to that previously documented for cardiovascular health. In particular, it now seems likely that any mental health protective effects of exercise may be realised with relatively little time spent regularly undertaking low intensity activity (Hsu, Hoffmann et al. 2008). There is also an indication that workplace based

activity may not share the same mental health benefits as leisure time activity, casting doubt on whether observed associations from the general population can be extended to the workplace (Hsu, Hoffmann et al. 2008) . Until these issues are clarified, the effect of workplace interventions to promote physical activity on mental health cannot be ascertained.

* *In summary, the three included reviews examining the impact of interventions aimed at increasing physical activity in the workplace provide some preliminary evidence for improved employee mental health, but mixed findings regarding the impact of increasing physical activity on organisational outcomes such as sickness absence levels.*

5.1.3 Workplace health promotion

Employers have increasingly recognised that there may be benefits in assisting employees to maintain their health in terms of increased productivity (i.e., by reducing presenteeism and absenteeism) (Black 2008). Workplace Health Promotion (WHP) is an overarching intervention that considers mental and physical health in the workplace. Two systematic reviews (Kuoppala et al., 2008; Osilla et al., 2012) and one meta-analysis (Martin, Sanderson et al. 2009), all of moderate quality, were included that assessed the mental health component of workplace health promotion interventions,

Kuoppala, Lamminpaa et al.'s review comprised 46 studies (including 14 RCTs) and found a weak association between WHP and improved mental health and a moderate association between WHP and decreased sickness absence (Kuoppala, Lamminpaa et al. 2008). The review also found that psychological health promotion applied alone

appears to have no effect on physical and mental health or job wellbeing. This review gave weight to studies that were RCTs or cluster-randomized controlled trials, giving strength to their conclusion. However it is also important to note that throughout this review WHP was not operationalised and examples of strategies to implement WHP were not provided.

Osilla, Van Busum et al. assessed worksite wellness programs and examined four studies that had perceived mental health as an outcome measurement (Osilla, Van Busum et al. 2012). In 3 of 4 studies, worksite wellness programs were found to result in a decrease in mental health difficulties and stress, although the one study reporting no difference in stress was the sole RCT included in this review (Cook, Billings et al. 2007). The authors concluded that there was insufficient evidence to suggest that WHP is associated with improved mental health among employees. Furthermore, the reviewers caution that it is difficult to generalise reported findings due to methodological limitations (e.g., wellness programs were very heterogeneous, outcome variables were not clearly defined and effect size calculations were not consistently reported).

Martin, Sanderson et al's meta-analysis found a range of workplace health promotion interventions (e.g. psychoeducation with CBT, physical activity, stress management) and reported a small, but positive, effect on mental health outcomes among employees. However it is not clear which interventions produced the most meaningful outcome.

One positive aspect of WHP interventions are their capacity to target and potentially prevent numerous health issues as opposed to just focusing on mental health. Addressing numerous risk factors simultaneously may also prove more economical

and time effective for an organisation (Kuoppala, Lamminpaa et al. 2008). However the included reviews report a weak association with health outcomes with questionable evidence and thus additional research is needed to establish the effectiveness of this primary prevention. Furthermore, researchers need to clearly define the components of this intervention (e.g. defining the methods and materials involved in psychological health promotion) in order to better understand which, if any, of the parts of this intervention are effective.

* *In summary, the three studies examining the impact of WHP interventions had mixed findings. Both systematic reviews and the meta-analysis concluded there was only preliminary evidence for an association between WHP and improved mental health. However, there was some evidence of a moderate association between WHP and decreased sickness absence reported in one of the reviews. Therefore, while not obviously improving employee mental health, WHPs may have additional benefits in terms of employee engagement with benefits in terms of sickness absence and other organisational outcomes.*

5.1.4 Resilience training for high-risk occupations

It is apparent that not all work related risk factors, as identified in chapter 4, can be addressed by interventions. The workplace is a variable environment and there will always be a degree of stress, uncertainty as well as a potential to be exposed to traumatic events. Some individuals will have the resilience and ability to adapt and cope successfully to these psychosocial risk factors in order to effectively function in the workplace (Agaibi and Wilson 2005). Some interventions have been developed to try and aid or enhance individual resilience to a variety of different situations.

There are certain occupations in which exposure to potentially traumatic events can be expected to occur commonly. The most obvious of these 'high risk' occupations are the military and emergency services. The majority of research on resilience training has been completed with specific occupational groups.

A systematic review of primary prevention for PTSD amongst military personnel assessed a number of pre-deployment interventions that may increase coping skills and resilience amongst army soldiers (Hourani, Council et al. 2011). Firstly, psychoeducation was examined in order to determine its effectiveness in encouraging coping skills and resilience. Psychoeducation involves giving people preparatory information about potential stressful events and what symptoms they may experience after trauma. The aim is that familiarity with this information will result in people finding these situations to be less disturbing and will enable them to recognise what symptoms are part of a normal reaction. However, the reviewers concluded that little evidence exists to suggest that psychoeducation fosters greater resilience in trauma survivors. Consequently more research is required to examine the effectiveness of this intervention on an individual and organisational level.

Stress inoculation training (SIT) was also reviewed by Hourani, Council et al. and involves exposing workers to mild stressors in order to foster psychological preparedness and promote resilience against more major stressors. The authors concluded that (SIT) has the advantage of being able to be provided in a group format, making it potentially efficient and inexpensive, and can potentially increase resilience (Hourani, Council et al. 2011). However, a limitation of this review is that it comprised mainly narrative and anecdotal evidence with minimal emphasis placed on the methodological rigor of included research.

* *In summary, resilience training appears to be an intervention of great interest within certain high-risk groups. Despite its appeal, to date, there is only preliminary evidence that resilience training is effective amongst these groups and we could find no reviews considering its effectiveness amongst more general working populations.*

5.1.5 Debriefing

Psychological debriefing involves a class of interventions delivered immediately following trauma in order to relieve distress and avoid long-term psychopathology (Australian Centre for Posttraumatic Mental Health 2007). Psychological debriefing operates on the principles of ventilation, normalisation of distress and psychoeducation regarding presumed symptoms. However, it has been suggested that stimulation of emotional ventilation so soon after a traumatic event may actually produced adverse effects (Sijbrandij, Olf et al. 2006). The Australian Centre for Posttraumatic Mental Health conducted a systematic review of eleven adequately controlled trials and RCT's assessing early psychological interventions and reported that there is unlikely to be any benefits from routine debriefing in preventing the development of PTSD symptoms or a PTSD diagnosis (Australian Centre for Posttraumatic Mental Health 2007). The reviewers concluded that debriefing interventions should not be delivered on a routine basis but rather practitioners should adopt a stance of 'watchful waiting.' If a traumatic incident occurs in the workplace, employees should be offered psychological first aid including support, comfort, immediate needs being met, emotional and instrumental support and ongoing monitoring. Additional assistance should be provided in a step-wise fashion according to need.

*** *In summary, there is strong evidence against the routine use of debriefing following potential traumatic incidents in the workplace.*

5.2 Secondary Prevention Strategies

Secondary prevention strategies aim to manage symptoms and reduce progression of a disease with early detection and intervention. The interventions of the included studies of this met-review included counselling and stress management programs. An additional intervention of screening was also considered.

5.2.1 Counselling

Two moderate quality reviews from the UK have reported that counselling interventions in the workplace may assist in reducing symptoms of stress, anxiety and depression among employees (McLeod 2001; McLeod 2008). Each of these reviews included 37 and 128 studies respectively. The studies included in these reviews describe interventions that are usually provided within the organisation (in-house) or by external counselling services in the form of employee assisted programs (EAP). McLeod's 2001 review concluded that workplace counselling interventions produce a small yet significant positive impact on organisational outcomes such as job commitment, work functioning and job satisfaction (McLeod 2001). In addition to these findings, McLeod's 2008 review reported that this form of intervention can reduce sickness absence by up to 60% (McLeod 2008). While interesting, the results of these reviews are significantly compromised by the methodological limitations of the included studies. For example, sample characteristics (size, established diagnosis) as well as the use of control groups and

appropriate measurement tools varied considerably across the included studies. Furthermore, only one true RCT was included in the initial report, which reported no benefit from counselling. Henderson et al. provides further explanation on the methodological limitations on these reports and why its results must be interpreted with caution (Henderson, Hotopf et al. 2003). The interpretation of the findings relating to counselling is limited further by uncertainty about what can be included as workplace counselling. In his reviews, McLeod defines counselling as any intervention which is voluntarily chosen by the client, responsive to individual needs and intended to bring about change (McLeod 2001). While useful, this definition still leaves it unclear exactly what type of psychological interventions are being used.

** Therefore, in summary, while two related reviews concluded that workplace counselling (in house or externally delivered via EAP) may reduce symptoms of stress, anxiety and depression and may also reduce sickness absence and improve work functioning, there has been considerable debate in the literature regarding the validity of these conclusions and significant uncertainty remains regarding the methodological quality of the included studies. Counselling may be of benefit, but the relative benefits of different forms of counselling remains unknown despite its widespread use.*

5.2.2 Stress management programs

As discussed previously, the relationship between perceived “stress” in the workplace and risk of mental illness is complicated. However, there is some evidence that the perception of certain types of stress can contribute to the development of mental health issues (Stansfeld and Candy 2006; Netterstrom,

Conrad et al. 2008; Nieuwenhuijsen, Bruinvels et al. 2010). Therefore workplace interventions that focus on stress reduction and management may have a secondary prevention role.

Seymour and Grove conducted a systematic review and reported moderate evidence that stress management programmes in the workplace might have, at best, a modest short-term impact on a range of variables associated with individual stress (Seymour and Grove 2005). This conclusion was based on studies that mostly comprised of volunteers and only one study was an RCT. Furthermore, the details of the stress related variables were not documented or explained and can therefore not be assumed to equate to diagnoses of depression or anxiety disorders. The interventions reviewed included strategies to acquire problem solving skills, reduce negative coping style and ways in which to identify stressors, and minimise their impact, at work.

Seymour and Grove also concluded that there is limited evidence that an individual approach to stress management is more effective than a global approach (Seymour and Grove 2005). Global approaches, as defined by Seymour and Grove, are characterised by providing information to employees rather training for specific skill acquisition (Seymour and Grove 2005).

Two other reviews considered the effect of cognitive behavioural therapy (CBT) on reducing stress in the workplace. Cognitive behavioural therapy is based on the underlying rationale that an individual's affect and behaviour is determined by their cognitions with therapy aiming to change the individual's specific misconceptions and maladaptive assumptions (Beck, Rush et al. 1979). A meta-review by Bhui, Dinos et al. comprised of 11 meta-analyses and 12 systematic/literature reviews

(Bhui, Dinos et al. 2012). Overall the reviewers concluded that CBT interventions that aimed to reduce workplace stress had larger effect sizes compared to other individual focused interventions such as relaxation and meditation. However this intervention was not found to alter organisational outcomes (e.g., reduce absenteeism). They also reported that organisational or mixed interventions may also impact on a worker's mental health. Examples of individual interventions include (CBT, relaxation, music making, mindfulness-based stress reduction, communication skills). Similarly, Richardson and Rothstein conducted a meta-analysis of 36 studies of stress management interventions, including cognitive behavioural therapies and relaxation techniques (Richardson and Rothstein 2008). All of the studies included in this review utilised a random assignment to a treatment and control condition, giving weight to the findings. It was concluded that cognitive behavioural therapies employed as stress management interventions produced significant outcomes on the individual level but not on the organisational level (Richardson and Rothstein 2008). Examples of cognitive behavioural therapies evaluated in this review include traditional CBT skills, Stress Inoculation Training (SIT), Acceptance and Commitment therapy (ACT), rational-emotive therapy and online CBT. Despite these positive outcomes for the use of cognitive behavioural therapies in stress management, Richardson and Rothstein also reported that relaxation and meditation techniques, which were the most popular stress management interventions, consistently produced moderate, although smaller, positive effects for individual mental health (Richardson and Rothstein 2008). In consultation with subject matter experts the reviewers noted that the popularity of this intervention is likely to be attributed to its practicality, as it is the least expensive and the easiest to implement. While Richardson and Rothstein did not report any direct comparisons between

cognitive behavioural therapies and relaxation techniques, other reviews have found that CBT interventions have a significantly greater benefit than relaxation and meditation (Bhui, Dinos et al. 2012).

*** In summary, amongst the variety of interventions designed for those reporting stress in the workplace, those utilising cognitive behavioural therapies had moderate levels of evidence for their effectiveness in reducing self-reported stress and symptoms of both depression and anxiety. There was some suggestions that other simpler interventions such as relaxation and meditation techniques may also be effective, but less so than cognitive behavioural therapies.*

5.2.3 Screening

Health screening, a secondary prevention strategy, is an established part of risk management in many organisations (Henderson, Harvey et al. 2011). The search strategy used for this meta-review did not identify any reviews which addressed the effectiveness for screening. We are, however, aware of some primary research literature focused on screening which may be informative.

One randomised controlled trial on screening for depression has been conducted amongst a US workforce (Wang, Simon et al. 2007). This study found that screening, followed by telephone support and care management, resulted in lower self-reported depression scores, higher job retention and more hours worked among employees. However, the generalizability of this finding to non-US workforces remains unclear. Another RCT, this time based in the Netherlands, suggested screening primary care patients followed by providing those with sub-threshold

depression symptoms with a minimal contact (mainly self-help) cognitive behavioural intervention resulted in decreased lost work days (REF) (Smit, Willemse et al. 2006).

Screening has also been examined in specific workgroups, most notably the military. A recent systematic review by Gates, Holowka et al. investigated of the effects of screening amongst active duty military personnel and veterans (Gates, Holowka et al. 2012). They reported that some screening programs have been successful in identifying individuals with probable PTSD and that screening may contribute to a shorter duration of PTSD. However they also reported a number of limitations to screening in this field, such as military personnel with symptoms of PTSD being less likely to participate in the screening process and that pre-deployment screening appears to have little to no effect. Similarly, an extensive 15 year report into the health of the UK armed forces documented that mental health screening prior to deployment was unlikely to be of any benefit (King's Centre for Military Health Research 2010).

. * *While there were no reviews summarising the evidence for screening in the workplace, the results of primary research studies suggest that screening when combined with effective post-screening interventions can reduce the impact of depression in a working population. Screening is not without risk, with false positives results potentially leading to stigma and the pathologising of normal levels of distress. The above evidence suggests that screening may be useful, but only in certain situations and when appropriate interventions are available for those who screen positive.*

5.3 Tertiary Prevention Strategies

Tertiary prevention strategies are frequently considered when primary or secondary preventions strategies have been unsuccessful. They aim to provide the individual with therapeutic relief for severe, high cost health difficulties (Quick, Quick et al. 1997) and to minimise the impact a condition, such as depression or anxiety, has on the individual and the organisation.

5.3.1 Cognitive Behavioural Therapy

A large body of research evidence supports the application of Cognitive Behavioural Therapy (CBT) in the treatment of common mental disorders such as anxiety and depression (Beck, Rush et al. 1979; Nieuwenhuijsen, Bultmann et al. 2008; National Institute for Health and Clinical Experience 2009). As noted earlier, CBT shows promising individual outcomes as a preventative intervention for employees reporting workplace stress (Richardson and Rothstein 2008; Bhui, Dinos et al. 2012).

The present meta-review included six reviews which examined the effectiveness of CBT interventions in the workplace, four were deemed of moderate research quality (Seymour and Grove 2005; Furlan, Gnam et al. 2012; Pomaki, Franche et al. 2012) and two Cochrane reviews was categorised as high quality (Bruinvels, Rebergen et al. 2007; van Oostrom, Driessen et al. 2009). Three of these studies, including one review of high quality, reported that CBT may result in improved outcomes among workers primarily on the individual level (i.e., reduced symptomology) (Bruinvels, Rebergen et al. 2007; Pomaki, Franche et al. 2012). However, when considering functional outcomes, such as sickness absence, the highest quality review (Cochrane) found only one RCT study of good methodological quality (van Oostrom,

Driessen et al. 2009) and concluded that the research evidence for all workplace mental health interventions is of inadequate quality to draw reliable conclusions regarding treatment efficacy (Seymour and Grove 2005; Furlan, Gnam et al. 2012). Similarly, another Cochrane review of moderate quality concluded that there was a lack of evidence regarding the effectiveness of any standard psychological interventions on reducing sickness absence due to depression (Nieuwenhuijsen, Bultmann et al. 2008).

In contrast, when considering occupational outcomes amongst employees with adjustment disorder, one high quality Cochrane review comprising four RCTs comparing CBT to usual care found CBT may facilitate earlier return to work by two weeks (Bruinvels, Rebergen et al. 2007). A notable limitation of this review was that the included studies described different lengths of treatment (LOT) and modes of delivery (for example, one reported delivering the intervention via a psychologist another via a general practitioner and LOT varied considerably from brief 10-20 minutes sessions to 11 sessions of 45 minutes each). This restricts any inferences regarding what mode of delivery/LOT is most effective. Another review described some evidence of improved work functioning (job performance, productivity) among employees with depression following a workplace CBT intervention (Pomaki, Franche et al. 2012). However, these conclusions were based on the findings of a single study, thus limiting the generalisability of the results.

Furlan, Gnam et al. also examined the impact of workplace interventions such as CBT on organisational outcomes among employees diagnosed with depression and anxiety disorders (over 50% had depression) (Furlan, Gnam et al. 2012). This review comprised 14 studies of which 1 RCT focused on CBT. The review concluded that due to the very low quality of the research, no one intervention could be

recommended as effective in terms of organisational outcomes (i.e., preventing and managing work disability/sickness absence, work functioning and recurrences of work disability/sickness absence).

A notable limitation of the current research is that reviews often failed to define which components of CBT were employed in the included intervention studies (e.g., psycho-education, cognitive restructuring, goal setting). Furthermore, as noted by many of the reviews, there is a lack of consistency in the measures used across primary studies when examining individual outcomes. This significantly compromises the generalisability and meaningful interpretation of findings across studies in this area.

*** Therefore, while there is moderate evidence for the effectiveness of workplace-based CBT in terms of symptomatic improvement, the impact of standard CBT treatment upon organisational outcomes such as absenteeism, presenteeism and productivity remains unclear and may well differ according to the diagnosis, with some evidence in cases of adjustment disorder but little evidence for depression. Most reviews have highlighted that primary research has tended to neglect examining the organisational level outcomes of these interventions and have called for further research in this area.*

5.3.2 Exposure Therapy

There were very few review papers identified by our search strategy that considered to the role of trauma in the workplace. As noted previously, workplace trauma may be associated with a variety of mental health outcomes, including post-traumatic stress disorder (PTSD). The Australian Guidelines for the treatment of acute stress

disorder and PTSD recommend that adults with PTSD be provided with trauma-focused interventions i.e. trauma focused CBT (Australian Centre for Postraumatic Mental Health 2007). Furthermore exposure therapy has been found to produce effective outcomes in the treatment of PTSD (Australian Centre for Postraumatic Mental Health 2007). The effectiveness of this intervention in the treatment of work-related PTSD has tended to be examined in the context of occupational specific roles such as emergency service and army personnel (Wilhelm, Kovess et al. 2004; Centers for Disease Control and Prevention 2006).

The present meta-review identified two studies (Noordik, van der Klink et al. 2010; Stergiopoulos, Cimo et al. 2011) that specifically examined the effectiveness of exposure therapy in the treatment of work-related anxiety and posttraumatic stress disorder (PTSD) across a range of occupations. A meta-analytic review of moderate quality by Noordik et al. involved seven studies, four of which were RCTs and three were controlled studies. The samples of the included studies comprised those who reported anxiety symptoms and those diagnosed with PTSD, Obsessive Compulsive Disorder (OCD) and Phobias. Their findings lend some support for the use of exposure in vivo when treating PTSD. Exposure in vivo provides the opportunity for employees to gradually learn how to deal with anxiety-provoking work situations during return to work (RTW) or actual work (Noordik, van der Klink et al. 2010). The reviewers concluded that gradual exposure-in-vivo interventions compared to waiting list control, produced positive outcomes on both the individual level (reduced anxiety symptoms) and organisational level (increased productivity, reduced sickness absence). However, they also concluded that exposure-in-vivo produced similar outcomes to when compared to imaginal exposure therapy (aimed at cognitive restructuring and often used in preparation for a real life confrontation

with anxiety-provoking situations). Imaginal exposure therapy is less invasive and likely to be more cost effective from rehabilitation and RTW programming perspective. While these results show promising outcomes for both imaginal exposure therapy and exposure in-vivo, the authors acknowledged that these conclusions are based on the findings of only two studies, one of which was deemed of low quality of evidence due to a high risk of biases in their methodological approach. Furthermore, in one of these studies, exposure therapy was combined with a specific CBT cognitive restructuring component, again limiting the inferences that can be drawn regarding the overall effectiveness of this intervention for work-related PTSD/ anxiety.

However, further support for the use of exposure therapy in the workplace was described in Stergioplous et al. review, deemed of moderate quality (Stergiopoulos, Cimo et al. 2011). This review involved 7 studies, 3 of where were RCTs, comprising samples with a sole clinical diagnosis of PTSD. Three of these studies looked at exposure-based treatments for employees with occupation-related injuries and resulting PTSD, with all three having pre-post outcome measure designs. The researchers concluded that for work-injured clients, avoidance of the work area where the injury occurred was a major barrier to their overall recovery and successful RTW. They found that exposure therapy for PTSD resulted in an average RTW rate of 85% at 6 month follow-up. Again, these conclusions are interpreted with caution given the sparse primary research available on work-related exposure therapy for PTSD (n = 3 studies) as well as several methodological limitations. First, the type of exposure therapy varied across the studies (imaginal vs. graded work exposure vs. on-site work evaluations), second, individual outcomes (e.g., symptoms, everyday functioning) remained unassessed, third, none of the included

studies comprised control groups and finally there was no research available commenting on the *long-term* organisational and individual benefits of this workplace intervention.

*** In summary, there was moderate evidence for the effectiveness of workplace based exposure therapy for individuals who have developed PTSD following occupation-related injury. Given the positive findings among individuals with severe work related anxiety such as PTSD, it would be worth examining the effectiveness of such exposure techniques in treating other common workplace anxiety issues such as Generalised Anxiety Disorder and Adjustment Disorder.*

5.3.3 Medication

Only one study was included that assessed the effectiveness of antidepressant medication as a workplace intervention (Nieuwenhuijsen, Bultmann et al. 2008). This meta-analytical Cochrane review, of moderate quality, comprised of 11 RCT's and focused on the organisational outcome of absenteeism. A particularly strength of this review was that it only included studies that utilised validated clinical measurements or the DSM-IV criteria to diagnose depression. The reviewers concluded that selective serotonin reuptake inhibitors (SSRIs) compared to other medication (tricyclic anti-depressants (TCAs) and serotonin-noradrenaline reuptake inhibitor (SNRIs)) produced no effect on sickness absence among depressed workers. Again, when anti-depressant medication was compared to placebo, no effect was found. There was some evidence that tricyclics anti-depressant medication combined with psychodynamic therapy may reduce sickness absence

among depressed workers, however this finding was based on the results of one study.

* *While antidepressants are known to be effective treatments for the symptoms of depression and anxiety, there is inconclusive results of the effect of antidepressants on organisational outcomes for depressed workers. This may be due to a lack of primary research in this area or because antidepressants may only facilitate functioning among individuals with severe depression. Alternatively, it may be that any functional occupational benefits of antidepressant medication may lag behind symptomatic improvements or that specific interventions addressing return to work issues are needed in addition to standard symptom based treatment.*

5.3.4 Return to work (RTW) programs

Absenteeism due to depression and anxiety disorders is becoming increasingly problematic in many developed countries (OECD 2012). In light of the associated economic cost for organisations (see chapter 6) and the social and psychological benefits of work (see chapter 7), the role RTW programmes may serve in facilitating improved functioning among employees with depression/anxiety is of particular interest.

Our systematic search strategy found only one review, of moderate quality, that considered the effectiveness of RTW programs for people with depression/anxiety (Corbiere and Shen 2006). This systematic review comprised 14 studies and reported that the most popular psychological intervention for RTW was CBT. They found that this program was usually more effective than the treatment as usual condition in improving RTW rate for people with mental health problems. Included

studies also demonstrated that RTW interventions using CBT led to more favourable outcomes on the individual level (i.e., less psychological distress, improved work satisfaction and reduced depression). While it should be noted that only two of the included studies focused specifically on mental health outcomes, one of these was a RCT that reported the intervention group had significantly higher RTW rates at three months. This is further supported by findings from a high quality Cochrane review that CBT may facilitate earlier return to work by two weeks among employees with adjustment disorder (Bruinvels, Rebergen et al. 2007).

As discussed in Chapter 4, there are a number of risk factors that may need to be considered when developing RTW programs (e.g. job demands, perceived control, social support). The research thus far suggests that CBT as a RTW intervention has potential in facilitating improved functioning on both the individual (improved symptoms) and organisational level (improved RTW rates) among employees with mental health difficulties. However the literature does not provide a standardised RTW process for workers with depression or anxiety disorders. Understandably, the exact details of this program would vary across occupations. However, there appears to be no clear definition of what a RTW program should involve (e.g., health specialists required, graded RTW hours, workplace support required). Further research would help establish guidelines around RTW programs for workers with depression and anxiety. In addition, research is required to establish the immediate and long-term individual and organisational benefits of any new interventions.

*** In summary, there is moderate evidence from a small number of trials suggesting that modified CBT delivered as part of a return to work program may have a direct benefit on organisation outcomes such as length of sickness absence in addition to the known individual symptom reduction benefits of CBT.*

5.4 Discussion

Overall the majority of studies examining workplace interventions for employees with depression or anxiety disorders are focused on reducing the symptoms of the condition, with few studies specifically examining the potential additional organisational outcomes, such as improved work functioning and reduced absenteeism.

The evidence for the effectiveness of primary prevention interventions is mixed and limited by methodological drawbacks. There is preliminary evidence, backed up by a sound theoretical underpinning, that some strategies which increase employee control may result in positive psychological outcomes. There is also preliminary evidence that interventions which aim to increase employees' level of physical activity may reduce depressive and anxiety symptoms, although the impact of such interventions on sickness absence levels and work performance is unknown. In contrast, the limited evidence available for workplace health promotion activities suggest they have very limited effect on employee symptoms levels, but may reduce sickness absence levels via other pathways such as improved employee engagement. There is insufficient evidence from reviews on other universal primary prevention strategies in the workplace. In terms of selective primary prevention, there is strong evidence that debriefing should not be used following a potentially traumatic incident in the workplace.

The majority of published reviews examining secondary prevention focused on those who complain of stress related symptoms. While two related reviews concluded that workplace counselling (in house or externally delivered via EAP) may reduce symptoms of stress, anxiety and depression and may also reduce sickness absence

and improve work functioning among employees, there has been debate in the literature regarding the validity of these conclusions and significant uncertainty remains regarding the methodological of the included studies. There was stronger levels of evidence for other stress management interventions, particularly CBT based interventions. CBT-based stress management interventions produce significantly improved outcomes at the individual level among employees yet once again the impact on organisational outcomes is not clear. This suggests that while these interventions produce meaningful improvement with regards levels of psychological symptoms, this may not generalise to functional change in organisational factors such as presenteeism, productivity and absenteeism.

In terms of tertiary prevention, there is a good evidence base for what interventions work for treating the symptoms of depression and anxiety disorders in the general population. However, reviews which have examined the use of standard CBT or antidepressant treatment in the workplace were not able to find a benefit in terms of reduced sickness absence. In contrast, reviews examining two work-focused tertiary treatments were identified; exposure therapy for PTSD following workplace trauma and CBT as part of a return to work intervention. There was evidence suggesting both of these interventions were associated with improved individual (symptom reduction) and organisational (reduced absenteeism, increased work functioning) outcomes.

As noted by van Oostrom, Driessen et al. in their Cochrane review of workplace interventions for preventing workplace disability, there are significant methodological limitations in the primary research which prevent any conclusion being drawn regarding the overall effectiveness of workplace interventions for mental health (van Oostrom, Driessen et al. 2009). The most notable limitations include:

- Small sample sizes in treatment groups
- Poorly defined sample characteristics (e.g., tendency to pool employees with various depression and anxiety disorders into the same treatment group)
- Lack of formal RCT intervention trials
- Lack of appropriate control groups
- Lack of formalised diagnosis for those assigned to treatment groups
- Lack of consensus regarding measurement tools for both individual outcomes (symptom severity) and organisational outcomes (e.g., how to measure presenteeism/productivity accurately)
- Minimal consideration of psychosocial risk factors (Chapter 4) known to increase psychological stress in the workplace when developing and evaluating workplace mental health interventions

In light of these limitations, future researchers need to take particular care in their methodological approach when assessing the effectiveness of workplace interventions. In addition, studies should include measurement tools with good psychometric properties that examine organisational level outcomes. This is particularly important to the evaluation of workplace interventions as an intervention may well produce functional outcomes on the individual level (e.g. reduce symptoms of depression) yet may have minimal impact on the organisational level (e.g., level of productivity).

It is also worth noting that the majority of psychosocial risk factors identified in Chapter 4 do not appear to be taken into consideration by the present research on workplace interventions. In addition, there were no reviews identified which considered interventions delivered at the level of managers, who have a key role to

play in providing social support, promoting early intervention and facilitating early return to work following an episode of illness.

Summary of Key Points

- There is preliminary evidence that strategies aimed at increasing employee control, specifically interventions that involve self-scheduling of shifts and gradual/partial retirement, may improve and maintain mental health in the workplace. Further primary research, addressing methodological limitations is required to validate these findings.
 - There is some evidence that interventions aimed at increasing physical activity in the workplace may improve employee mental health, but there is uncertainty about the amount and type of exercise required and any impact on mental health appears to be relatively mild. There are mixed findings regarding the impact of physical activity on organisational outcomes such as sickness absence levels.
 - The impact of WHP interventions had mixed findings. A weak or no association was found between WHP and improved mental health while there was some evidence of a moderate association between WHP and decreased sickness absence. Therefore, while not obviously improving employee mental health, WHPs may have additional benefits, such as increased employee engagement, which may lead to reduced sickness
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absence and other organisational outcomes.

- There is limited and inconclusive evidence that resilience training may be effective amongst high risk groups such as army personnel but no reviews were found that considered its effectiveness amongst more general working populations.
 - There is strong evidence against the use of debriefing following potential traumatic incidents in the workplace.
 - The use of workplace counselling (in house or externally delivered via EAP) is widespread and may have individual and organisational benefits. However, to date there is very little good quality evidence supporting its effectiveness and the relative benefits of different forms of counselling remains unknown.
 - Amongst the variety of interventions designed for those reporting stress in the workplace, those utilising cognitive behavioural therapies had moderate levels of evidence for their effectiveness in reducing self-reported stress and symptoms of both depression and anxiety. There was some suggestions that other simpler interventions such as relaxation and meditation techniques may also be effective, but less so than cognitive behavioural therapies.
 - There is positive evidence from a small number of primary research studies that screening when combined with effective post-screening interventions can reduce the impact of depression in a working population. Screening is not without risk with the evidence suggesting that it should only be used in certain situations and when appropriate interventions are available for those who screen positive.
 - There is moderate level evidence for the effectiveness of workplace-based CBT in terms of symptomatic improvement, however the impact of standard
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CBT treatment upon organisational outcomes such as absenteeism, presenteeism and productivity remains unclear and may well differ according to the diagnosis, with some evidence in cases of adjustment disorder but little evidence for depression.

- There was moderate evidence for the effectiveness of workplace based exposure therapy for individuals who have developed PTSD following occupation-related injury. Further research is needed to examine the effectiveness of exposure techniques in treating other common workplace anxiety issues such as Generalised Anxiety Disorder and Adjustment Disorder.
 - There were inconclusive results regarding the impact of standard treatments for depression, such as antidepressants, on organisational outcomes for depressed workers.
 - There is encouraging moderate level evidence that modified CBT delivered as part of a return to work program may have positive organisation outcomes such as reduced sickness absence in addition to the known individual symptom reduction benefits of CBT.
 - Due to the nature of a meta-review, only interventions that have been included within previous reviews can be assessed. It is feasible that other interventions that address depression and anxiety disorders in the workplace have been examined in the primary research literature, but are yet to be summarised within published reviews.
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Table 7: Reviews that address what interventions have been effective in addressing depression and anxiety disorders in the workplace.

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Bhui, et al.	2012	To assess the effectiveness of individual, organisational and mixed interventions on the outcomes of mental health and absenteeism.	UK	23	S	5	<p>Individual focused interventions (e.g., CBT, progressive muscle relaxation, EAP)</p> <p>And</p> <p>Organisation: focused interventions (co-worker support group, fitness programs, job redesign)</p> <p>And</p> <p>combination of both</p>	<p>Meta-analysis and narrative reviews both indicate that individual interventions (e.g. cognitive-behavioural programmes, relaxation) show larger effects compared with organisational or mixed interventions, especially at the individual level.</p> <p>CBT was found to be the most effective individual targeted intervention for individual outcomes (mood state, sleep, health behaviours etc).</p> <p>Individual focused interventions did not impact on absenteeism.</p> <p>Organisational level interventions are scarce and there is a lack of primary research examining organisational-level outcomes.</p> <p>Recommend that future primary studies use a consistent set of outcomes to measure anxiety and depression to allow reviewers to conduct more direct comparisons and evaluations of intervention effectiveness.</p>	<p>A quality assessment was not carried out.</p> <p>High quality search strategy resulted in the inclusion of meta-analysis and narrative reviews. Included comprehensive tables of the included studies, and a description of their intervention findings, are provided.</p> <p>Article would be difficult for a lay person to read.</p> <p>Unclear which of the individual strategies produced meaningful outcomes.</p> <p>Unclear what components of CBT were found to be useful on the individual level (e.g. cognitive restructuring vs. psychoeducation or both).</p> <p>Length of intervention time was not examined as an influencing factor (e.g., unclear whether CBT was most effective when delivered over a 6 month period vs. brief therapy).</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Brown at al.	2011	To determine the impact physical activity has on employee well-being and presenteeism.	Australia	20	S	4	Physical Activity	<p>Physical activity has a positive impact on employee well being across a range of outcome measures such as quality of life and emotional well-being.</p> <p>Aerobic exercise and exercise and relaxation in combination were found to reduce anxiety and burnout in employees</p> <p>However intervention trials indicate no association between physical activity and workplace well-being, particularly absenteeism.</p>	<p>No quality assessment.</p> <p>Adequate systematic search.</p> <p>Only one included study addressed presenteeism, limiting interpretation of findings.</p> <p>Well-being assessment measures varied considerably across studies.</p> <p>Fails to operationalise 'physical activity'.</p> <p>Overall, findings do not clearly specify what are the best types of activity (cardiovascular vs. resistance), intensity(e.g., mild vs. vigorous) and time required to produce meaningful benefits.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Bruinvels et al.	2007	To evaluate the effectiveness of interventions aimed at return to work for workers with adjustment disorders.	Netherlands	6	M	9	<p>Pharmaco-therapy (e.g antidepressants), Psychological therapy (e.g CBT), Relaxation techniques (e.g. Yoga), Exercise Programmes, (e.g., running), Employee assistance programs (EAP)</p> <p>And</p> <p>Interventions aimed at the workplace, e.g., occupational stress management programs.</p>	<p>Only studies with psychological therapy were identified (n =6). No eligible studies on pharmacotherapy, relaxation techniques, exercise programs or EAP were found.</p> <p>Cognitive behavioural therapy (CBT) (when compared to usual care by GP/Occupational Physician) may facilitate RTW of workers with adjustment disorders to the extent that they may return up to 2 weeks earlier with partial or full RTW.</p> <p>Early RTW due to CBT may be associated with improved mental health.</p> <p>No evidence to suggest that solution-focused behavioural (SFB) therapy, or an intervention aimed exclusively at work adjustments, facilitates RTW among workers with adjustment disorders.</p>	<p>Conducted a good quality assessment with main conclusions being interpreted in respect to quality assessment findings.</p> <p>All included studies were RCTs comprising samples that met a formal diagnosis of Adjustment Disorder as outlined in the DSM-IV and ICD-10 criteria.</p> <p>Clearly, examined both the individual (worker's wellbeing/ severity of symptoms) and organisational outcomes (work status, time on modified duties, loss of work days due to absenteeism).</p> <p>Search strategy was very comprehensive, with results combined appropriately and publication bias assessed.</p> <p>Research is required to establish whether SFB therapy and interventions aimed specifically at work adjustments facilitate RTW among those with adjustment disorder.</p> <p>The RCT studies included in the review were from Norway and Netherlands only. RCTs required in other countries.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Corbiere & Shen	2006	To describe psychological return-to-work (RTW) interventions for people with mental health problems and/or physical injuries, and to summarize the impact of these RTW interventions on work and health outcomes.	Canada	14	S	4	Interventions that were RTW oriented and comprised psychological components focusing on mental health problems.	<p>The most common psychological interventions reviewed focused on coping strategies, problem-solving strategies and belief/attitude adjustments.</p> <p>Cognitive behavioural RTW intervention was usually more effective than the treatment-as-usual condition in improving RTW rate, with nearly two-thirds presenting CBT as the main intervention.</p>	<p>A quality assessment was conducted but results of this assessment are not considered when formulating conclusions.</p> <p>Search strategy was adequate but inclusion/exclusion criteria resulted in only 2 of the 14 included RTW intervention studies focusing on mental health (specifically adjustment disorder) and showed that CBT improved RTW status, however only one of these studies included an adequate control group thus limiting the inferences that can be drawn from their findings.</p> <p>Majority focused on health problems associated with physical injuries.</p> <p>Results should be interpreted with caution due to the heterogeneity of intervention components between studies.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Egan et al.	2007	To determine the psychosocial effects of increasing employee participation and control through workplace reorganisation.	UK	18	S	6	<p>Organisation-level interventions designed to increase employee participation/ Control.</p> <p>(e.g., problem solving committees, two-day education courses, stress reduction working committee).</p>	<p>Some evidence of mental health benefits (including reduced anxiety and depression) when employee control improved, demands decreased and/or support increased.</p> <p>Evidence cannot completely validate these findings</p> <p>The reporting of Interventions examined in the included studies was generally poor or difficult to assess.</p> <p>There was a lack of evidence that the interventions were actually implemented in full or at all.</p>	<p>A quality assessment was conducted but results of this assessment were not considered when formulating results.</p> <p>Carried out a systematic search in many electronic databases.</p> <p>Authors are right in declaring tentative support for hypothesis. Authors note that any health effects attributed to interventions aimed at improving employees control and participation in workplace decision making may have been influenced by concurrent interventions.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Furlan et al.	2011	To determine which intervention approaches to manage depression in the workplace have been successful.	Canada	12	S	7	A range of primary and secondary intervention strategies (including psychological therapy, enhanced primary care, occupational medicine, exercise, integrated care, psychiatric and occupation therapy)	<p>Included reviews that identified a wide range of interventions but concluded that no recommendation could be recommended as the evidence for all included reviews was of insufficient quality.</p> <p>Key message is that some interventions are feasible and require further research and evaluation:</p> <ul style="list-style-type: none"> - Enhanced primary and psychiatric care, enhance occupational medicine, psychological interventions (e.g. CBT, SFT, Psychodynamic), worksite stress reduction and Integrated Care management). 	<p>A quality assessment was carried out with results of this assessment the basis for forming their conclusion that no intervention could be recommended.</p> <p>Systematic search strategy carried out with only studies that focused on depression included.</p> <p>Review focused specifically on work outcomes of these interventions (disability/sickness absence, work functioning, recurrences of sickness/disability absence).</p> <p>Consider and identify the risk of bias in all included studies lending strength to the overall findings</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Joyce	2010	To evaluate the effects of flexible working interventions on the physical, mental and general health and wellbeing of employees and their families.	UK	10	S	7	Flexible working interventions	<p>Flexitime was shown not to have significant effects on self-reported psychological health outcomes.</p> <p>Self-scheduling of shifts and gradual/partial retirement may lead to significant improvements in mental health.</p> <p>Authors tentatively suggest that flexible working interventions that increase worker control and choice are likely to have a positive effect on health outcomes.</p>	<p>Quality assessment not conducted but methodology rigour of studies considered in discussion.</p> <p>Comprehensive search strategy with only studies that had community-based sample included.</p> <p>Authors warn that given the methodologically limited evidence, conclusions should be interpreted with caution.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Kuppola, Kamminpaa & Husman	2008	To study the association between work health promotion and job well-being, work ability, absenteeism, and early retirement.	Finland	46	M	6	Work health promotion to improve job well-being	<p>Introduced the job well-being pyramid.</p> <p>Reported a very weak association between psychological health promotion and job well-being.</p> <p>No effects found on physical well-being and well-being in general.</p> <p>Moderate effect of health promotion on sickness absences.</p> <p>Exercise was found to increase overall well-being.</p>	<p>Strength of evidence considered and only studies that were of high quality were included</p> <p>Conducts a good systematic search but studies from 1970's onwards are included, perhaps research that is now outdated. Methods used to combine the results carried out appropriately.</p> <p>It is unclear when authors refer to workplace health promotion whether this encompasses physical health, mental health, or both.</p> <p>Generalisability of findings is limited due to various outcome measures for "job well-being".</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Martin, Sanderson & Cocker	2009	To investigate whether different types of health promotion intervention in the workplace reduce depression and anxiety symptoms.	Australia	22	M	5	Workplace Health Promotion Intervention	<p>Small, but positive, effects for symptoms of depression and anxiety in the interventions reviewed.</p> <p>Interventions with a direct focus on mental health had a beneficial effect on symptoms.</p> <p>Just over half of the included studies used psychoeducation focusing on cognitive behaviour or training in coping skills within a stress management framework.</p>	<p>A quality assessment was not carried out.</p> <p>Conducted a systematic search strategy with methods used to combine the results carried out appropriately.</p> <p>A particular strength of this meta-analysis was that it included studies that only reported outcomes on a standardised mental health screening measure for depression or anxiety (e.g. BDI, DASS, or a composite measure such as the GHQ).</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
McLeod	2001	To review the effectiveness of counselling in the workplace	UK	37	S	6	Counselling in the workplace (counselling provided by in-house or externally contracted counselling service e.g. EAP for people with work stress difficulties)	Counselling interventions at work are generally effective in alleviating symptoms of anxiety, stress and depression. Counselling interventions have a small, but still significant, positive impact on job commitment, work functioning, job satisfaction and substance misuse.	Systematic search strategy carried out. A quality assessment was carried out with results of this assessment considered when formulating conclusions. The quality assessment and levels of evidence analysis was relatively subjective in so far that it did not appear to consider the impact of a study's small sample size and lack of control groups when interpreting results. Unclear as to what mode of counselling was provided (supportive vs. educational, vs. cognitive behavioural).

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
McLeod	2008	To review the effectiveness of counselling in the workplace	UK	128	S	6	Workplace counselling	Similar to findings to McLeod (2001). Counselling interventions can reduce sickness absence by up to 60%.	<p>Systematic search strategy carried out.</p> <p>A quality assessment was carried out with results of this assessment considered when formulating conclusions.</p> <p>The quality assessment was limited in so far that only 1 point differentiated a study from being of Low or High quality (11 points vs. 12 points).</p> <p>Inclusion criteria did not consider sample size, use of control groups or measurement tools (e.g., psychometric properties of self-reported questionnaires) in studies evaluating counselling interventions thus limiting the overall findings of this review.</p> <p>Unclear as to what mode of counselling was provided (supportive vs. educational, vs. cognitive behavioural).</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Nieuwenhuijsen et al.	2008	To evaluate the effectiveness of interventions aimed at reducing work disability in depressed workers.	Netherlands	11	M	8	Work and Worker Directed Interventions to reduce sickness absence among depressed workers.	<p>Based on a heterogeneous sample of studies, no evidence of an effect of antidepressant medication (SSRIs ,TCAs, SNRIs) on sickness absence among depressed workers.</p> <p>Similarly, no evidence for an effect of enhanced primary care or psychological interventions alone.</p> <p>Psychodynamic therapy combined with TCA medication found to reduce days of sickness absence compared to TCA (based on one study).</p> <p>Despite thorough search strategy employed, no studies found that conducted work-directed interventions.</p> <p>No studies met the inclusion criteria that would allow a comparison of antidepressant medication to psychological intervention.</p>	<p>A quality assessment was carried out the results of which were considered when formulating conclusions.</p> <p>A very comprehensive systematic search strategy with only RCTs included. Methods used to combine the results were appropriate</p> <p>A strength of this review was it included only studies that utilised DSM-IV diagnostic criteria for depression or a validated measurement tool (e.g. Beck's Depression Inventory).</p> <p>Many comparisons were based on single studies. Therefore high quality primary research is required to determine effects of medication and psychological intervention on absenteeism and work functioning.</p> <p>Primary research also required to compare the effectiveness of these therapies and if used in combination.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Noordik et al.	2010	To determine whether a treatment programme that included exposure in vivo resulted in better work-related and anxiety-related outcomes than a treatment programme without exposure in vivo.	Netherlands	7	M	8	Exposure Therapy	For people with PTSD, gradual exposure-in-vivo interventions can yield better work-related (e.g., productivity, sickness absence) and anxiety related outcomes (reduced symptoms) compared to a waiting-list but not better compared to imaginal exposure.	<p>A quality assessment, using the GRADE approach, was carried out with results of this assessment considered when formulating conclusions.</p> <p>Conducted a systematic search strategy with a large key word strategy. Methods used to combine the results were appropriate.</p> <p>Results regarding exposure-in-vivo for PTSD were based on two included studies, one of which also involved cognitive restructuring as part of the intervention thus limiting the conclusions drawn regarding the effectiveness of this approach.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Osilla et al.	2012	To analyse the impact of worksite wellness programs on health and financial outcomes.	USA	33	S	4	Workplace wellness programs	<p>3 of 4 studies on perceived mental health reviewed indicated that worksite wellness programs decrease mental health difficulties and stress. Overall, insufficient Evidence for effects on mental health and absenteeism.</p> <p>Difficult to generalise conclusions due to wellness programs being very heterogeneous and outcomes were not systematically operationalised.</p>	<p>A quality assessment conducted with results of this assessment considered when formulating conclusions.</p> <p>A systematic search was carried out but details of characteristics of the included studies was not accessible.</p> <p>Authors point out that the included studies had questionable evaluation designs.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Pomaki et al.	2011	To summarize evidence on workplace-based work disability prevention (WDP) interventions in workers with common mental health conditions.	Canada	8	S	7	Variety of interventions aimed to minimise work disability among workers with a CMH	<p>Facilitation of access to clinical treatment, and workplace-based high-intensity psychological intervention (primarily CBT) produced moderate evidence in effectively improving work functioning (productivity, job performance or work limitations) and quality of life but did not influence absence duration.</p> <p>Moderate evidence indicated that facilitation of navigation through the disability management system improved work absence duration.</p>	<p>A quality assessment was carried out with all studies rated as medium to high quality.</p> <p>Conducted a broad systematic search.</p> <p>The main finding regarding CBT was based on only one study (which involved telephone counselling and use of a CBT workbook) thus limiting the generalisability of results. Further research is warranted and should compare this form of CBT intervention to group and individual therapy.</p> <p>-Did not focus on a single study method (e.g RCTs) which gave a greater depth of literature.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Richardson & Rothstein	2008	To determine the effectiveness of stress management interventions on occupational settings.	USA	36	M	5	Stress Management Intervention Programs (SMIs)	<p>The combined strength of the effectiveness of all SMIs was .53, a significant medium to large effect.</p> <p>CBT programs produced larger effect sizes than other interventions; however relaxation and meditation techniques were the most frequently used (69% of included studies).</p> <p>Relaxation and meditation techniques consistently produced medium effects and were described by subject matter experts as the most practical intervention to implement.</p> <p>Single-mode CBT interventions were more effective than CBT that had more components.</p> <p>Treatment length, outcome variable and occupation did not appear to be significant moderators.</p> <p>There remains a lack of studies that assess the organisational-level outcomes of these interventions.</p>	<p>A quality assessment was carried out. Conducted an appropriate systematic search.</p> <p>Interestingly, including unpublished studies (grey literature) increased publication bias.</p> <p>Overall effect size is an average of several heterogeneous effects which limits interpretation reliability.</p> <p>Unclear whether the overall effect size relates to physiological, psychological or organisational outcomes.</p> <p>As noted by authors, there was a lack of consistency in the tools used to measure psychological outcomes (stress, anxiety, general mental health).</p> <p>In all included studies posttreatment measures were taken either immediately after training or within several weeks therefore the long term effects of these interventions remain unclear.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Seymour & Grove	2005	To find and review evidence-based preventative programmes at work for people with common mental health problems.	UK	31	S	6	A range of primary, secondary and tertiary workplace interventions	<p>Intervention type was very varied and most involved a blend of different approaches. Improving problem solving and communication skills were frequent components of these interventions.</p> <p>Outcome measures of interventions were also extremely diverse and few measured whether intervention resulted into a lower incidence of stress per se.</p> <p>Overall finding is that the extent to which these interventions prevent common mental health problems remains unclear.</p> <p>In terms of retention, individual (stress reduction & management) rather than organisational approaches to managing common mental health problems are more likely to be effective.</p> <p>In terms of rehabilitation and RTW outcomes, the most effective approach reported is brief individual therapy that is CBT in nature. This effect was seen mainly among employees with high-control jobs.</p>	<p>A quality assessment was carried out with results of this assessment considered when formulating conclusions</p> <p>Conducted a broad systematic strategy with grey literature considered.</p> <p>Well written report that comprehensively addresses the question of interventions for common mental health problems in the workplace.</p> <p>However the conclusions regarding interventions were often based on only a few studies.</p> <p>The findings regarding CBT and rehabilitation/RTW outcomes is based on only one large study. Similarly, findings regarding retention were from studies among health care professionals limiting the generalisability of these results.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Stergiopolous et al.	2011	To examine the evidence for the effectiveness of existing interventions adapted for work-related PTSD.	Canada	7	S	7	Interventions using real exposure techniques for anxiety in the workplace	<p>Some support found for successful treatment of PTSD treatment with an average RTW rate of 85% at 6 month follow-up after exposure-based treatment (based on 3 studies).</p> <p>There is a need for more extensive controlled studies to determine the most effective treatments for PTSD.</p>	<p>A quality assessment was carried out with all included studies meeting criteria for good or excellent quality.</p> <p>A systematic search was carried out.</p> <p>Only papers which provided a clinical diagnosis of PTSD (by clinician or validated measure) were included which meant that any issue of using self-report measures was not present.</p> <p>Conclusions regarding the effectiveness of exposure-based-therapy for PTSD in the workplace were based on 3 studies and therefore requires further supporting research.</p> <p>limited evidence supporting the long-term RTW outcomes (18 months/ 2 years) of this intervention.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Intervention	Author's Findings	Reviewer's Comments
Van Oostrom et al.	2009	To determine the effectiveness of workplace interventions and to evaluate whether the effects differ when compared across different health conditions.	Netherlands	1	S	10	Workplace interventions (e.g. CBT) (targeting both the worker and the workplace, e.g., working conditions/work environment).	<p>The lack of RCT's (N=1) on the effects of workplace interventions among workers with mental health problems meant that no conclusions could be formed.</p> <p>A need for more research on the effectiveness of workplace interventions for mental health problems.</p> <p>To allow better comparisons between intervention types researchers need to agree on the use of outcome measures for sickness absence.</p>	<p>A quality assessment was carried out with results of this assessment considered when formulating conclusions.</p> <p>A very comprehensive systematic search strategy was carried out.</p> <p>This review is considered to be of high methodological quality and an excellent example to guide future research in this area.</p>

Chapter 6 - What are the costs associated with depression and anxiety disorders in the workplace?

The search strategy developed for this meta-review identified nineteen studies that addressed the organisational costs associated with depression and anxiety disorders in the workplace. However, only one review was deemed to be of at least moderate quality (McDaid and Park 2011). This review focused on the cost of delivering mental health interventions in the workplace and included one Australian study.

6.1 Cost of depression and anxiety

The costs of absenteeism and presenteeism in Australia were not examined specifically or estimated in any of the reviews obtained for this meta-review. Reviews that failed to meet the quality assessment criteria were examined but did not provide any additional information.

A recent report by the Victorian Health Promotion Foundation (VicHealth) in Australia provided economic costs for the effect of depression in the workplace (LaMontagne, Sanderson et al. 2011). The estimation of costs was based on lost productive time (due to absenteeism and presenteeism), job turnover, and the use of mental health services and anti-depressant medication. It was estimated that the prevalence rates of lifetime depression (diagnosed in accordance with DSM-IV TR criteria) in the Australian workforce was 14.7%, the equivalent of 1.54 million persons in the Australian population. The total cost for depression over one year was estimated at \$8180 per person or \$12.6 billion in total. The lifetime costs was estimates at \$138

679 per person and \$213.5 billion in total. It was also estimated that 5.8% of these costs were attributable to job strain which equates to 730 million per annum and 11.8 billion over a lifetime. The majority of these costs (\$12.3 billion) were related to decreased productivity and job turnover, rather than health service use or antidepressant medication.

This report by VicHealth is informative yet focused solely on the economic costs of one common mental disorder), depression. The costs of anxiety disorders have not yet been established. This is concerning since anxiety disorders have been recognised as the most common mental health condition in Australia with a prevalence rate of approximately 14% over a 12 month period (ABS 2009d). Anxiety can result in significant disturbances to daily functioning. A study based in primary care has shown that around two thirds of patients with generalised anxiety disorder report some level of occupational dysfunction, with an average of 10 impairment/disability days per month (Wittchen, Kessler et al. 2002). This level of occupational dysfunction is equivalent to that reported with major depression. Other community based studies have suggested that anxiety disorders may be associated with even higher levels of sickness absence than depression (Hoffmann, Saliner et al. 2008). As a result, it is reasonable to speculate that the inclusion of anxiety disorders would significantly add to the overall economic costs of depression and anxiety disorders in Australia. In addition, other related costs such as workers compensation and the impact on families were not included in the VicHealth analysis. Therefore the estimates provided in the report may well be considered the *minimum* estimate of the economic costs resulting from depression and anxiety disorders in the Australian workplace.

6.2 Cost and potential economic benefit of Interventions

McDaid and Park conducted a systematic review as part of the European Council DataPrev project (McDaid and Park 2011). It aimed to determine the economic case for investment in interventions that promote mental health and well-being. Nine of the ten workplace economic analyses report favourable outcomes for the impact of mental health care interventions in terms of reducing absenteeism and improving performance. Examples of interventions reviewed that were deemed cost effective include:

- Workplace mental health promotions led to a 30% decrease in productivity losses resulting in net reduction of costs of €300 000 (AU \$365 547) for a 1000 employee company (National Institute for Health and Clinical Excellence 2009b)
- Stress management programs delivered at the individual level, such as the Johnson and Johnson wellness programme, have been associated with a reduction in health-care costs of \$US 225 (AU \$217) per employee per annum (Ozminkowski, Ling et al. 2002).
- A Multi-component workplace-based health promotion programme in a UK company cost £70 (AU \$107) per employee but there was a 6-fold return on this investment due to reduction in absenteeism and increased productivity (Mills, Kessler et al. 2007).

This included review has a number of limitations that must be considered when interpreting the findings. Firstly it should be noted that while a quality assessment was carried out, results of this assessment did not influence the reporting of the results. In addition, as noted in Chapter 5, the evidence base for some of the

interventions used in the analysis is, at best, modest. It was also apparent that while based on certain assumptions the interventions reviewed were cost effective, it is unclear which intervention was the most likely to produce organisational and individual outcomes. Lastly, it is important to note that the majority of results are based on European studies which limit their generalisability to the Australian working population.

6.3 Discussion

It is apparent that the main costs of depression and anxiety to an organisation are absenteeism and presenteeism which leads to reduced productivity and work functioning (McDaid and Park 2011; Bhui, Dinos et al. 2012; OECD 2012). The majority of the literature examining workplace mental aims to identify the causes of these disorders as well as the interventions that aim to address these conditions. Less research has focused specifically on the economic costs associated with depression and anxiety disorders in the workplace. As noted by McDaid and Park it is likely that most business reports researching these economic costs are documented and disseminated within organisations and are not published in academic literature (McDaid and Park 2011). Therefore, detailed cost analyses of workplace mental health interventions are likely to exist *within* organisations, but academic researchers do not acquire this grey material when conducting cost-analysis reports. Acquiring this information is essential to determining the likely costs of workplace interventions as well defining best workplace practices.

Further comprehensive research into these economic costs is clearly warranted. The dissemination and publication of these economic costs would provide further

rationale to the ongoing and future investment of funds into preventing and managing both depression and anxiety in the workplace. It should also be noted that the costs of mental ill health amongst the working age population cannot be measured by economic analysis alone. Those suffering from depression or anxiety have ongoing distressing symptoms, significantly increased physical health problems and impairment in every area of functioning, including their interpersonal and family relationships.

Summary of Key Points

- The main costs of depression and anxiety disorder to an organisation are absenteeism, presenteeism and increased staff turnover..
 - There is very limited research focused specifically on the economic costs associated with depression and anxiety disorders in the workplace.
 - An Australian report estimated that the total cost for depression in the workplace over one year was estimated at \$8180 per person or \$12.6 billion in total. This report did not consider the costs associated with anxiety disorder, which may be considerable.
 - The sole included review examining the economic effectiveness of workplace interventions reported that a variety of workplace based mental health care interventions appear likely to be cost effective.
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Table 8: Reviews that consider the costs associated with depression and anxiety disorder sin the workplace

Author	Year	Research Aim of Question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
McDaid & Park	2011	To identify economic evaluations.	UK	47	S	5	<p>Most workplace health promotions related to mental health focused on helping individuals already identified as having a mental health problem. No studies solely looked at the benefits or organizational level actions to promote mental health.</p> <p>Nine of the ten economic analyses set in the workplace report that interventions directed at mental health can be cost effective.</p>	<p>A quality assessment was carried out but results of the assessment were not considered when formulating conclusions.</p> <p>Search strategy was comprehensive.</p> <p>Authors note that there is limited economic studies looking solely at mental well- being at work have been published possibly due to lack of incentives for organisations to undertake such evaluations. Alternatively the academic world may be failing to assess organisational reports that do consider economic evaluations. European based review that only considered one intervention in an Australian workplace setting.</p>

Chapter 7 - How does work protect against, and contribute to the recovery from, depression and anxiety disorders?

The present meta-review identified three systematic reviews that examined how work protects against depression and anxiety disorders (Waddell and Burton 2006; Barak, Travis et al. 2009; Fossey and Harvey 2010). These systematic reviews were deemed to be of moderate quality.

7.1 How does work protects against depression/anxiety?

In Chapter 4, the present meta-review identified a number of work factors that may contribute to the development of depression and anxiety disorders. However, it is probable that work may also have positive effects that help protect against these disorders. Fossey and Harvey conducted a meta-synthesis of 20 studies with the aim of gaining insight into the viewpoints of employees experiencing mental ill-health (Fossey and Harvey 2010). In terms of how work can protect against depression/anxiety, a number of overarching themes were identified including:

- Being employed leads to greater autonomy, status and acceptance within society, a sense of purpose, feelings of being productive, affirmation of ability and opportunities for personal development.
- Gaining employment also helped create a sense of well-being by helping an individual with mental illness to initially feel better, enabling more positive appraisals to be made and is associated with greater optimism.

- Positive interactions with others at work generates a sense of being welcome, respected and supported.

While these benefits associated with work may protect an employee from developing depression or anxiety, the studies involved in Fossey and Harvey review did not specifically examine whether such factors resulted in meaningful *functional* change on an individual level (e.g., did returning to work result in improved overall psychological functioning and reduced symptom severity) (Fossey and Harvey 2010). Furthermore, the concept of mental illness was not clearly defined in this review and the severity of the depression and anxiety disorders experienced by employees was unclear. While these results are promising, further studies with greater methodological quality are required to validate these anecdotal findings.

The systematic review by Waddell and Burton aimed to assess whether work has a positive impact on health and wellbeing (Waddell and Burton 2006). In terms of the protective advantages of work on mental health, Waddell and Burton concluded the following:

- Employment is generally the most important means of obtaining adequate economic resources and is thus essential for material well-being and full participation in today's society.
- Work meets important psychosocial needs in societies where employment is considered to be a social norm.
- There is a general consensus that work is important in promoting mental health and facilitates recovery from mental health problems.

- Beneficial health effects (physical and psychological) are dependent on the quality and type of work.
- There is limited evidence however to clearly define the psychosocial and physical characteristics of work roles and work environments that are “good” for health.

The reviewers also considered how *unemployment* impacts on mental health and concluded that:

- Unemployment is associated with poorer mental health, decreased psychological well-being and increased psychological distress.
- The health effects of unemployment are at least partly mediated through socioeconomic status, poverty and financial anxiety.

Other reviews that our search strategy identified, but were deemed to be of low quality, also lend support to the theory that unemployment or being out of work is associated with poor mental health (Hammarstrom 1994; Dooley, Fielding et al. 1996; Jin, Shah et al. 1997; Murphy and Athanasou 1999; McKee-Ryan, Song et al. 2005; Paul and Moser 2006; Paul and Moser 2009). Waddell and Burton’s findings suggest that in most situations work is associated with increased psychological health and well-being (Waddell and Burton 2006). The relationship between work and psychological wellbeing becomes most apparent when employees are compared to unemployed individuals. The review also concluded that overall the beneficial effects of work outweigh the risk of work, and are greater than the negative impact of long-term unemployment or sickness absence. Despite these findings however, Waddell and Burton (2006) rightly caution that certain aspects of work may

pose a risk to mental (and physical) health. The reviewers also report that the factors that characterise a job/workplace as “good” for health (physical and psychological) are not clearly understood. As noted in Chapter 4, these factors require further investigation.

The third included review (Barak, Travis et al. 2009) examined the specific advantages of workplace supervision. A meta-analysis was conducted on the results of 27 studies and found moderate effect sizes between the supervisory dimensions of task assistance, social and emotional support and supervisory interpersonal interaction with beneficial outcomes for workers. These worker outcomes may include satisfaction, well-being and organisational citizenship behaviour (wherein employees voluntarily help or assist others in the workplace, without an explicit/implicit promise of reward for their behaviour). Supportive supervision also appears to be associated with reductions in symptoms of anxiety and depression. It is important to note that the majority of studies included in this review comprised samples of people who work in the field of social work and/or mental health and relied on self-report observational data only. This limits the generalisability of the review’s findings to all work settings. However, these results are not surprising given the protective role of social support as noted in Chapter 4. Furthermore, good social support in the workplace may also serve as a buffer against the effects of other psychosocial risk factors (e.g. low control, high demands) in various work settings (Stansfeld and Candy 2006; Netterstrom, Conrad et al. 2008; Nieuwenhuijsen, Bruinvels et al. 2010).

A workplace may also actively protect against depression and anxiety disorders by implementing primary interventions at an organisational or individual level. Such interventions aim to prevent/reduce exposure to psychological and physical risk

factors in the workplace and to enhance the mental health resilience of employees. By implementing strategies that actively promote mental health in the workplace, employees are more likely to develop skills that they can use to protect themselves against depression and anxiety disorders. Primary interventions that this meta-review examined are outlined in Chapter 5.

7.2 How does work contribute to the recovery of depression/anxiety

Despite the ability of work to help protect against depression and anxiety disorders, psychosocial factors within or external to the workforce may also contribute to the development of mental illness. Considering that Australians spend on average 33 hours per week at work, (ABS 2012) the workplace may well be a suitable environment to address mental disorders when they arise. A workplace may contribute to the recovery of depression/anxiety disorders by implementing secondary interventions (which aim to manage symptoms) and tertiary interventions (which aim to minimise the impact of symptoms). These interventions are discussed and reviewed in detail in Chapter 5. Furthermore, anecdotal evidence from one systematic review (Fossey and Harvey 2010) suggests that employees identify work as providing a number of important positive outcomes including a sense of purpose, acceptance within society and opportunities for development and may thus play an important role in their recovery from anxiety/depression. As noted in Chapter 5, additional research is required to identify which interventions have been developed with a focus on symptom reduction that can be modified to include a focus on functional recovery. Clinicians involved in the treatment of depression and anxiety also need to be aware of the importance of an early rehabilitation focus when

managing workers with a mental health problem and the potential benefits of including the workplace in any treatment plan.

7.3 Discussion

Despite the existence of workplace psychosocial factors which may contribute to the development of depression and anxiety disorders, work may also provide access to protective factors and may contribute to the recovery of, depression and anxiety disorders. The three included reviews in this study support the idea that work can be beneficial for an employee's wellbeing, particularly if good quality supervision is present and there are favourable workplace conditions. Further research is required to gain greater clarity about which factors create a "good" job and a "good" work environment with regards to mental health outcomes. Furthermore, at present it is unclear whether it is the process of working itself (engaging in tasks, learning etc) or factors associated with the workplace (interactions with employees/supervisors, environment) or both that serve as protective factors against mental illness

The potential benefits of good work and the role work may have in the recovery from illness are substantial. The majority of the literature and discussion about workplace mental health focuses on the detrimental psychological effects of work as well as the workplace interventions aimed at treating these conditions. While such discussions are necessary, it is important that the potential benefits of work are discussed and investigated further.

Summary of Key Points

- Work is perceived by employees as being protective against depression and anxiety disorders. Employees report that good quality work increases feeling of personal wellbeing, facilitates peer interactions and provides access to economic resources.
 - The positive effects of work are highlighted by the high rates of the mental illness among unemployed persons.
 - The health benefits of work appear to be somewhat dependent on the quality and type of work, yet there is limited evidence of what constitutes a “good” workplace or a “good” job in terms of mental health outcomes.
 - Positive workplace supervision appears to have some beneficial outcomes for workers and may help in reducing the symptoms of depression and anxiety in some workers.
 - Further research is required to clearly define the characteristics of “positive workplace supervision” and whether it serves as a protective factor across various workplace settings.
 - Work may contribute to the prevention and recovery of depression and anxiety disorders through the implementation of primary, secondary and tertiary prevention interventions in the workplace, although further research is required to establish the most effective strategies.
 - Additional research is needed to establish the positive advantages of work in regards to depression and anxiety disorders particularly in terms of “functional
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change” (symptomology, increased daily functioning etc.) and sense of self identity.

- The potential positive effects of good work and the role work can play in facilitating recovery from an illness need to be highlighted and promoted more widely.
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Table 9: Studies that address how work protects against and contributes to the recovery from depression and anxiety disorders

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Barak et al.	2009	To systematically analyse the effect of supervision on worker outcomes.	USA	27	M	8	<p>Presents a conceptual model that proposes that the supervisor-supervisee exchange fosters beneficial outcomes and limits detrimental outcomes.</p> <p>Meta-analysis indicate that supervisory dimensions of task assistance, social and emotional support and supervisory interpersonal interaction are significantly related to beneficial outcomes for workers.</p> <p>Effect sizes are moderate.</p>	<p>A quality assessment was carried out with results of this assessment considered when formulating conclusions.</p> <p>Search strategy resulted in 27 studies being included, resulting in a combined sample of over 10 000. Methods used to combine the results carried out appropriately.</p> <p>High-quality meta-analysis that appropriately assesses homogeneity and considers publication bias. However, majority of the large sample comprised employees in social work/mental health thus limiting the generalisability of the results to all work settings.</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Fossey & Harvey	2010	To carry out a meta-synthesis of mental health consumer viewpoint of employment in the hope of making recommendations regarding the further development of vocational services and supports.	Australia	20	S	4	Four themes were synthesized from the findings: (a) employment has varied meanings, benefits, and drawbacks to weigh up (e.g. greater autonomy, a sense of purpose, acceptance within society, opportunities for development, etc) (b) strategies for maintaining employment and mental health are important (c) diverse supports within and beyond the workplace are helpful; and (d) systemic issues add to the employment barriers.	<p>A quality assessment was not carried out.</p> <p>A comprehensive systematic search was carried out. Studies included represented a variety of developed countries.</p> <p>Studies were only excluded based on topical, as opposed to methodological grounds.</p> <p>Unclear what mental ill-health referred to (i.e. depression, anxiety, psychosis, etc).</p>

Author	Year	Research Aim or question	Country	No. Of Studies Included	Type of Review	Quality Score	Author's Findings	Reviewer's Comments
Waddell & Burton	2006	To determine if there is scientific evidence for the health effects of work and worklessness .	UK	Not provided	S	6	<p>Employment provides material well-being and allows for participation in society.</p> <p>Work is beneficial for mental health, with employment meeting important psychological needs.</p> <p>Extensive evidence that there is an association between unemployment and poorer mental health.</p> <p>Work is important in promoting mental health and recovery from mental health problems.</p> <p>Beneficial health effects (mental health and physical) are dependent on the quality and type of work yet there is limited evidence to define what aspects of a job and a workplace are deemed "good" for health.</p>	<p>A quality assessment was carried out with results of this assessment considered when formulating conclusions.</p> <p>A comprehensive systematic search was carried out.</p> <p>Covers a large amount of the literature that addressed the benefits of work for people with a common mental health disorder.</p>

Chapter 8 – Conclusions and recommendations

8.1 Overall conclusions

The present study represents the first comprehensive systematic meta-review of the bi-directional relationship between work and depression/anxiety disorders. The main findings of this meta-review are:

- There is good evidence that in certain situations an individual's work environment can contribute to the onset of depression and anxiety disorders. There is a considerable amount of research evidence that certain psychosocial aspects of the work environment, in particular low control, high demand, high effort-reward imbalance, low social support and job dissatisfaction, can significantly increase the likelihood of an employee developing depression or an anxiety disorder.
- There is also good evidence that work can have a beneficial impact on employees' mental health. Work can have a role both in preventing and aiding the recovery from mental health problems. These positive effects of work have traditionally received less attention than the potential risks associated with work.
- Depression and anxiety disorders are common amongst the working age population of Australia. Mental disorders are now the leading cause of sickness absence in most developed countries and can have a dramatic impact on work performance. It is estimated that depression costs Australian

employers \$12.3 billion per annum through lost work, reduced productivity and increased staff turnover. These financial costs are in addition to the immense personnel costs experienced by those suffering from mental disorders. The financial cost of anxiety disorders in Australia remains unknown, but is likely to be substantial.

- There is promising evidence that some workplace-based interventions aimed at preventing or treating depression or anxiety disorders may be cost-effective. However, the methodological quality of research appraising work-based interventions has often been poor and as a result many interventions have been widely rolled out without an adequate evidence base for their effectiveness. This may represent a poor use of resources.
- There is preliminary evidence which suggests the workplace may be a suitable location for programs aimed at preventing mental disorders through the reduction of known risk factors or programs which increase individual resilience. While this is potentially a very exciting development, to date there is insufficient evidence to support any particular prevention program.
- A wide variety of interventions have been developed for workers reporting high levels of stress in the workplace. Interventions utilising cognitive behavioural techniques, such as traditional cognitive behavioural therapy (CBT), stress inoculation training (SIT), acceptance and commitment therapy (ACT), rational-emotive therapy and online CBT had moderate levels of evidence for their effectiveness in reducing self-reported stress and symptoms of both depression and anxiety.
- Traumatic events can occur in the workplace and can lead to some exposed workers developing a variety of mental health problems, including depression

and post-traumatic stress disorder (PTSD). There is strong evidence that following a potentially traumatic incident in the workplace, structured psychological debriefing should not be offered on a routine basis. If a traumatic incident occurs in the workplace, employees should be offered psychological first aid including support, comfort, immediate needs being met, emotional and instrumental support and ongoing monitoring. Additional assistance should be provided in a step-wise fashion according to need.

- Antidepressant medications and a variety of psychological interventions are well established as effective clinical treatments for the symptoms of depression and anxiety disorders. When used in a working population, these standard treatments appear to be effective at reducing symptoms, but are less effective at improving occupational outcomes such as return to work and work performance. This suggests that occupational recovery cannot be assumed to be an automatic consequence of symptomatic recovery.
- In contrast, treatments which incorporate a specific focus on work-related issues, such as exposure therapy for PTSD following workplace trauma or cognitive behavioural therapy delivered as part of a return to work program seem to be more effective at improving the occupational outcomes of workers in addition to symptomatic improvement.

The present meta-review identified a considerable number of methodological limitations which significantly impacted on the inferences that could be made from the research to date. These factors must be considered in order to improve the quality of future primary research. A more detailed summary of evidence gaps and methodological limitations for each chapter is provided in Appendix C.

8.2 Future research Priorities

Despite the increasing level of academic output related to workplace mental health, there is still a paucity of high quality research and as a result, there are substantial gaps in our understanding of how work impacts on mental health and what work-based interventions may be effective. As a result of this meta-review, we have identified a number of key research priorities which need to be addressed:

1. *Detailed prospective cohort studies are required to examine the interaction between individual and workplace risk factors in the development of mental health and occupational outcomes.*

As noted above, there is good evidence that certain workplace risk factors are associated with an increased risk of mental ill health amongst employees. However, it is becoming clear that these relationships are complex and that the impact of individual factors such as coping style, attitudes to health and work and the nature of interpersonal relationships may be critical in understanding why mental illness develops in some workers. There is also evidence that other workplace factors, such as perceived bullying, exposure to single or multiple traumatic events and level of job satisfaction may be important, but under-researched risk factors. More detailed prospective cohort studies are required to elucidate the impact of these complex relationships and to inform future interventions.

2. *High quality randomised controlled trials are required to examine whether preventative programs based in the workplace can be effective.*

There is evidence that common but disabling mental disorders, such as depression and anxiety, may be able to be prevented with a combination of reducing known risk factors and increasing individual resilience (Stapulionis, Oliveira et al. 2008). As outlined in this meta-review, there is exciting preliminary evidence that the workplace may be an ideal setting to deliver preventative programs. However, the experience of debriefing, which was initially thought to be a sensible idea to prevent PTSD following trauma, but was later shown to be not helpful and possibly harmful (Roberts, Kitchiner et al. 2009), has demonstrated that interventions must be evaluated properly before wide scale dissemination. This is essential both to prevent harm and ensure appropriate use of limited resources. Based on the findings of this meta-review, there are clear indications for the trialling of a range of workplace based preventative programs, including interventions aimed at reducing known risk factors and resilience training programs. If found to be effective in high quality randomised controlled trials, such interventions could become standard practice in workplaces and produce significant public mental health benefits.

- 3. Randomised controlled trials are required to assess the effectiveness and long-term outcomes of modified mental health interventions incorporating specific workplace outcomes.*

There is promising evidence for modifying standard interventions to focus specifically on workplace outcomes, for example CBT-based return to work programs. The development and testing of further early intervention and

rehabilitation strategies is urgently required. While many of these interventions will focus on individual workers, there may also be a role for interventions aimed at the organisational level, particularly managers who play a key role in facilitating return to work strategies.

- 4. Observational studies are required to examine the role of work as a protective factor in terms of employee mental health.*

As outlined in this meta-review, the protective nature of work and the workplace in terms of employee mental health has been relatively unrecognised and unexamined in research to date. Further observational research is required to examine how certain work factors may serve as a protective factor against mental health difficulties in the workplace. Such research is likely to provide valuable insights that will inform and guide the development of guidelines about how workplaces can become more involved in mental health promotion.

- 5. Research is required to establish the true cost of anxiety and depression amongst the working age population of Australia.*

While some research exists regarding the economic costs of depression, our meta-review was unable to establish the economic costs of anxiety amongst working age individuals in Australia. Given the high prevalence of anxiety disorders, this is particularly important and would allow a better estimate of the true cost of common mental disorders in the workplace.

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10. Appendix

Appendix A: Experts that responded to grey literature request.

Name	Organisation
Dr Kristy Sanderson	Menzies Research Institute Australia
Associate Professor Tony LaMontagne	<u>McCaughey Centre: VicHealth Centre for the Promotion of Mental Health and Community Wellbeing</u> (University of Melbourne)
Professor Malcolm Sim	Monash Centre for Occupational and Environmental Health
Associate Professor Nick Glozier	Brain & Mind Research Institute (University Of Sydney)
Professor Stephen Stansfeld	Wolfson Institute of Preventive Medicine. (Queen Mary, University of London)
Dr Ira Madan	Guy's and St Thomas' NHS Foundation Trust and King's College, London
Dr Philip Wang	National Institute of Mental Health
Christopher Prinz	Organisation for Economic Co- operation and Development (OECD)

Appendix B: AMSTAR; Measurement tool to assess the methodological quality of systematic reviews.

AMSTAR

<p>1. Was an ‘a priori’ design provided? The research question and inclusion criteria should be established before the conduct of the review.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Can’t answer <input type="checkbox"/> Not applicable
<p>2. Was there duplicate study selection and data extraction? There should be at least two independent data extractors and a consensus procedure for disagreements should be in place.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Can’t answer <input type="checkbox"/> Not applicable
<p>3. Was a comprehensive literature search performed? At least two electronic sources should be searched. The report must include years and databases used (e.g. Central, EMBASE, and MEDLINE). Key words and/or MESH terms must be stated and where feasible the search strategy should be provided. All searches should be supplemented by consulting current contents, reviews, textbooks, specialized registers, or experts in the particular field of study, and by reviewing the references in the studies found.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Can’t answer <input type="checkbox"/> Not applicable
<p>4. Was the status of publication (i.e. grey literature) used as an inclusion criterion? The authors should state that they searched for reports regardless of their publication type. The authors should state whether or not they excluded any reports (from the systematic review), based on their publication status, language etc.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Can’t answer <input type="checkbox"/> Not applicable
<p>5. Was a list of studies (included and excluded) provided? A list of included and excluded studies should be provided.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Can’t answer <input type="checkbox"/> Not applicable
<p>6. Were the characteristics of the included studies provided? In an aggregated form such as a table, data from the original studies should be provided on the participants, interventions and outcomes. The ranges of characteristics in all the studies analyzed e.g. age, race, sex, relevant socioeconomic data, disease status, duration, severity, or other diseases should be reported.</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Can’t answer <input type="checkbox"/> Not applicable

7. Was the scientific quality of the included studies assessed and documented?

'A priori' methods of assessment should be provided (e.g., for effectiveness studies if the author(s) chose to include only randomized, double-blind, placebo controlled studies, or allocation concealment as inclusion criteria); for other types of studies alternative items will be relevant.

- Yes
 No
 Can't answer
 Not applicable

8. Was the scientific quality of the included studies used appropriately in formulating conclusions?

The results of the methodological rigor and scientific quality should be considered in the analysis and the conclusions of the review, and explicitly stated in formulating recommendations.

- Yes
 No
 Can't answer
 Not applicable

9. Were the methods used to combine the findings of studies appropriate?

For the pooled results, a test should be done to ensure the studies were combinable, to assess their homogeneity (i.e. Chi-squared test for homogeneity, I^2). If heterogeneity exists a random effects model should be used and/or the clinical appropriateness of combining should be taken into consideration (i.e. is it sensible to combine?).

- Yes
 No
 Can't answer
 Not applicable

10. Was the likelihood of publication bias assessed?

An assessment of publication bias should include a combination of graphical aids (e.g., funnel plot, other available tests) and/or statistical tests (e.g., Egger regression test).

- Yes
 No
 Can't answer
 Not applicable

11. Was the conflict of interest stated?

Potential sources of support should be clearly acknowledged in both the systematic review and the included studies.

- Yes
 No
 Can't answer
 Not applicable

Appendix C: Evidence gaps and methodological limitations identified.

A number of evidence gaps and methodological limitations in the included reviews were identified and have been referenced throughout this meta-review. Below is a summary of these evidence gaps for each specific chapter that address a question.

Chapter 4: How does work contribute to the development of depression and anxiety disorders?

- Limited research on certain psychosocial risk factors and how they contribute to the development of depression and anxiety (i.e. organisational justice, organisational change and employment status). Further research is needed to determine the effect of these risk factors and to also determine other factors that might contribute to mental illness in the workplace (e.g. bullying).
- Limited consideration of the impact of individual factors on the subjective assessment or workplace factors and the interaction of individual and workplace factors in producing mental health outcomes.
- A number of methodological limitations reduces the generalisability of these results:
 - a lack of standardised and valid measures
 - potential confounding factors are not taken into consideration
 - Limited consideration of the interactional effects of psychosocial risk factors on employee mental health. Therefore it is unclear which combination of risk factors produces the greatest likelihood of developing depression and anxiety disorders.

Chapter 5: What interventions have been effective in addressing depression and anxiety disorders in the workplace?

- A review of interventions for depression and anxiety disorders in the workplace found that significant methodological limitations exist in the primary research which prevents any clear inferences being made about the effectiveness of these interventions.
- There is confusion in the literature on the definition of primary, secondary and tertiary prevention.
- Majority of research focuses on individual outcomes. Fewer studies have examined the organisation outcomes of these interventions.
- Minimal consideration of established psychosocial risk factors known to increase an employee's likelihood of depression and anxiety disorders (i.e., high job demands, low job control).
- Some interventions show promising outcomes on the individual level (e.g. CBT for adjustment disorder, CBT for stress management) however it is unclear which components of these interventions (e.g. psychoeducation, cognitive restructuring, belief challenging, etc.) facilitate functional improvement among employees.
- No evidence was found for workplace interventions that specifically address generalised anxiety disorder (GAD) and adjustment disorder with anxiety.
- Intervention studies of standard treatments often do not consider or report the impact on occupational outcomes.
- In studies that addressed the effectiveness of counselling, it was not always clear what mode of counselling was provided (e.g., supportive, educational, cognitive

behavioural). A difference may exist between the outcomes achieved across these different modes of counselling, and also across the different delivery method (face to face, vs. phone, vs. in-house). For example, the individual and organisation outcomes of in-house counselling may differ significantly to those achieved when employees access external EAP counselling services

- No research found in the present meta-review that discussed the organisational and individual outcome of common medications e.g. benzodiazepines.
- Further research is warranted to establish the individual and organisation effects of anti-depressant medication combined with psychotherapy for employees with depression and anxiety disorders.
- Despite a notable growth in the occupational rehabilitation sector the meta-review found limited research examining the outcomes of tertiary interventions such as RTW programs.
- Methodological limitations include:
 - Poorly defined sample
 - Lack of appropriate control group
 - Lack of high quality randomised controlled trials
 - Small sample size in treatment groups
 - Lack of formalised diagnosis
 - Lack of consensus regarding standardised measurements for individual and organisational outcomes
 - Minimal consideration of potential confounding variables, such as psychosocial risk factors, when evaluating interventions
 - Key terms fail to be operationalized (e.g. physical activity). Furthermore themes of interventions are often reviewed but strategies on how to

implement these interventions are not provided (e.g. workplace health promotion (WHP))

Chapter 6: What are the costs associated with depression and anxiety disorders in the workplace?

- Reviewers examining the effectiveness of workplace interventions for depression and anxiety disorders need to incorporate a cost analysis to determine its feasibility.
- Researchers need to consider accessing grey material from organisations that conduct cost analyses of workplace interventions.
- No evidence was found in the present meta-review relating to the costs of anxiety disorders despite anxiety being more prevalent than depression in Australia.
- The total cost of prescribing medication for depression and anxiety disorders (depression and anxiety) in the Australian workplace has yet to be established.
- Research is yet to determine the personal costs for an employee with depression or anxiety disorders.

Chapter 7: How does work protect against, and contribute to the recovery from, depression and anxiety disorders?

- While the health benefits of work may depend on the type and quality of work, research is yet to determine what factors, and combination thereof, produce a healthy work environment in terms of employee mental health.
- Limited research on how work may serve as a protective factor against depression and anxiety disorders in the workplace.

- Social support has been identified as a potential protective factor against the impact of psychosocial risk factors on employee mental health. However further research is required to determine how positive workplace supervision serves as a protective factor across various workplace settings.