Acceptance-Based and Traditional Cognitive-Behavioural Stress Management in the Workplace: Investigating the Mediators and Moderators of Change

Paul E. Flaxman

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Goldsmiths College, University of London

Psychology Department

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ABSTRACT

This thesis describes three intervention studies that were designed to investigate the mediators and moderators of change in worksite stress management training (SMT) programmes. In the first study (Study I), 154 local government employees were randomly assigned to one of three conditions: 1) a training programme based on acceptance and commitment therapy (ACT); 2) stress inoculation training (SIT); or 3) a wait-list control group. The ACT and SIT interventions were delivered to small groups of employees via three training sessions spread over three months. Outcome and process of change measures were administered at baseline (Time 1), three months after two sessions of training (Time 2), and again three months after a final session of training (Time 3). Both ACT and SIT resulted in large improvements in general mental health across the six month assessment period. Further analyses indicated that the beneficial impact of ACT on mental health was mediated by an increase in psychological flexibility, while the impact of SIT was mediated (at least in part) by a decrease in dysfunctional cognitions. Theoretically consistent differences between ACT and SIT were also found in employees' use of thought reappraisal strategies and in their beliefs about the importance of controlling undesirable cognitions.

Study II used a similar methodology to investigate the impact of ACT on the frequency of dysfunctional thinking, and on learning at work. In this second study, 81 local government employees were randomly assigned to an ACT group or to a wait-list control group. The ACT intervention resulted in a significant improvement in employee well-being across a seven month period. As predicted, these improvements in mental health were mediated by an increase in psychological flexibility but not by a reduction in the frequency of dysfunctional thinking. Psychological flexibility also served as the mechanism by which ACT increased work-related learning.

In the final study (Study III), participants' initial level of strain was examined as a potential moderator of change in the ACT and SIT interventions. The data from the two previous studies were merged for this final analysis. Results indicated that initial level of strain moderated the effects of these two interventions on employees' mental health. Further analyses revealed that both ACT and SIT led to the largest improvements in mental health amongst those employees with an elevated baseline level of strain. Moreover, approximately 70% of the initially high strain ACT and SIT participants improved to a clinically significant degree by the final assessment point.

The general discussion focuses on the theoretical and practical implications of this research, and highlights the utility of using worksite SMT programmes to test underlying cognitive-behavioural theories of change.

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CHAPTER 1

CHAPTER 1: INTRODUCTION

1.1 Occupational Stress: Definition, Costs, and Intervention Approaches

The term "stress" now occupies a firm place in the modern lexicon (Cartwright & Cooper, 1997). However, the widespread use of this term has apparently done little to calm the considerable controversy associated with it. Indeed, any discussion of stress is likely to elicit a variety of reactions, ranging from outright denial of its existence, through to deep concern over rising stress levels and the concomitant impact on individuals, organisations, and society. These contrasting reactions no doubt reflect what Lehrer and Woolfolk (1995) refer to as the "hoopla and ballyhoo" that has surrounded the popularisation of the stress concept.

The controversy related to this topic does not only reside in the public imagination. In the scientific literature, the challenge of providing a universal definition of stress has occupied scholars from the fields of medicine, physiology, organisational behaviour, and psychology for over half a century. One legacy of these varied contributions is that stress terminology has historically been chaotic, with stress variously being defined as a stimulus, a response, or both (Lazarus & Folkman, 1984). In spite of these differences in perspective and terminology, the historical development of the stress concept, which is discussed below, has led to a reasonable consensus (amongst researchers at least) on its conceptualisation.

1.1.1 Early Conceptualisations of Stress

There have essentially been three different approaches to defining stress: a stimulus-based approach; a response-based approach; and, a transactional, or appraisal-based approach (Cox & Ferguson, 1991). The early stimulus definitions borrowed from

the fields of physics and engineering inasmuch as stress was defined in terms of the load or demand placed on a person by an environmental stimulus. From this perspective, stress refers to the noxious environmental events that impinge upon the individual (producing *strain*). Not surprisingly, perhaps, this stimulus-focused approach produced attempts to identify a taxonomy of (usually negative) environmental stimuli that are likely to be "normatively" stressful (e.g., divorce, bereavement, life-threatening illness) (Lazarus & Folkman, 1984). Interestingly, Matheny et al. (1986) suggest that the general public has been most influenced by stimulus-based definitions, as people often identify events as stress*ful* (e.g., jobs, relationships, deadlines).

In contrast, the response-based view of stress has its roots in medicine and physiology. In the 1930's, the physiologist Walter B. Cannon documented the physiological changes (e.g., adrenaline secretions) that occurred within the bodies of animals and humans under stressful conditions. These changes, which Cannon labelled the "emergency reaction", set the stage for identifying the "fight-or-flight" response, a term that has retained a firm place in the stress lexicon (Quick, Quick, Nelson, & Hurrell, 1997). Likewise, the physician Hans Selye (e.g., 1956), who is generally regarded as the "Father of Stress", argued that stress is not best conceptualised as a noxious environmental demand (which he termed a *stressor*), but as a set of predictable physiological processes that constitute an individual's defence against such a demand (Jex, 1998; Lazarus & Folkman, 1984). In Selye's view, these reactions (which principally involve the release of adrenal gland hormones) are essentially adaptive, because they prepare the person to cope with an imminent threat. He referred to this physiological mobilisation as the general adaptation syndrome (GAS), which is comprised of three primary stages: *alarm,* in which an initial phase of high arousal is

followed by the activation of the individual's defence mechanisms (this stage essentially equates to Cannon's emergency reaction); *resistance*, the adaptation stage when, ideally, equilibrium is restored; however, if the physiological defence mechanism is ineffective, or the stress response continues, the individual moves on to a third stage - *exhaustion*, when adaptive mechanisms collapse (Matheny et al., 1986).

Thus, the response-based orientation differs from the stimulus-based view of stress in two key ways. First, the term stress is taken to indicate either environmental demands (stimulus), or the body's non-specific physiological response in the face of such demands (response). Second, the two approaches differ in terms of whether the human body is viewed as essentially active or passive in the stress process. In the stimulus-based view, the organism seems to be viewed as a relatively passive recipient of strain resulting from noxious environmental events; while the response view conceptualises stress as a more dynamic process, in which the physiological system "fights back" in an effort to restore equilibrium (Lazarus & Folkman, 1984).

The stimulus- and response-based approaches have undoubtedly contributed greatly to our current understanding of the nature and impact of stress, and much of the terminology that was used in those early definitions is still in use today. However, both approaches have been criticised for their limited utility and lack of theoretical sophistication (e.g., Cox, 1978; Cox & Ferguson, 1991; Lazarus & Folkman, 1984). In particular, both failed to take adequate account of individual differences and psychological processes that are central to the experience of human stress. This limitation resulted in the stimulus- and response-based approaches being superseded by models that emphasise the *transaction*, or interaction, between an individual and his or

her environment, and which make explicit the psychological nature of stress (e.g., Cox, 1978; Lazarus, 1966).

1.1.2 An Appraisal-Based Model of Stress

The most widely accepted psychological elaboration of the stress concept was developed by Richard Lazarus and colleagues in the latter half of the 20th century (e.g., Lazarus, 1966; Lazarus & Folkman, 1984). Lazarus argued that stress should be conceptualised neither as a stimulus nor a physiological response, but as cognitive appraisal and coping processes that are central to person-environment transactions. From this perspective, a stress reaction is determined by how a person interprets the significance of particular situations and events. These interpretations are comprised of two related forms of appraisal: *primary appraisal*, which refers to the person's evaluation of the seriousness of an event in terms of its potential impact on well-being (in essence, this evaluative process takes the form of "am I likely to be harmed or benefited by this event, now or in the future, and in what way?"); and, *secondary appraisal*, which involves an assessment of the adequacy of one's resources and options for coping with the demand (this can be summarised as "what, if anything, can be done about it?"). Lazarus and Folkman (1984) were keen to point out that their primary/secondary terminology should not be taken as an indication that one form of appraisal is more important than the other, or that one precedes the other in time; rather, their model hypothesises that both forms of appraisal continually interact as people evaluate the importance of internal and external events, and take stock of their personal coping strategies. Thus, according to this appraisal-based approach, *stress occurs when we believe that a particular event threatens our well being, because we evaluate it as*

taxing or exceeding our coping resources (e.g., Lazarus & Folkman, 1984; Meichenbaum, 1993b).

This model of stress has a number of advantages over the earlier stimulus- and response-bound definitions. First, the appraisal approach is able to account for a seemingly obvious feature of the stress process: a particular event can be stressful for one person, but not for another. Indeed, the study of such between- (and even within-) person variations in the experience of stress is a central feature of Lazarus's model, which describes the nature, and outcomes, of individual differences in appraisal and coping processes (e.g., Cox and Ferguson, 1991; Lazarus & Folkman, 1984). A second (and perhaps the most important) feature of this approach is that it provides general guiding principles for designing stress prevention and reduction programmes. This link between the appraisal/coping model and stress interventions will be discussed in more detail shortly.

One final, useful feature of this appraisal formulation is that it views stress as a rubric, or organising concept, within which more specific variables and processes can be defined. In particular, the terms *stressor* and *strain* are commonly used to refer to precipitating features, and detrimental outcomes, of the stress process, respectively. The term stressor is used to indicate those physical or psychological demands to which people have to respond, and which have the potential to trigger an unhelpful response (or *strain*, see below). While some traumatic events (e.g., involvement in a serious accident) are likely to be psychologically hazardous for most (if not all) people, research has tended to focus on more chronic and subtle *psychosocial* sources of stress, such as those that reside in the work environment (e.g., excessive job demands, lack of job control, difficult work relationships). The term strain (or *distress*), on the other

hand, refers to the multitude of negative outcomes that may be experienced by individuals when faced with stressors. Such strains are usually classified as physical (e.g., tension headaches, musculoskeletal disorders, tremors), psychological (e.g., anxiety, depression, job dissatisfaction), or behavioural (e.g., absenteeism from work, alcohol misuse, marital conflict) (Jex, 1998; Quick, et al., 1997).

Thus, according to Lazarus and Folkman's (1984) model, whether a demand functions as a stressor, and whether a stressor leads to strain, is determined by the individual's primary and secondary appraisal processes. For example, their model would hypothesise that one person could perceive a particular work demand as a challenge, based on an appraisal of the situation as potentially beneficial to his or her well-being (sometimes referred to as *eustress*, or "good" stress), while another could perceive the exact same demand as a threat, with the potential to overwhelm his or her coping resources. Not surprisingly, only the second individual in this scenario would experience psychological strain (or distress).

The general consensus that has developed around this influential appraisal-based conceptualisation of stress is evident throughout the occupational stress literature (e.g., Bunce, 1997; Jex, 1998; Murphy, 1996). For example, a mismatch between perceived demands and coping resources has been incorporated into the following definition of work-related stress, which is currently espoused by the United States National Institute of Occupational Safety and Health (NIOSH):

> *Job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker* (NIOSH, 1999).

Similarly, Jex (1998) concludes that most prominent theories of occupational stress imply that: (1) employees' appraisals moderate the impact of the objective work

environment; (2) employees make decisions about how to cope with, or respond to, work-related stressors; and (3) individual differences impact on both the appraisal of such stressors, and the person's response to them. All three of these propositions are clearly consistent with Lazarus et al.'s appraisal/coping framework.

To summarise, the study of stress has historically been plagued by terminological confusion, which stemmed in large part from the lack of a universal conceptualisation of this construct. However, over the last 20 years or so, a reasonable consensus has emerged around Lazarus et al.'s overarching conceptualisation of the stress process, within which more specific stress-related variables, such as stressors, cognitive appraisal and coping, and strains have been defined (e.g., Lazarus & Folkman, 1984). It is probably no coincidence that these conceptual developments were closely followed by a burgeoning interest in the causes, correlates, and consequences of *occupational stress*, in particular (e.g., Beehr & Newman, 1978; Cooper & Marshall, 1976; Cox, 1978). A continuing driver for this area of research has been the increasing realisation of the prevalence of stress in the workplace, and its costly impact on both employees' well-being and organisational performance.

1.1.3 The Costs of Occupational Stress

The estimated costs of work-related stress to employees, organisations, and societies are substantial. For example, in the United Kingdom (UK), approximately half a million employees report experiencing stress at a level that is making them ill, with 1 in 5 working individuals describing their job as "very" or "extremely" stressful (Health and Safety Executive [HSE], 2004). Similarly, in recent surveys of employees in the

UK National Health Service (which included nurses, doctors, administrative, and technical staff), more than 1 in 4 respondents reported a sufficient level of distress to make them probable cases of minor psychiatric disorder (typically anxiety and/or depression) (Hardy, Woods, & Wall, 2003; Wall et al., 1997). Moreover, research has shown that these high rates of mental ill-health amongst the working population are associated with increased absenteeism, with current estimates indicating that employee distress results in approximately 13 million lost working days per year in Britain alone (e.g., Cartwright & Cooper, 1997; Hardy et al., 2003; Hoel, Sparks, & Cooper, 2001; HSE, 2004). The HSE have calculated that work-related stress costs British society almost £4 billion every year (at 1995/6 prices). Since this figure was calculated, it is estimated that the number of working days lost due to stress has more than doubled (Jones et al., 2003; Mackay, Cousins, Kelly, Lee, & McCaig, 2004).

In view of the apparent scale and impact of occupational stress, it is not surprising that some authors have described the promotion of mental health at work as one of the most important issues of modern times (Puryear & Hurrell, 1994; Reynolds, 1997). The following section describes the main intervention approaches that have been employed to tackle this issue.

1.1.4 Worksite Stress Management: Organisation- and Individual-Focused Approaches

As mentioned above, one of the key advantages of the appraisal-based conceptualisation of stress is that it provides guiding principles for the development of occupational stress management interventions (SMIs). In particular, by defining stress as a mismatch between perceived demands and coping resources, the appraisal model suggests two main foci for worksite interventions: (1) the demands (or stressors) that

are produced by the work environment (i.e., *organisation*-focused), and (2) employees' appraisals of such stressors, and/or their repertoire of coping skills (i.e., *individual*-focused).

Organisation-Focused Interventions

Organisation-focused SMIs typically involve the redesign of work and management processes in order to reduce workers' exposure to sources of stress (Bond & Hayes, 2002). Such interventions are usually designed to alter particular aspects of the psychosocial work environment that have been found by research to have a detrimental impact on employees' well-being. These psychosocial "hazards" include low levels of job control, inadequate workplace support, role conflict or ambiguity, poor workplace communication, and work overload (e.g., Cox et al., 2000; Karasek & Theorell, 1990; Mackay et al., 2004; Parker & Wall, 1998). Importantly, a number of studies have found that organisation-directed initiatives that target these work characteristics can be effective in improving both employee well-being and "business" outcomes (e.g., absenteeism and job performance) (e.g., Bond & Bunce, 2001; Bond, Flaxman, & Loivette, 2006; Jackson, 1982; Wall et al., 1992).

These organisation-focused interventions that reduce demands or stressors *at their source* are often referred to as a *primary* stress prevention approaches (e.g., Murphy, 1988; Quick et al., 1997). The basic philosophy that underpins this approach is that, where possible, it is better to identify, and modify, potential work-related stressors *before* they lead to employee distress (Quick et al., 1997). The importance of primary stress prevention is recognised in current European Union (EU) and United Kingdom (UK) health and safety legislation, which places a legal duty on employers to

ensure that practicable steps are taken to reduce the intensity or number of stressors that are present in the workplace (e.g., Cox et al., 2000; Mackay et al., 2004).

Hence, it is difficult to overestimate the importance of organisation-focused initiatives, such as work redesign, for preventing work-related stress. However, as is discussed in the following section, there are a number of features of the stress process that suggest that it is also important to consider worksite interventions that target characteristics of the employees themselves.

Individual-Focused Interventions

While organisation-focused interventions are generally advocated by stress researchers and policy-makers alike, this approach to stress prevention is not without its limitations (Bond & Hayes, 2002). First, some work-related stressors (e.g., seasonal deadlines or difficult customers) cannot easily be removed or reduced. Second, there is a plethora of extra-organisational sources of stress (e.g., commuting, antisocial neighbours, and family discord) that can have a detrimental impact on an employee's well-being, and yet remain immune to organisation-focused initiatives. Third, a number of studies have suggested that employees who possess appropriate coping skills (e.g., a proactive coping style, psychological flexibility), are more likely to benefit from the opportunities provided by favourable work designs (e.g., high levels of job control) (e.g., Bond, Flaxman, & Bunce, 2006; Day & Livingstone, 2001; Parker & Sprigg, 1999). Each of these issues could potentially be addressed by the implementation of individual-focused SMIs.

However, as previously mentioned, perhaps the strongest support for implementing employee-oriented worksite programmes emerges from the widely accepted appraisal-based model of the stress process (e.g., Lazarus & Folkman, 1984). To reiterate,

the appraisal view of stress emphasises the importance of an individual's coping resources, and hypothesises that inappropriate coping efforts (e.g., avoidance) have the potential to exacerbate sources of stress, and to prolong or increase mental ill-health (e.g., Lazarus & Folkman, 1984; Matheny et al., 1986). Consistent with this line of thought, researchers have found that undesirable psychological coping styles (e.g., avoidance coping, type-A behaviour pattern, perfectionism) are reliable predictors of stress in the workplace (e.g., Bond & Bunce, 2003; Cooper & Payne, 1991; Guppy & Weatherstone, 1997; Ferguson, Daniels, & Jones, 2006; Jex, 1998; Jex, Bliese, Buzzell, & Primeau, 2001; Quick et al., 1997).

In accordance with this appraisal/coping framework, the most common individual-focused worksite interventions take the form of *stress management training* (SMT) programmes, which are designed to tackle workplace stress via two routes: (1) by helping employees to modify dysfunctional appraisals of events; and (2) by providing employees with the skills for coping more effectively with the demands of work (and life), and with any resulting distress (Ivancevich et al., 1990; Reynolds & Shapiro, 1991).

Whereas organisation-focused interventions have been generally categorised as primary stress prevention, worksite SMT programmes are more likely to be described as *secondary* or *tertiary* prevention (e.g., Quick et al., 1997). Interventions that operate at the secondary level may, for example, be offered to employees who are showing signs of an unhelpful stress response (e.g., irritability, avoidance), to ensure that this response does not lead to psychological distress (e.g., depression) or physical ill-health (e.g., gastrointestinal disorder). Tertiary prevention, on the other hand, refers to those interventions that are more curative, or therapeutic, in nature, and which are aimed at reducing the impact of any distress that employees are already experiencing.

While the distinction between individual- and organisation-focused interventions provides a useful heuristic for categorising the two main approaches to worksite stress management, the distinctions between primary, secondary, and tertiary levels of prevention are typically less clear, inasmuch as many stress management strategies could conceivably function at all levels (Matheny et al., 1986). For example, whilst the stress literature tends to classify worksite SMT programmes as secondary/tertiary prevention, some of the techniques employed (e.g., time management or problem-solving training) may also function at a primary level (Quick et al., 1997).

In sum, the preceding discussion has outlined the general intervention approaches that have been employed to manage stress in the workplace. An important distinction has been made between those interventions that seek to reduce employees' exposure to work-related stressors (organisation-focused), and those that are aimed at modifying workers' unhelpful cognitive appraisals, and/or enhancing their personal coping skills (individual-focused). This thesis focuses on the latter intervention approach, which typically takes the form of worksite stress management training (SMT).

A key development that contributed to the appraisal-based formulation of stress was the emergence of the cognitive-behaviour therapy (CBT) movement in the 1970's and 1980's (Lazarus & Folkman, 1984). In particular, the CBTs and Lazarus and Folkman's model both emphasise the importance of people's interpretations (or appraisals) of life events as a core feature in psychological distress and successful coping (Lazarus & Folkman, 1984; Meichenbaum, 1985). Accordingly, Lazarus and Folkman (1984) concluded that most CBT assumptions and procedures were "highly compatible" with their own theory of stress and coping (p. 374). This strong endorsement of the CBTs by

prominent stress theorists is just one of the reasons why worksite stress management training interventions have been almost exclusively based on cognitive-behavioural principles and techniques. Indeed, as will be discussed in the following section, recent developments in the theory and practice of CBT continue to inform the design of worksite stress management programmes.

1.2 Worksite Stress Management Training and Cognitive-Behaviour Therapy: An Historic Relationship

Overview

The aim of this section is to describe the typical technical content of worksite stress management training (SMT) programmes. As will be shown, there has been a symbiotic relationship between these programmes and the cognitive-behaviour therapies (CBTs), and it is rare to find published accounts of employee-focused stress interventions that are *not* based on cognitive and/or behavioural techniques. Thus, the following discussion begins with an overview of the evolution of CBT, and then focuses on some of the key characteristics that make this therapeutic approach so conducive to delivery in worksite training contexts. Then, towards the end of this section, the reader will be introduced to some important developments that have been taking place in the field of CBT over the last 10 or 15 years, along with a consideration of the implications of these developments for the design of worksite SMT programmes.

1.2.1 The Evolution of Cognitive-Behaviour Therapy (CBT)

Most accounts of the development of CBT are organised around three evolutionary phases (or "waves"), each of which has had (or is currently having) a major

impact on the field of psychotherapy: (1) the birth of behaviour therapy; (2) its transformation into *cognitive*-behaviour therapy; and (3) the growing focus on "mindfulness"-based approaches that seek to change the function, not the content, of cognition (e.g., Dobson & Block, 1988; Hayes, 2004a; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Kazdin, 1978; Newell & Dryden, 1991; Rachman, 1997).

The Birth of Behaviour Therapy (the "First Wave")

The roots of behaviour therapy lie in the application of conditioning theories of learning, which had been established in the animal laboratory, to the treatment of human psychological problems (Newell & Dryden, 1991). There were essentially two strands of early behaviour therapy, which eventually converged to form a unified therapeutic movement. One of these strands emerged from the US, where a group of psychologists were applying Skinnerian principles of operant conditioning with individuals in the "back wards" of institutions who were suffering from severe psychiatric disorders (e.g., schizophrenia) (e.g., Ayllon, 1963; Lindsley, 1956; Rachman, 1997; Skinner, 1959). At the same time, a British (and South African) form of behaviour therapy was emerging independently, thanks to the pioneering work of Hans Eysenck and Joseph Wolpe (e.g., Eysenck, 1952; 1960; Wolpe, 1958). Eysenck and Wolpe were particularly influenced by the classical learning theories of Pavlov and Hull, and concentrated on the treatment of the more common "neurotic" disorders (e.g., anxiety).

Perhaps the most significant development that emerged from this early period of behaviour therapy came with the introduction of *systematic desensitisation* (Wolpe, 1958), a counterconditioning procedure that was designed to treat specific anxiety disorders (e.g., agoraphobia). Wolpe had hit upon the idea of teaching anxious clients how

to achieve a state of muscular relaxation, as a way to inhibit any anxiety that was associated with imaginal (and eventually in-vivo) exposure to the phobic object or situation. Although not as widely used today (at least not in its original form), Wolpe's procedure had a huge influence on behaviour therapy, and provided the basis for many subsequent behavioural techniques for fear reduction (e.g., exposure) (Newell & Dryden, 1991; Rachman, 1997). As will be discussed presently, one of the lasting legacies of Wolpe's approach has been the inclusion of condensed forms of *relaxation training* in many prominent stress and anxiety treatment regimens (e.g., Bernstein & Borkovec, 1973; Meichenbaum, 1985; Suinn & Richardson, 1971; White, 2000).

The decade following the introduction of systematic desensitisation (1958-1970) was undoubtedly an important period in the history of psychotherapy, as the new behaviour therapy movement became firmly established. Part of the appeal of the behavioural approach stemmed from the fact that it provided a radical alternative to Freudian psychoanalysis, which had previously dominated the therapeutic field, but which was increasingly being viewed as elusive and unscientific (e.g., Eysenck, 1952; Wolpe & Rachman, 1960; Rachman, 1997). In contrast to psychoanalysis, the behaviour therapists displayed a strong commitment to strict empirical standards, and conducted a high volume of outcome studies that were designed to rigorously evaluate the efficacy of prominent behavioural procedures (e.g., systematic desensitisation, exposure, and reinforcement programmes). On the basis of this empirical work, it became clear that standard behaviour therapy techniques were effective in reducing specific fears and phobias, and for the modification of maladaptive (e.g., avoidance) behaviours (e.g., Davison, 1968; Lang, 1969; Rachman, 1997; Rachman & Wilson, 1980).

However, despite the considerable success in treating anxiety disorders, early behaviour therapy was not found to be a particularly effective in the treatment of depression (Rachman, 1997). Quite simply, the traditional behavioural models and procedures were unable to account for the "large and obvious" role of *cognition* in the experience of depression and other forms of negative affect (Rachman, 1997, p. 12). By the end of the 1960's, this limitation was contributing to a growing dissatisfaction with a strictly behavioural approach to psychotherapy. Against this background of discontent, it is not surprising that many behaviour therapists were attracted to the work of Albert Ellis (1962) and Aaron Beck (1967; 1970), who added cognitive conceptualisations and strategies to behaviour therapy. The "cognitive revolution" had begun (Meichenbaum, 1993a).

The Emergence of Cognitive-Behavioural Therapy (the "Second Wave")

The two founding fathers of cognitive psychotherapy were Ellis, who developed Rational-Emotive Behaviour Therapy (REBT; e.g., 1962; 1994), and Beck (e.g., 1976; Beck et al., 1979), whose cognitive therapy for depression was later expanded to facilitate the treatment of other emotional disorders (e.g., Beck, 1993; Beck & Emery, 1985). Interestingly, both Ellis and Beck had trained as psychoanalysts, and both had become similarly dissatisfied with the efficacy of psychodynamic therapy for dealing with emotional distress. Although there are differences in emphasis and terminology between REBT and Beck's cognitive therapy, both approaches are based on the assumption that most forms of psychopathology are the consequence of maladaptive thinking; and that cognitive change should, therefore, be the primary goal of psychotherapy (Dobson & Block, 1988; Newell & Dryden, 1991).

This underlying cognitive philosophy is neatly illustrated by Ellis's renowned "ABC" model of human functioning. In this model, **A**ctivating events or situations are mediated by a person's cognitions, or **B**eliefs, regarding those events, which give rise to various emotional and/or behavioural **C**onsequences (Newell & Dryden, 1991). Ellis identified a number of core "irrational beliefs" that are likely to be linked to unfavourable emotional consequences, such as anxiety, feelings of worthlessness, or anger. In REBT, these beliefs are viewed as "irrational" because of their demanding, dogmatic, and absolutistic nature, and they can be inferred when an individual's internal dialogue is peppered with terms such as "must", "always", "ought", or "should" (e.g., "I *should always* be successful in my job, and it will be a catastrophe if I am not"; "I *must* be liked by people whom I like, and I cannot accept it if I am not"). Accordingly, the goal of REBT is to substitute these irrational thought patterns with more "rational" (i.e., less dogmatic) desires, preferences, or wishes (e.g., "It is desirable that certain people like me, but it's not the end of the world if they don't"), in order to reduce maladaptive emotions and behaviours (Dryden, 1990).

The most common technique employed by REBT therapists involves the systematic *disputation* of their clients' irrational thinking (Ellis & Dryden, 1999). The first step in this therapeutic approach usually involves helping clients to detect any irrational beliefs that are underpinning their psychological distress. The therapist will then begin to debate (sometimes quite rigorously) with the client, over the value, and veracity, of particular beliefs (e.g., "where is the evidence for this belief?"), and will employ various logical and pragmatic arguments that are designed to undermine dogmatic thinking styles. In addition to disputation, an REBT therapist is likely to use a range of emotive, imagery, and behavioural techniques, all in the service of helping the client to

replace irrational cognitions with more rational alternatives (e.g., Ellis, 1994; Ellis & Dryden, 1999).

Although REBT is generally regarded as the oldest of the cognitive-behavioural treatment approaches, it has not received as much empirical and clinical attention as Beck's cognitive therapy (Dobson & Block, 1988). This may be due, in part, to the fact that Beck was an academic researcher and that he focused initially on understanding and treating depression, a clinical problem that had highlighted the limitations of standard behaviour therapy (Dobson & Block, 1988; Meichenbaum, 1977).

According to Beck's model of psychopathology, emotional disorders (e.g., anxiety and depression) stem from the distorted *content* of people's cognitions. Specifically, Beck focused on the fleeting "automatic thoughts" that intervene between an event and an affective response, and used these cognitions as indicators of the meanings and interpretations a person attaches to particular events. Beck identified a number of cognitive distortions in the negative thoughts of his distressed clients, and which often resulted in their adopting an inaccurate, or biased, interpretation of reality.

Beck theorised that the distortions found in the content of negative automatic thoughts can, in turn, provide clues to an individual's dysfunctional core belief system. These core beliefs, or cognitive *schemas*, are generally stated in the form of conditional "if-then" propositions; they tend to centre around issues related to performance, success, and gaining approval from others; and they are similar in breadth to the irrational beliefs that were described by Ellis (e.g., "If I do not do well all the time, people will not respect me") (Dryden & Golden, 1987). Beck originally discussed these dysfunctional cognitions in the context of depression, but they have since been studied in relation to other forms of

psychopathology (e.g., Dyck, 1992; Hollon, Kendall, & Lumry, 1986) and occupational stress (e.g., Bond & Bunce, 2000; Guppy & Weatherstone, 1997).

In accordance with this cognitive formulation of emotional disturbance, Beck's treatment procedure consists of a series of specific learning experiences that are designed to teach distressed clients the following skills (adapted from Dryden & Golden, 1987):

1. How to monitor and record negative automatic thoughts.
2. How to recognise the connections between cognition, emotion (or mood), and behaviour.
3. How to examine the evidence for and against distorted thoughts.
4. How to replace distorted cognitions with more accurate and balanced interpretations of events.
5. How to identify, and modify, the core dysfunctional cognitions that give rise to distorted automatic thoughts.

A number of cognitive and behavioural techniques would be employed by the cognitive therapist to impart these skills to the client, with much of the therapeutic work based on the use of daily thought records. These records, which are completed collaboratively between client and therapist, serve to identify the specific content of the client's distorted thinking, and can quickly reveal any cognitive themes that point to underlying dysfunctional core beliefs. The therapist encourages clients to treat the content of their thoughts as "hypotheses to be tested", and to internalise a series of questions that appraise the validity of particular cognitions (e.g., "what is the evidence for and against this thought"; "what are the alternative interpretations of this event?"; "what are the real implications if this thought/belief is correct?") (e.g., Dryden & Golden, 1987). In addition to this thought challenging process, cognitive therapy clients would be encouraged to

engage in various behavioural homework assignments (a rudimentary form of behaviour therapy), as another method for examining the evidence for dysfunctional cognitions. For example, an anxious client may be asked to take a short trip by public transport, in order to reality-test the content of a specific thought (e.g., "I will faint if I get on the train").

Importantly, Beck (and, to a lesser extent, Ellis) and his followers adopted the stringent empirical standards that had characterised behaviour therapy, and the early empirical demonstrations of the effectiveness of cognitive therapy helped to remove some of the initial resistance to cognitive models and procedures. As Rachman (1997) notes, many traditional behaviour therapists were encouraged by the inclusion of behavioural techniques in the new cognitive treatment approaches, and by the fact that both Beck and Ellis had explicitly recognised the value of behaviour therapy (as well as its limitations). As a result of this, cognitive therapy was generally viewed as a supplement to behaviour therapy, and many behaviourally oriented clinicians began to incorporate cognitive techniques into their therapeutic repertoires (Rachman, 1997).

Thus, the inevitable integration of the cognitive and behavioural approaches can be traced back to the earliest writings of the pioneers of cognitive therapy (e.g., Beck, 1970; Ellis, 1962). The merging of the two streams was given further impetus by the work of a number of researchers and clinicians - most notably Donald Meichenbaum - who specifically sought to bridge the gap between the cognitive models of psychopathology, and the therapeutic technology of behaviour therapy. This work resulted in a number of seminal publications during the 1970's (e.g., Bandura, 1977; Goldfried & Davison, 1976; Mahoney, 1974; Meichenbaum, 1977), which firmly established the *cognitive-behaviour therapy* (CBT) movement.

As a result of this interesting historical development, CBT now encompasses a diverse range of models, techniques, and procedures. In the three decades following the welding together of the behavioural and cognitive streams, a great deal of research has provided empirical support for second wave cognitive-behavioural interventions in the treatment of a range of clinical problems, including anxiety, depression, eating disorders, and psychosis (e.g., Barlow, 2002; Blackburn et al., 1986; Shea, et al., 1992; Westra & Stewart, 1998). Moreover, as is discussed below, the short-term, skills-based nature of second wave CBT facilitated its influence in the development of *stress management training* interventions, for use outside of the traditional clinical setting.

1.2.2 Second Wave CBT Stress Management: Stress Inoculation Training (SIT)

Even during the early years of behaviour therapy (the "first wave"), clinicians and researchers had recognised the potential for expanding this therapeutic approach into coping skills training programmes. For example, although systematic desensitisation was originally designed as a procedure for de-conditioning *specific* fears, many clients interpreted the relaxation training component as a strategy that could help them cope with stress in general (e.g., Goldfried, 1971; 1980). This observation, along with a desire amongst clinicians for greater treatment generalisation, led to several descriptions of the use of relaxation as a generalised coping skill, which could be imparted to clients in groups as well as in individual therapy sessions (e.g., Goldfried, 1971; Meichenbaum & Cameron, 1972; Suinn & Richardson, 1971; Zemore, 1975).

The possibility of psychotherapy as coping skills training became more firmly established following the transformation of behaviour therapy into *cognitive*-behaviour therapy (i.e., the "second wave") (Goldfried, 1980). This growing interest in coping skills

interventions flowed naturally from a number of key characteristics of the CBTs (adapted from Free, 1999; Sank & Shaffer, 1984):

1. CBTs are heavily educative, and involve the explication of the underlying therapeutic model and rationale to the client.
2. CBTs tend to be procedurally specific, and can be disseminated via detailed (e.g., manualised) instructions.
3. CBTs mostly focus on current problems, behaviours, and cognitions, and do not require extensive inferences about unconscious processes.
4. CBTs are brief, and time-limited.
5. CBTs tap into the individual's capacity for self-direction, and aim to empower people to "become their own therapists".

Like many of his contemporaries in the 1970's, Donald Meichenbaum sought to harness these features of the cognitive-behavioural approach as a way to improve treatment generalisation, efficiency, and effectiveness (e.g., Goldfried et al., 1974; Meichenbaum, 1972; 1977). Meichenbaum particularly promoted the convergence of the skills-based CBTs, and Lazarus's stress, appraisal, and coping paradigm (described previously). On the basis of the considerable overlap between these two fields, Meichenbaum and his colleagues developed *stress inoculation training* (SIT) – a comprehensive CBT-based protocol that can be employed both as a clinical intervention, and on a *preventive* basis, with high risk or "normal" populations (Meichenbaum, 1977; Meichenbaum & Novaco, 1985).

SIT is characterised by three overlapping intervention phases: (1) *conceptualisation* of stress in line with the second wave CBT (cognitive modification) model; (2) coping *skills acquisition and rehearsal*; and (3) *application* of coping skills

outside of the training (or therapy) sessions (e.g., Meichenbaum & Deffenbacher, 1988). The conceptualisation phase of SIT is designed to (a) enlist participants into a collaborative stress management partnership with the trainer, and (b) provide participants with a cognitive-behavioural framework for understanding the nature, prevention, and treatment of stress. In this initial phase, SIT participants may be asked to complete various self-monitoring exercises, which are aimed at increasing awareness of stress-related cognitions, emotions, and behaviours, and the situations in which they tend to occur. This process is very similar (if not identical) to the "A-B-C" and thought record exercises that are used in traditional cognitive therapy. The SIT trainer uses these exercises to provide a conceptualisation of stress as a complex interplay between the cognitive, affective, physiological, and behavioural response modalities, each of which represents a potential point of entry for specific stress management techniques (Meichenbaum, 1985).

The conceptualisation phase is designed to lay the groundwork for the second intervention phase (skills acquisition and rehearsal), during which a number of cognitive and behavioural coping skills are introduced. Although there are a variety of techniques that can be employed in SIT, the most common components are *relaxation training*, *cognitive restructuring*, *guided self-instruction*, and *problem-solving* (Meichenbaum, 1985). The relaxation training component involves the use of progressive muscular relaxation (e.g., Bernstein & Borkovec, 1973), and other arousal reduction procedures (e.g., diaphragmatic breathing exercises), which are presented to participants as techniques that can be used to exert some control over undesirable internal states (e.g., tension).

SIT also incorporates two sets of cognitive coping techniques: cognitive restructuring, and self-instruction. It is perhaps not surprising that cognitive techniques

occupy such a central position in SIT, in view of the fact that Meichenbaum was particularly influenced by Lazarus's appraisal/coping model of stress, and by Beck's cognitive therapy (e.g., Meichenbaum, 1985; 1993b). The cognitive restructuring component in SIT very much reflects this latter influence, inasmuch as it is virtually indistinguishable from Beck's thought challenging procedure, described above. Specifically, SIT participants are taught how to: (1) identify stress-engendering thoughts and beliefs; (2) gather evidence that evaluates the validity and viability of those cognitions; and (3) replace dysfunctional cognitions with more balanced, reality-based, interpretations of events (Meichenbaum, 1985; Meichenbaum & Deffenbacher, 1988).

The self-instructional training component trains participants in the use of coping self-statements that can be specifically designed for different stages of a stressful encounter (e.g., preparing for a stressor, confronting a stressor, and reviewing coping efforts after the event). These self-statements typically provide cues for problem-solving (e.g., "I can work out a plan to handle this"), and for managing problematic stress reactions (e.g., "Stop worrying, worrying won't help anything"; "Relax, take a slow deep breath"). In SIT, these self-statements are not designed to be repeated mindlessly, or in rote fashion; instead, participants are encouraged to personalise the statements, and to use them to "neutralise" specific stress-related cognitions (Meichenbaum, 1985).

As well as employing these coping self-statements to nurture a problem-solving attitude, SIT also provides specific instruction on effective problem-solving. This procedure typically introduces participants to a sequential problem-solving algorithm, which includes the following steps: (1) defining the problem(s); (2) setting goals; (3) brainstorming solutions; (4) weighing up the pros and cons of each solution; (5) choosing

a solution and planning for action; (6) implementation; and, (7) evaluation (Flaxman, Bond, & Keogh, 2002; Meichenbaum, 1985).

The third, and final, phase of SIT (application) focuses on assisting participants in transferring coping skills to situations outside of the training sessions. This skill transfer usually begins in-session, where participants can be asked to visualise an imminent stressful event (e.g., having to speak at a work meeting), and to mentally rehearse the deployment of adaptive coping strategies (e.g., relaxation and coping self-statements). This application process, which generally overlaps with the skills acquisition phase, also takes the form of homework assignments, which encourage participants to try out their newly acquired coping techniques in "real world" situations (Meichenbaum, 1977; 1985).

Meichenbaum (1993b) explicitly links these three intervention phases to Lazarus and Folkman's (1984) appraisal/coping formulation of stress. Specifically, SIT is designed to: facilitate adaptive appraisals of stressors and stress responses (conceptualisation); enhance a person's repertoire of coping responses (skills acquisition); and to nurture a person's confidence in his or her coping capabilities (application); therefore reducing the likelihood of a mismatch between perceived demands and coping resources.

Although SIT was originally used in the treatment of phobias, chronic anger, and physical pain, Meichenbaum and his colleagues were particularly excited by the potential for using this coping skills approach on a preventive basis, in order to provide individuals with a prospective defence against stress (Meichenbaum, 1977; Meichenbaum & Novaco, 1985; Novaco, 1977). Moreover, at a time when interest in *occupational* stress was rapidly developing, it became clear that the workplace provided an ideal context for implementing such "prophylactic" interventions (e.g., Ganster et al., 1982; Newman &

Beehr, 1979; Novaco, 1977). As a result, SIT has essentially provided the prototype for the bulk of worksite stress management training (SMT) programmes that have been implemented over the last 25 years or so (e.g., Murphy, 1984; 1996; Saunders et al., 1996; van der Klink et al., 2001). The empirical research that has evaluated these worksite interventions will be discussed shortly (see section 1.3).

To summarise, the preceding discussion has tracked the evolution of CBT, from its roots in behaviour therapy (the first wave), through to the incorporation of cognitive therapy models and procedures (the second wave). As was illustrated, the emergence of CBT was associated with a general shift towards a coping skills view of psychotherapy. This skills-oriented view has, in turn, led to the development of CBT-based stress management training (SMT) programmes, such as stress inoculation training, which can be delivered to small groups in the workplace and other non-clinical contexts. In order to promote the continuation of this historic relationship that has linked the fields of CBT and worksite stress management, it is important that major developments in CBT are incorporated into worksite SMT programmes. This issue appears to be particularly relevant at the present time, as recent advances in the theory and practice of CBT have led to the emergence of a new "third wave" of cognitive-behavioural approaches.

1.2.3 Developments in CBT: Acceptance and Commitment Therapy (ACT) and the Third Wave[1]

As we have seen, the model of change that underpins second wave CBT interventions suggests that individuals can alleviate psychological distress by modifying the content of dysfunctional thoughts (e.g., through cognitive restructuring or coping self-

statements). More recently, a new generation of "third wave" CBTs has emerged, which do not promote such cognitive modification; instead, these new CBTs all share a common aim of changing the way that people *relate to* their undesirable thoughts, feelings, and physiological sensations. These third wave therapies include acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), mindfulness-based cognitive therapy (MBCT; Segal, Teasdale, & Williams, 2002), dialectic behavior therapy (DBT; Linehan, 1993), and metacognitive therapy (Wells, 2000). Although there are differences between these approaches, with some emerging from the behavioural wing of CBT (e.g., ACT), and others from the cognitive wing (e.g., MBCT), they are all united by their therapeutic emphasis on the function, rather than the form or frequency, of undesirable cognitions, and by their use of mindfulness- and acceptance-based techniques (Hayes, 2004a).

When accounting for the emergence of this new generation of mindfulness-based approaches, third wave authors typically highlight a number of empirical anomalies that raise questions over the core assumptions of second wave CBT (e.g., Hayes, 2004a; Hayes et al., 2006; Orsillo et al., 2004; Segal et al., 2002). These anomalous findings include: (1) changes in dysfunctional cognitions do not appear to be unique to second wave CBT (i.e., cognitive restructuring) interventions; (2) clinical clients often improve in second wave CBT before the core cognitive restructuring procedures have been implemented; and (3) support for the hypothesis that second wave CBT reduces anxiety and depression by first altering the content of core dysfunctional cognitions has been inconsistent (e.g., Burns & Spangler, 2001; Orsillo et al., 2004, Hayes, 2004a; Teasdale, Segal, & Williams, 1995). Hayes (e.g., Hayes et al., 2006), in particular, has been critical of the weak links between second wave CBT and cognitive science. Hayes points out that

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[1] A version of this section was recently published in the form of a book chapter by Flaxman and Bond (2006)

the core second wave constructs and procedures, such as dysfunctional attitudes and cognitive restructuring, did not originally emerge from a programme of basic cognitive research; they were instead essentially based on the clinical experiences and observations of the originators of the second generation CBTs (i.e., Beck and Ellis), who were seeking to address the shortcomings of traditional behaviour therapy (Hayes et al., 2006). A combination of these (and other) factors has led many CBT clinicians and researchers to question the therapeutic necessity of changing the content of people's dysfunctional cognitions. As a consequence, the third wave CBT movement is characterised by a shift away from such direct cognitive modification strategies.

The present thesis focuses on acceptance and commitment therapy (ACT), which is at the forefront of this new generation of CBTs. As with second wave CBT, ACT appears to be particularly suitable for the worksite stress management context because (a) it is a skills-based approach, and (b) the model on which it is based is applicable to most (if not all) forms of psychological distress. This model is outlined below, along with the key features of ACT interventions.

The ACT Model of Psychopathology: Cognitive Fusion and Experiential Avoidance

Rather than directly targeting the content of psychological phenomena for therapeutic change, which has been the traditional CBT approach, ACT attempts to alter the problematic functions of unwanted thoughts and feelings by modifying the psychological *contexts* in which they are experienced (Hayes & Wilson, 1994). This emphasis on function and context in ACT stems from its behaviour analytic philosophy of functional contextualism (Biglan & Hayes, 1996) which is also reflected in ACT's underlying theory: *relational frame theory* (RFT) - a detailed account, and empirical

research programme, that focuses on the fundamental nature of human language and cognition (e.g., Hayes, Barnes-Holmes, & Roche, 2001; Hayes et al., 1999).

From an ACT perspective, most forms of psychological distress are the result of two contexts that are built into the very fabric of human language: *cognitive fusion* and *experiential avoidance*. Cognitive fusion occurs when a person becomes entangled (or *fused*) with the literal content of his or her thoughts, so that those thoughts (and related emotions) are taken to be true interpretations of experience (e.g., when worrisome thoughts are taken to be accurate prophecies about the future, rather than seen as mere *thoughts* about the future) (Hayes, Strosahl, Bunting, Twohig, & Wilson, 2004). In a context of fusion, people are generally unaware of the process of thinking, less in contact with present moment experiences, and their actions are largely determined by the psychological content that they have become fused with (even when that content leads to ineffective or harmful behaviours) (Hayes, 1989; 2004b). Experiential avoidance occurs when people are unwilling to remain in contact with unwanted psychological events (e.g., thoughts, emotions, somatic sensations) and, instead, attempt to change the content or reduce the frequency of those undesirable experiences, even when doing so is counterproductive (e.g., thought suppression), harmful (e.g., drug and alcohol misuse), and/or life restricting (e.g., situational avoidance) (e.g., Hayes et al., 1999; Hayes et al., 1996; Marlatt et al., 2004; Wenzlaff & Wegner, 2000).

Thus, ACT does not view undesirable psychological content (e.g., negative thoughts) as inherently toxic to an individual's well-being. Rather, it is only seen as a problem to the extent to which it is taken literally (fusion) and construed as something to be removed or avoided (experiential avoidance). Ironically, the contexts of fusion and experiential avoidance, which are created by people's attempts to "feel better", may

actually increase the intensity and frequency of unwanted internal states, as a person "plunges inward" to struggle (usually futilely) with difficult psychological content (Blackledge & Hayes, 2001; Wenger & Zanakos, 1994). Moreover, as people continue to attempt to control their unwanted thoughts and feelings, their strategies for doing so (e.g., avoiding certain people and situations) can become life constricting barriers to pursuing their goals and values (e.g., being an attentive spouse or an effective worker).

Interestingly, ACT authors suggest that the contexts of fusion and avoidance are supported by our own language community, where negatively evaluated private events tend to be regarded as valid reasons for dysfunctional behaviour (e.g., "I want to go back to work, but I'm too depressed"). Such language conventions promote the unhelpful assumption that in order to obtain valued behavioural outcomes (e.g., being an effective employee), we must first minimise (and thus control) unwanted internal events (e.g., negative thoughts) (Block, 2002; Hayes et al., 1999). In ACT, attempts to control unwanted internal events are generally seen as the problem, not the solution.

ACT Interventions: Cultivating Mindfulness to Promote Valued Living

In general terms, ACT interventions aim to break down the contexts of fusion and experiential avoidance, and do not, therefore, focus on the removal or reduction of unpleasant thoughts and emotions. Because of this therapeutic aim, ACT, like the other third wave CBTs, can be more generally defined as a *mindfulness*-based intervention. Mindfulness is essentially a meta-cognitive skill, which involves relating to one's thoughts as passing events in the mind, rather then identifying with them, being disturbed by them, or treating them as necessarily accurate representations of reality (e.g., Hayes et

al., 1999; Segal et al., 2004). The essence, and potential benefits, of mindfulness are illustrated in the following excerpt from Kabat-Zinn (1990):

> It is remarkable how liberating it feels to be able to see that your thoughts are just thoughts and they are not 'you' or 'reality'. For instance, if you have the thought that you have to get a certain number of things done today and you don't recognize it as a thought but act as if it's 'the truth', then you have created a reality *in that moment* in which you really believe that those things must all be done today. On the other hand, when such a thought comes up, if you are able to step back from it and see it clearly, then you will be able to prioritise things and make sensible decisions about what really needs doing. You will know when to call it quits during the day. So the simple act of recognizing your thoughts *as thoughts* can free you from the distorted reality they often create and allow for more clear sightedness and a greater sense of manageability in your life (pp. 69-70; also cited in Teasdale, 1999).

More specifically, ACT has six core therapeutic strategies that involve:

(1) highlighting the costs and ineffectiveness of experiential avoidance strategies;

(2) establishing psychological *acceptance* and cognitive *defusion* (or mindfulness) skills, in order to break down the literal content of thoughts, and to encourage full contact with difficult psychological content;

(3) distinguishing a sense of self that is distinct from, and therefore not threatened by, psychological content (*self-as-context*);

(4) promoting contact with *present moment* experience;

(5) helping to clarify *values* as chosen life directions, and distinguishing values from goals and actions; and

(6) building patterns of *committed action* that are linked to chosen values (Hayes, 2004b).

In the ACT model of therapeutic change, acceptance, defusion, self-as-context, and contact with the present moment form a larger set of *mindfulness/acceptance skills*,

while contact with the present moment, self-as-context, values, and committed action together delineate *values-based action* skills (Hayes, 2004b).

As was mentioned above, ACT's emphasis on mindfulness/acceptance skills is generally consistent with other third wave CBTs (e.g., Baer, 1993; Segal et al., 2002). However, ACT can be distinguished from the other third wave approaches by its strong emphasis on values-based action. Indeed, in ACT, mindfulness is very much viewed as a means to an end (i.e., values-based action), while the other third wave CBTs tend to cultivate mindfulness more as an end in itself (e.g., Segal et al., 2002; Wells, 2000).

This key integration of mindfulness and values-based action is designed to produce *psychological flexibility*: the ability to contact the present moment and, depending upon what the situation affords, pursue one's goals without being deterred by unwanted thoughts, feelings, and/or physiological sensations (e.g., Hayes, 2004b; Hayes, Strosahl et al., 2004). The promotion of psychological flexibility appears to have considerable therapeutic utility, with a growing body of research finding ACT to be an effective treatment for a range of clinical problems, including polysubstance abuse, psychosis, evaluation anxiety, chronic pain, depression, and eating disorders (for a recent review of this research see Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004).

Thus, although ACT represents an expansion of the cognitive-behavioural tradition, there are stark differences between the rationale and goals of ACT and those of the second wave CBTs. As was indicated above, the key difference between these two approaches stems from the presumed role of cognitions in the development and treatment of psychological distress: the second wave CBTs seek to change cognitive *content* (e.g., from dysfunctional to functional), whilst ACT seeks to change people's *relationship* with their cognitions, by promoting mindfulness and values-based action. Despite these

theoretical and procedural contrasts, ACT shares many of the key characteristics of the traditional CBTs: it is a skills-based approach; it is procedurally specific; and it can be delivered in groups as well as individually (e.g., Bond & Bunce, 2000; Eifert & Forsyth, 2005; Flaxman & Bond, 2006; Hayes, Bissett et al., 2004; Walser & Pistorello, 2004).

Extending the historical links between the CBTs and stress management interventions, researchers have recently begun investigating the utility of employing ACT in the worksite training context (e.g., Bond & Bunce, 2000; Bond & Hayes, 2002; Hayes Bissett et al., 2004). The present thesis aims to continue this line of research by comparing an ACT worksite intervention with a more traditional second wave programme (stress inoculation training), in order to test the contrasting theoretical models of change that underpin these two approaches. However, prior to discussing the specific research strategies that will be employed in this thesis, the following sections provide an overview of the research that has evaluated ACT and stress inoculation training interventions delivered in the workplace.

1.3 Worksite Stress Management Training (SMT): Outcome Research

Overview

The next two sections (1.3. and 1.4) provide a review of the research that has evaluated the effectiveness of both "second wave" (i.e., stress inoculation training) and "third wave" (i.e., ACT) cognitive-behavioural worksite stress management programmes. While this first section assesses the impact of these interventions on various stress- and work-related *outcomes*, the following section (1.4) focuses more specifically on those studies that have attempted to identify key *process* variables (e.g., the "active ingredients") within SMT programmes. As will be discussed, much of this worksite SMT

research has been poorly grounded in the underlying cognitive-behavioural models of psychological distress and change, and a principal aim of this thesis is to address this theoretical shortcoming.

The bulk of the stress management literature has investigated second wave cognitive-behavioural interventions, such as those based on stress inoculation training. Reviews of this voluminous literature are provided in the six articles listed below[2], and each of these will be summarised and discussed in the following pages:

1. Newman & Beehr (1979)
2. Murphy (1984)
3. DeFrank & Cooper (1987)
4. Murphy (1996)
5. Saunders, Driskell, Johnston, & Salas (1996)
6. van der Klink, Blonk, Schene, & Dijk (2001).

While most of these outcome reviews are qualitative in nature, two of them (Saunders et al., 1996; van der Klink et al., 2001) are quantitative meta-analyses and therefore provide estimates of the effect sizes associated with various stress management techniques.

In contrast to this traditional second wave stress management research, there are at present only three published studies that have evaluated the efficacy of ACT as a worksite training intervention (Bond & Bunce, 2000; Dahl, Wilson, & Nilsson, 2004; Hayes, Bissett et al., 2004). This ACT intervention research will also be reviewed below.

1.3.1 Second Wave CBT Worksite Interventions

Newman and Beehr (1979) published the first critical review of occupational stress management interventions, which brought together various early writings on the topic that had emerged during the 1970's. Although they reviewed both individual- and

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[2] There are other reviews of this literature (e.g., Bamberg & Busch, 1996; Kelly, 1995; McLeroy et al., 1984; van der Hek & Plomp, 1997), but these were omitted to avoid duplication

organisation-focused strategies, the present discussion focuses on the former intervention approach, in keeping with the topic of this dissertation.

This early review is very limited in its ability to provide empirical evidence on the efficacy of CBT-based worksite programmes; well-designed evaluations of these interventions were virtually non-existent at the time. Nevertheless, their review is important in that it identified the potential in using behavioural and cognitive-behavioural procedures to enhance well-being in the workplace. For example, the authors cite the work of Suinn (1976), a prominent behaviour therapist, who had successfully employed relaxation training, emotional desensitisation, and time management, in the modification of the stress-related behaviours of "Type A" workers (who are prone to competitive overdrive, anger, and hostility). Many of the other strategies reviewed by Newman and Beehr were based on opinion and anecdotal evidence, and, at the time of their review, had not been exposed to much (if any) empirical scrutiny. However, even amongst these quasi-scientific prescriptions for reducing occupational stress, it is interesting to note a number of techniques that would not look out of place alongside the cognitive modification approaches that were about to become prominent in stress management research (e.g., changing one's "philosophy of life", mental diversion, and cognitive reappraisal).

Thus, despite the lack of well-designed studies available for review, Newman and Beehr's article served two important functions: 1) it highlighted CBT-based training programmes as one of the more promising methods for managing stress in the workplace; and, 2) it provided a timely challenge to researchers to begin empirically evaluating the merits of these interventions.

By the time Murphy (1984) published the second review of occupational stress interventions, it was clear that researchers had begun to take heed of Newman and Beehr's recommendations; Murphy reviewed thirteen published and unpublished studies that evaluated various worksite stress management programmes. He found considerable variation amongst these studies in terms of training formats, the outcome measures used, and the adequacy of the methodologies. For example, Murphy found that the duration of worksite SMT programmes ranged from 1 to 15 sessions, with total participant contact time ranging from 1 to 16 hours. Similarly, an array of outcome measures was used in these studies, ranging from physiological indices, such as blood pressure and forehead EMG, to self-report measures of anxiety, stress symptomatology, and coping.

Despite this diversity, Murphy was able to classify most of the studies as *preventive* (as opposed to *curative*) in orientation, in that they did not exclusively solicit employees with high levels of psychological distress. There was also some consistency in the actual content of the intervention programmes, inasmuch as all studies included a relaxation exercise (usually muscular relaxation), with most also incorporating some form of stress education that provided participants with information on the nature, consequences, and amelioration of stress. About half of the studies evaluated a combination of cognitive-behavioural skills (typically cognitive restructuring) and muscular relaxation training - a multifaceted format that is consistent with Meichenbaum's (1985) stress inoculation training approach (described previously). All but one of the studies that employed this combination reported significant benefits to participants.

Hence, based on his qualitative review of these early stress management studies, Murphy concluded that these second wave CBT-based interventions were generally

effective in helping employees reduce physiological arousal levels and psychological manifestations of stress. However, he also highlighted a number of research issues that would need to be addressed in order to provide a more complete evaluation of these programmes, including: 1) assessing *non-specific* effects, which may stem from the process of participation in *any* stress management group, rather than from the technical content of the delivered programmes; 2) identifying the relative proportions of successful and unsuccessful participants, along with any individual characteristics that may differentiate these groups; 3) investigating the maintenance and duration of any post-training benefits; and, 4) estimating cost-benefit ratios associated with the implementation of worksite stress management programmes.

DeFrank and Cooper (1987) subsequently updated Murphy's review to incorporate an additional five worksite stress management studies. DeFrank and Cooper took a slightly different approach than did Murphy, by developing a tripartite classification scheme for the various measures used in this research area. They proposed that worksite SMT outcomes could be classified according to whether they focus principally on one of the following types of outcomes: individual, individual/organisational interface, or organisation. Individual-level outcomes include biochemical and physical indices (e.g., catecholamines, blood pressure, muscle tension), psychological variables (e.g., depression, anxiety, life satisfaction), and psychosomatic complaints (e.g., headaches, sweating palms, dizziness). Outcomes measured at the individual/organisational interface include self-report measures of job stress, job satisfaction, and burnout, along with more objective indicators, such as absenteeism and turnover. These latter objective variables also appear in DeFrank and Cooper's organisational outcome category, although, in this case, they were more likely to be measured at a broader level (e.g., measuring

absenteeism at the departmental level). Amongst the eighteen studies included in their review (many of which employed multiple outcomes), DeFrank and Cooper found that worksite SMT interventions were most commonly evaluated at the individual outcome level; a smaller number of studies also included measurement at the individual/organisation interface, but the reviewers found only two instances of organisational level outcomes.

With regard to the technical content of worksite SMT programmes, DeFrank and Cooper, like Murphy before them, noted that a combination of second wave CBT techniques (i.e., cognitive restructuring) and progressive muscular relaxation was the most frequently employed intervention approach. The authors provided the following general conclusion on the effectiveness of these programmes: "…it is reasonable to conclude along with Murphy (1984) that the studies in this area generally demonstrate acceptable levels of support for the efficacy of these activities." (*p*. 8).

DeFrank and Cooper went on to reiterate many of the research concerns that Murphy had outlined, such as the lack of control groups in some studies, small sample sizes, and short follow-up periods. Additionally, on the basis of their review, DeFrank and Cooper proposed two avenues for future research:

1). Investigating whether worksite SMT impacts are specific to individual-level outcomes, or whether the benefits extend from the individual to the organisation; and,

2). Comparing the effects of multicomponent programmes (such as SIT) with individual stress management procedures (e.g., muscular relaxation).

As will be discussed below, both of these issues received subsequent empirical attention from stress management researchers.

In the mid 1990's, Murphy published his second qualitative review of the worksite stress management literature (Murphy, 1996). As is illustrated in Table 1.1, Murphy categorised the various stress management programmes and outcome measures in a broadly similar fashion to previous reviewers.

Table 1.1
Summary of Results from Murphy's (1996) Review

		Health-Outcome Measure							
		Physiological		Psychological		Somatic		Job/org	
SMT Method	Total N	n	% pos	n	% pos	n	% pos	n	% pos
PMR	13	6	83	8	50	6	33	4	25
COG-BEH	13	4	50	10	100	3	100	5	80
Combination	30	13	62	21	76	13	85	11	64
PMR + COG-BEH	15	7	57	11	73	6	83	6	67

Note. PMR = progressive muscular relaxation; COG-BEH = cognitive-behavioural (cognitive restructuring); the Combination category also contains the 15 PMR + COG-BEH intervention studies; % pos = % of studies that reported a positive result for this outcome category; table adapted from Murphy (1996) (*p.* 129)

Murphy's largest intervention category (combination of methods) was mostly comprised of training programmes that combined cognitive-behavioural skills (i.e., cognitive restructuring) with progressive muscular relaxation, followed by programmes that employed these two procedures in conjunction with another intervention component (e.g., assertiveness or problem solving training). As mentioned earlier, these technical combinations are generally considered to be variations of Meichenbaum's (1985) stress inoculation training (SIT) approach.

Murphy found some evidence of intervention-outcome specificity amongst those studies that evaluated a single stress management procedure. In particular, as Table 1.1 indicates, relaxation training generally produced significant improvements on physiological indices (e.g., blood pressure, muscle activity levels), but relatively little change on other outcome measures. In contrast, cognitive-behavioural methods, such as

cognitive restructuring, produced the most consistent effects on psychological and somatic outcomes, especially anxiety. For job/organisational outcomes (e.g., job satisfaction), cognitive restructuring techniques used in isolation appeared to have a greater impact (80% positive) than multicomponent CBT interventions (64-67% positive); although, Murphy noted that most of the studies evaluating the impact of cognitive restructuring alone were poorly designed (e.g., they did not include control groups).

Of the 64 stress management studies reviewed by Murphy, 22 evaluated *multifaceted* programmes based on CBT skills and relaxation training, such as stress inoculation training, and these interventions produced the most consistent effects across the various outcome measures. Hence, it is perhaps not surprising that Murphy (1996) reached the same conclusion as previous reviewers: that a blend of cognitive restructuring and muscular relaxation techniques was the most common, and most effective, worksite stress management approach. Despite this generally favourable conclusion, Murphy recommended that stress management researchers pay more attention to underlying theoretical models, in order to generate specific hypotheses about the effects of worksite SMT programmes on outcome and process variables. These theoretical issues will shortly be discussed in more detail.

The penultimate review to be discussed in this section is a meta-analysis of the worksite stress management literature, conducted by van der Klink et al. (2001). These researchers adopted a more rigorous approach by only reviewing studies that used an experimental or quasi-experimental design. They located 43 individual-focused stress management studies that met their strict methodological criteria, 18 of which evaluated a *cognitive-behavioural* intervention, 17 evaluated a *relaxation* intervention, and 8 evaluated a *multimodal* programme. These intervention categories were broadly similar to

those employed by Murphy (1996), although it appears that most of the stress inoculation training (SIT) studies, which were classified as *multicomponent* by Murphy, were included in van der Klink et al.'s *cognitive-behavioural* category (e.g., Gronningsaeter et al., 1992; McCue & Sachs, 1991; Sharp & Forman, 1985; West, Horan, & Games, 1984). In this latter review, the multimodal category includes a fairly diverse range of interventions (only some of which are CBT-based), and so the following summary focuses on the cognitive-behavioural and relaxation intervention categories.

Table 1.2, below, indicates the overall effect sizes (across all outcome measures) associated with these two intervention approaches. As can be seen, van der Klink et al. found a *moderate* effect for cognitive-behavioural worksite interventions ($d = .68$), and a *small* effect for relaxation training ($d = .35$), according to Cohen's (1988) effect size criteria[3]. Moreover, cognitive-behavioural interventions, such as SIT, were found to be significantly more effective than relaxation training ($p < .05$), and marginally more effective than various other multimodal worksite interventions ($p = .06$).

Table 1.2
Summary of Results from van der Klink et al.'s (2001) Meta-Analytic Review

SMT Method	No. of Studies	No. of Participants	*d*	95% Confidence Interval
Cognitive-behavioural	18	858	0.68*	0.54, 0.82
Relaxation	17	982	0.35*	0.22, 0.48

Note. *d* = effect size; table adapted from van der Klink et al. (2001) (*p*. 273)
* $p < .05$.

When effect sizes were calculated for the various outcome categories, the pattern of findings was generally consistent with Murphy's qualitative review. Specifically, CBT-based interventions (i.e., SIT) were particularly effective for improving psychological

[3] According to Cohen (1988), effect sizes (measured by *d*) are small at .20, medium at .50, and large at .80.

coping resources (d = .65) and reducing anxiety (d = .70), but had a minimal impact on physiological stress indicators (d = .11). Relaxation training, on the other hand, had a significant impact on physiological outcomes (d = .31), but was less effective than cognitive-behavioural skills training in enhancing coping resources (d = .26) and reducing anxiety (d = .25). Neither relaxation nor cognitive-behavioural techniques appeared to have a significant impact on absenteeism, although this outcome variable was measured in only three of the reviewed SMT studies.

It is notable that van der Klink et al.'s findings are very similar to those observed in an earlier meta-analysis of stress inoculation training (SIT) (Saunders, Driskell, Johnston, & Salas, 1996). Saunders et al. (1996) sought to integrate the methodologically sound research (both published and unpublished) that has evaluated the impact of SIT on anxiety and performance outcomes. To this end, they reviewed several relevant worksite intervention studies (e.g., Forman 1981; Payne & Manning, 1990; Sharp & Forman, 1985), alongside a larger body of research that has evaluated SIT as a treatment for more specific anxiety problems (e.g., test, social, and health anxiety). Consistent with van der Klink et al. (2001), Saunders and colleagues found medium to large effects for SIT across the following three outcome categories: state anxiety (r = .37)[4]; performance anxiety (r = .51); and performance (r = .30). Moreover, the average effect size for the seven worksite studies reviewed by Saunders et al. was also of an essentially large magnitude (r = .49).

Taken together, the results of these two meta-analytic reviews appear to provide the most reliable evidence of the effectiveness of second wave CBT stress management interventions.

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[4] According to Cohen (1988), effect sizes (measured by r) are small at .10, medium at .30, and large at .50.

1.3.2 ACT Worksite Interventions

Bond and Bunce (2000) published the first study into the effectiveness of acceptance and commitment therapy (ACT) as a worksite stress management training (SMT) intervention. These researchers conducted a randomised controlled trial in a large UK media organisation, comparing ACT with a waiting-list control group, and an innovation training programme that was designed to teach workers how to reduce work-related stressors at their source. Both training programmes were delivered to small groups of employees using a "2+ 1" format (e.g., Barkham & Shapiro, 1990), which involves three training sessions: two on consecutive weeks, and a third "booster" session three months later. Each session lasted for approximately three hours.

In line with the ACT model of psychological distress, the intervention implemented by Bond and Bunce employed various metaphors and mindfulness exercises, which were designed to increase participants' willingness to experience difficult thoughts and emotions that may stem from stressful events. These mindfulness skills were, in turn, promoted as a method for reducing the extent to which participants' undesirable thoughts and feelings would function as barriers to goal-directed action (Bond & Hayes, 2002). Thus, in stark contrast to traditional (second wave) stress management programmes, this ACT worksite intervention was *not* based on changing the content of employees' stress-related cognitions (e.g., via cognitive restructuring). Rather, it sought to change the way that people responded to whatever thoughts, feelings, and physiological sensations that they were experiencing.

Bond and Bunce found that, over a six month evaluation period, ACT significantly reduced participants' psychological distress and enhanced their potential to be innovative at work. Employees in the two comparison groups experienced no significant

improvements in mental health, although the innovation training produced changes in innovation propensity equivalent to those observed in the ACT group. Neither ACT nor the innovation programme had a significant impact on work motivation or job satisfaction.

In another group-based ACT worksite study, Hayes, Bissett et al. (2004) investigated the impact of ACT on the stigmatising attitudes and burnout of substance abuse counsellors in the United States. Hayes et al. randomly allocated a group of these counsellors to attend an ACT intervention (n = 30), a multicultural awareness programme (n = 34), or a biologically based education programme (which served as the control group) (n = 29). All three training programmes were delivered via one day workshops. As with the previous study, the ACT intervention included various mindfulness exercises that were designed to reduce the impact – but not necessarily the form or frequency - of negative thoughts, beliefs, and emotions. For example, the trainer employed techniques to "bring up" the counsellors' difficult thoughts and emotions about their clients, and those counsellors were encouraged to practice experiencing these private reactions without believing or disbelieving them, and without trying to avoid them. The key outcome measures in this study (burnout and stigmatising attitudes towards their clients) were taken prior to the one day workshops (pre), immediately after the workshops (post), and three months later (follow-up).

The ACT group showed no change in stigmatising attitudes at post-treatment, but did show a significant improvement on this variable at the three month follow-up. The opposite pattern was found for the multicultural training condition, which resulted in significant improvement in counsellors' attitudes at post-treatment, but not at follow-up. There were no significant changes in the control group on this attitudinal variable. At the

follow-up, counsellors in the ACT group showed significantly more favourable attitudes towards their clients (i.e., less stigmatisation) than their colleagues in the educational control group. The ACT intervention also resulted in a significant reduction in burnout between baseline and follow-up; and, at the final assessment point, the ACT participants had significantly lower levels of burnout than both the multicultural training and control groups.

In a slightly different study, Dahl, Wilson, and Nilsson (2004) delivered ACT to a group of Swedish health workers who were at risk for long-term work disability (i.e., sick leave) resulting from stress and musculoskeletal pain. These researchers employed an additive treatment design, which involved nineteen of these workers being randomly assigned to one of two groups: 1) Medical treatment as usual (MTAU), which included visits to physicians and other medical specialists, and physical therapy interventions; or 2) MTAU plus ACT. In this study, the ACT intervention was delivered via four one-hour individual sessions, which were conducted weekly at the worksite or at employees' homes. The content of the intervention was based on four common ACT treatment components outlined by Hayes et al. (1999): clarifying *values*, promoting *cognitive defusion* (or mindfulness), encouraging goal-consistent *exposure*, and *committing* to identified goals. The specific purpose of the intervention was to foster a mindful and accepting posture towards disturbing thoughts, feelings, and sensations that participants were experiencing in relation to musculoskeletal pain. Additionally, in each of the four sessions, participants were encouraged to consider the extent to which their attempts to *avoid* pain symptoms interfered with their ability to move in personally valued life directions (e.g., engaging in meaningful work). The two key outcome measures employed by Dahl and her colleagues were sick leave utilisation (number of sick days), which was

objectively measured, and medical utilisation (e.g., number of visits to a physician etc.). Dahl et al. found that their ACT intervention had a significant and large effect on sick leave utilisation. At post-treatment, the workers who had received the four ACT sessions had a mean of 1 sick day over the past month, while those participants who only received medical treatment took an average of 11.5 sick days. By the six month follow-up, the difference between the two groups had widened considerably, with the ACT group averaging just 0.5 of a sick day across the six month follow-up period, in comparison to an average of 56.1 sick days taken by the medical treatment only group. In view of these differences, it is perhaps not surprising that the ACT group also paid significantly fewer visits to medical practitioners, with the ACT participants averaging 1.89 medical visits during the six month follow-up period, compared to 15.1 visits in the treatment as usual group.

To summarise, the preceding section reviewed the outcome research that has evaluated the effectiveness of second wave (stress inoculation training) and third wave (ACT) worksite stress management interventions. Overall, the empirical evidence supports the use of these CBT-based training programmes for reducing various manifestations of psychological distress (e.g., burnout and anxiety) and improving workers' coping resources; however, the effects of these interventions on work/organisational outcomes, such as job satisfaction and absenteeism, have been more equivocal (e.g., Bond & Bunce, 2000; Murphy, 1996; Reynolds, Taylor, & Shapiro, 1993b; Sallis et al., 1987). To date, no study has directly compared the effectiveness of second- and third-wave CBT worksite programmes, and this is one of the aims of the present thesis.

Although there is considerable diversity in the outcome research reviewed above, it is still possible to distil a number of general conclusions regarding a) the typical delivery formats, orientations, and recipients of CBT-based worksite programmes, and b) the quality of the methodologies used to evaluate these interventions.

First, the vast majority of worksite stress management programmes can be considered *preventive* in orientation, in that they are usually offered to all workers regardless of their initial levels of distress. This has implications for research in this area, and suggests that some of the findings reported above may have been "diluted" (due to a floor effect) by the heterogeneous employee groups that volunteer for stress management training (e.g., Bunce, 1997; Murphy, 1996). For example, it is likely to be more difficult to demonstrate a significant intervention effect for those workers who enter the training with normal levels of distress than it is for those with initially elevated levels of distress (Murphy, 1996). In relation to this issue, Murphy (1996) observed that 70% of the prevention-oriented studies that he reviewed reported positive results, compared with 94% of the treatment-oriented studies; similarly, across all of the worksite SMT studies reviewed by van der Klink et al. (2001), there was a larger effect size found for remedial interventions (d = .59; n = 4) than for the more common preventive programmes (d = .32, n = 44). It is also notable that the large effect of ACT on sick leave utilisation found by Dahl et al. (2004) was based on a sample of workers with relatively high baseline levels of musculoskeletal pain and distress: people who would be expected to have higher rates of sickness absence. In view of the above, it is not surprising that a number of commentators have recommended that researchers control for sample heterogeneity (e.g., baseline level of strain) when evaluating the effectiveness of worksite stress management

programmes (e.g., Bunce, 1997; Firth & Shapiro, 1986; Reynolds & Briner, 1994; Reynolds & Shapiro, 1991; Saunders et al., 1996; van der Klink et al., 2001).

A second feature of worksite SMT interventions is that they are usually delivered in small group formats rather than on an individual basis. The few studies that have evaluated one-to-one worksite interventions have tended to focus on workers with above average (i.e., clinical) levels of distress (e.g., Barkham & Shapiro, 1990; Dahl et al., 2004; Elliott & Shapiro, 1988; Firth & Shapiro, 1986; Shapiro et al., 1990; see West et al., 1984 for an exception). There appears to be no worksite SMT research that has directly compared the effectiveness of group and individual modes of delivery. Regardless, it is unlikely that many organisations would have the time or resources to provide individualised, one-to-one treatment to large numbers of employees, and thus the small group training format seems the most efficient and pragmatic way of imparting cognitive-behavioural skills to participants in work settings.

As mentioned earlier, there has been a great deal of variation in the duration of worksite stress management training programmes. The research reviewed above suggests that the "typical" programme is comprised of approximately seven sessions, which are most commonly delivered on a weekly basis, with each session lasting for between one and two hours (e.g., Murphy, 1996; Saunders et al., 1996; van der Klink et al., 2001). Surprisingly, the research suggests that longer SMT programmes are not necessarily the most effective. For example, van der Klink et al. (2001) found a significant *inverse* correlation (r = -.27) between the number of training sessions and effect size, indicating a greater benefit for shorter training programmes.

Finally, the research reviewed above indicates that stress management training programmes can be successfully delivered to a diverse range of occupational groups,

including white- and blue-collar workers, nurses, physicians, teachers, university staff, highway maintenance workers, military personnel, and police officers, to name but a few. Murphy (1996) notes that teachers, health care workers, and police officers have been frequently targeted for stress management, with blue collar workers being targeted less often. The literature also suggests that, in general, stress management training volunteers are more likely to be female than male (between 57% and 66% female, on average) (Kelley, 1995; Murphy, 1996); however, there appears to be no evidence to suggest that the gender of participants moderates the effectiveness of these interventions.

The methodological quality of worksite stress management research has undoubtedly improved over the last decade or so. To illustrate this, Murphy (1996) adopted the methodological criteria of the *American Journal of Health Promotion* (AJHP) to rate the rigour of the intervention research included in his review. Overall, this research received high marks on a range of methodological indices, including sample size, measurement reliability, statistical analyses, and experimental design. For example, nearly 90% of the studies used valid and reliable outcome measures, and almost three-quarters had at least 20 participants in the treatment group(s). Additionally, over half of the studies reviewed by Murphy were randomised control trials (RCTs), and therefore received the highest AJHP research rating.

Despite these general improvements in methodological rigour, most of the reviews cited in this section have highlighted the paucity of adequate follow-up assessments of worksite stress management programmes. For instance, less than a quarter of the studies reviewed by Murphy (1996) included a follow-up of at least six months; and, even amongst the generally well-designed studies reviewed by van der Klink et al. (2001), follow-up assessments (which were included in about half of the studies) were often

conducted in the absence of a control group. The relative infrequency of controlled follow-up measurement points may reflect the ethical and practical pressures that impinge upon the occupational stress management researcher. In particular, the inclusion of a no-treatment control condition typically requires the allocation of a number of employees to a waiting list, and withholding a desirable intervention for six months (or more) may be unacceptable to many participants and organisations. These methodological challenges notwithstanding, it is encouraging that a number of more recent worksite intervention studies have included controlled follow-up periods of at least six months (e.g., Bond & Bunce, 2000; Bunce & West, 1996; Dahl et al., 2004).

While these methodological issues are clearly important, it is apparent that most of the worksite stress management research reviewed above has been plagued by a more serious lack of *theoretical* sophistication (Murphy, 1996). For example, amongst the large body of outcome research that has evaluated variants of stress inoculation training, it is extremely difficult to locate any specific tests of the second wave CBT model that gave rise to this common intervention approach. This lack of theoretical grounding can pose a particular problem when the focus shifts from providing evidence of outcome effectiveness, towards attempting to understand *why* these worksite interventions are effective. This is illustrated in the following section, which discusses the challenges faced by researchers who have sought to identify SMT processes of change. As will be shown, overcoming these challenges is key in testing the cognitive-behavioural models of psychological distress and change that underpin worksite stress management programmes - a principal aim of this thesis.

1.4 Worksite Stress Management Training: Process Research

While the outcome research reviewed above is encouraging, it provides little information on the important issue of how or why the various SMT programmes actually help stress management participants. However, as SMT outcome studies have accumulated, researchers have increasingly focused on investigating the "active ingredients" of change in these worksite interventions (Reynolds, Taylor, & Shapiro, 1993a). As will be discussed below, most of the research strategies for investigating SMT processes have been adopted from the psychotherapy literature, which has traditionally been ahead of stress management research in terms of its conceptual and methodological sophistication (e.g., Bunce, 1997; Reynolds, Taylor, & Shapiro, 1993a&b; Stiles, Shapiro, & Elliott, 1986; Whisman, 1993).

The parallels between psychotherapy and stress intervention research were discussed by Bunce (1997), in a comprehensive review of factors that may be associated with worksite SMT outcomes (see also Reynolds et al., 1993a&b). As a starting point, Bunce reviewed the findings from a number of worksite studies that had compared different stress management techniques (e.g., relaxation training versus cognitive restructuring), many of which failed to find significant outcome differences between the contrasted treatments (e.g., Drazen et al., 1982; Higgins, 1986; Sallis et al., 1987). According to Bunce, such outcome equivalence in comparative SMT research indicates the existence of an "equivalence paradox" – a conundrum that has previously received a great deal of attention in the psychotherapy literature (e.g., Shapiro, 1995; Stiles et al., 1986). The equivalence paradox can be delineated as follows: psychological interventions that appear to be theoretically and technically distinct often produce similar improvements in outcome (e.g., Bunce, 1997; Elkin et al., 1989; Reynolds et al., 1993a; Stiles et al.,

1986). The failure to establish differential outcome effects of contrasting SMT programmes poses a dilemma because it seems to suggest that, no matter which approach or technique is employed, the end result is likely to be the same (Stiles et al., 1986). The unpalatable nature of this conclusion to many intervention researchers has resulted in a number of potential explanations of outcome equivalence, along with some specific research strategies that seek to resolve the apparent paradox.

Drawing on the psychotherapy literature, Bunce (1997) and Reynolds et al. (1993a) outline three possible interpretations of the outcome equivalence found in comparative SMT studies:

1. There are actual differences between contrasting SMT programmes, but methodological and design weaknesses within the studies mean that these differences often remain undetected.
2. SMT outcomes can be attributed to "non-specific" effects that are common to most worksite stress management interventions, rather than to the technical content of contrasting training programmes.
3. Technically (and theoretically) distinct SMT programmes produce broadly similar improvements in outcome variables, but they do so via different mechanisms of change.

Psychotherapy researchers have given attention to each of these interpretations in attempting to understand therapeutic outcome equivalence (e.g., Jacobson et al., 1996; Stiles et al., 1986; Whisman, 1993); however, similar research strategies have been used much less frequently in evaluations of worksite SMT interventions. For example, in relation to the first (methodological) interpretation listed above, comparative psychotherapy researchers routinely take steps to ensure that contrasted treatments are

clearly specified; this typically involves the development of detailed treatment manuals, and assessments of therapists' adherence to the specified treatment protocol(s) (e.g., Bunce, 1997; Stiles et al., 1986). In contrast, Bunce (1997) notes that worksite SMT researchers often fail to rigorously delineate between contrasting interventions, which can make it difficult to identify the exact nature of the interventions being evaluated, and which intervention components were responsible for the observed effects. This lack of specification was evident in the SMT outcome reviews discussed earlier, some of which showed inconsistencies in how they classified the various CBT-based worksite programmes that have been delivered (e.g., Murphy, 1996; van der Klink et al., 2001).

The second interpretation of the equivalence paradox (*non-specific* effects) is one of the more intriguing issues that has occupied both stress management and clinical intervention researchers. Non-specific effects stem from factors that are extraneous to the theoretically derived techniques of an intervention (e.g., cognitive restructuring or mindfulness practice). For example, non-specific effects might stem from such factors as the novelty of participating in an SMT, having people listen to one's concerns, receiving time off work to attend the training, or receiving empathy and attention from the trainer (Bunce, 1997; Murphy, 1984). As is discussed below, a small number of studies have attempted to assess the role of non-specific effects in CBT-based worksite programmes by: 1) using "placebo" conditions to indirectly control for expectancy and group process effects (which could conceivably produce non-specific treatment effects); 2) dismantling multicomponent SMT programmes (such as stress inoculation training) and comparing the different elements; or 3) employing session process measures to evaluate the possible influence of non-specific effects. As was mentioned previously, the importance of this research lies in its potential for identifying the active ingredients within worksite SMT

programmes, thereby increasing our understanding of *why* these interventions are effective (Bunce, 1997; Reynolds, Taylor, & Shapiro, 1993a).

1.4.1 Dismantling and Placebo Studies

In an early component analysis of worksite stress inoculation training (SIT), West, Horan, and Games (1984) compared the full SIT package (stress education, relaxation and cognitive coping skills, and in-session exposure) with each of its isolated elements and a no-treatment control group. Sixty acute care nurses were randomly assigned to the treatment conditions, and completed measures of anxiety, job-related tension, burnout, and blood pressure at pretest, five weeks later (posttest), and at four month follow-up. This study was unusual in that the intervention components were administered in weekly individual counselling sessions rather than the more typical group format. The results indicated that the coping skills component of SIT was the major active ingredient for reducing participants' psychological distress, and that the education and exposure conditions were ineffective when used in isolation. Hence, in this study, the benefits to participants could be attributed to the technical content of the training (i.e., coping skills), rather than to non-specific (e.g., expectancy or attention) effects (Bunce, 1997). It is interesting to note that West et al.'s (1984) finding – that coping skills acquisition is the principal active ingredient in SIT – is consistent with other (laboratory-based) component analyses of SIT (e.g., Horan et al., 1977; Meichenbaum, 1993; Vallis, 1984).

Whereas the above study suggests that the effects of worksite SMT can be attributed to the active technical components of the intervention, other comparative studies seem to suggest that non-specific effects may also contribute to post-intervention outcomes. Drazen, Nevid, Pace, & O'Brien (1982) compared the effectiveness of a CBT-

based programme (rational emotive therapy plus assertiveness training), a relaxation-based intervention (anxiety management training), and a hypertension education counselling control condition for reducing the blood pressure of workers with mild hypertension. Although blood pressure dropped in the cognitive and relaxation skills groups, there were no significant post-intervention differences between the three conditions. On the basis of these findings, Drazen et al. suggested that the post-intervention benefits could have been due to non-specific factors, such as routine blood pressure monitoring, peer support, and social pressure to make lifestyle changes, which were common to all the treatments in their study. However, it should be noted that there were only eight participants in the cognitive and relaxation groups, and only six in the education control condition. It seems unlikely that such a small sample would provide sufficient statistical power to detect between-group differences in blood pressure across time.

In a similar study, Sallis et al. (1987) randomly assigned 76 employees of two high tech companies to receive relaxation training, a multicomponent CBT-based programme (essentially SIT), or to an education/social support control group, which was designed to control for non-specific effects. Various stress-related measures were completed at baseline, after the eight week interventions, and at three month follow-up. At post-test, there were significant reductions in anxiety, depression, and hostility in all three conditions, but no differences between the two "active" intervention groups and the education/support control group. Because the education/support condition was designed to be "inactive" (i.e., a placebo), the authors concluded that non-specific factors, such as attention from the trainers and group support, may have been responsible for the observed reductions in psychological distress. However, while this study is an improvement on the

one conducted by Drazen et al. (in terms of sample size and outcome measures), it still contains a number of flaws that raise questions regarding their non-specific effects interpretation. For instance, the education/social support sessions in this study were designed to be interesting and credible, but not to teach specific coping skills; however, it is difficult to imagine that this group would not have discussed how to cope with stress at some point during the eight weekly sessions, and speaking about one's stressful thoughts and feelings in a group session can potentially promote mindfulness and even cognitive restructuring – important "active" elements of third- and second-wave CBTs. Moreover, the authors noted that some 20% of the study participants had previously attended SMT programmes, which further suggests that coping skills may have been reinforced and imparted amongst the education/support group members. Indeed, Sallis et al. themselves acknowledged this as an alternative interpretation of their findings. As their study did not include specific measures of coping skills, this interpretation cannot be ruled out.

These issues raise doubts about the viability of employing placebo conditions to indirectly control for non-specific intervention effects (Auerbach, 1989; Bunce, 1997; Parloff, 1986). As Auerbach (1989) has noted, a *credible* stress management placebo, which would require a fair degree of rapport between a facilitator and participants, is unlikely to be therapeutically inert, and may therefore stimulate coping mechanisms - such as cognitive restructuring, problem-solving, or mindfulness - that are likely to be associated with beneficial intervention outcomes. This may be one explanation for the lack of outcome differentiation in some of the studies that have contrasted "bona fide" stress management techniques with placebo control groups (e.g., Bunce, 1997; Murphy, 1983; Peters et al., 1977a&b; Sallis et al., 1987).

1.4.2 Session Impact Studies

In view of these limitations of placebo studies, some researchers have taken a more direct approach to evaluating and accounting for the processes of change in worksite SMT programmes. In three similar worksite studies, Reynolds et al. (1993a&b) and Bunce and West (1996) utilised a session impact methodology that had previously been successfully employed in psychotherapy research. This methodology employs two instruments – the Session Evaluation Questionnaire (SEQ; Stiles, 1980) and the Session Impact Scale (SIS; Wexler & Elliott, 1988) – which are both designed to be completed by stress management participants (or therapy clients) immediately after each session. The SEQ assesses the "depth" and "smoothness" of a session, along with the participant's post-session mood and level of arousal. The SIS, on the other hand, measures participants' perceptions of the helpful (and unhelpful) impacts of a session. The SIS dimensions assess *task* impacts, such as problem definition, awareness, and personal insight, which are hypothesised to reflect the degree to which the technical content of an intervention is imparted during a session; and *interpersonal* impacts, such as support, relief, and involvement, which are more akin to the non-specific effects described above (Reynolds et al., 1993b).

In the first of two studies, Reynolds et al. (1993a) administered the SEQ and SIS to 60 female UK healthcare workers who attended five or six weekly sessions of a typical second wave CBT-based programme (which included education (introduction), relaxation, cognitive restructuring, assertiveness, and time management components). Each session introduced a specific intervention approach (e.g., cognitive restructuring), which was then rated by participants immediately post-session. By using this design, the researchers were able to assess a) whether the task and interpersonal impacts showed an incremental

increase across the sessions, and b) the extent to which each of the specific SMT technical components had distinctive impacts.

Reynolds et al. (1993) found that problem definition and problem solution (task impacts), and support and relief (interpersonal impacts), all increased across the sessions, possibly reflecting incremental learning and the developing warmth and familiarity within the stress management groups. Ratings of personal insight were highest after sessions 2 (relaxation), 3 (relationships), and 4 (cognitive restructuring), and lowest after session 1 (education/introduction). Awareness ratings were highest after the cognitive restructuring session, and lowest after the education and time management components. The education and time management training components appeared to have very little impact on participants. The results of this study indicate that the different technical components of second wave worksite SMT programmes do have distinctive and predictable impacts on participants. According to Reynolds and her colleagues, these findings are consistent with the view that contrasting stress management techniques work through different mechanisms of change (i.e., the third interpretation of the equivalence paradox, listed above). However, this study did not employ the rigorous statistical procedures required to establish whether this was indeed the case. These analytical issues will be discussed in more detail in due course.

In a second study, Reynolds et al. (1993b) extended this line of research by assessing the extent to which specific technique-related impacts (e.g., personal insight and awareness) and non-specific interpersonal impacts (e.g., support and relief) were related to SMT outcomes. Using the same sample as in the previous study, Reynolds et al. (1993b) first evaluated the effectiveness of their multicomponent SMT programme on three outcome measures, which were administered at baseline, one month post-

intervention, and again at a three month follow-up. The six week intervention resulted in a significant decrease in psychological distress relative to a wait-list control group, but had no effect on job or non-job satisfaction.

In a second stage of analysis, the researchers correlated participants' session impact ratings (averaged across all sessions) with the three outcome variables. They found significant correlations between both task-oriented and interpersonal impacts and two of the outcomes. Those participants who reported more positive session impacts (both task and interpersonal) had higher levels of non-job satisfaction one month post-intervention; although, only one task impact (personal insight) was correlated with this outcome at three month follow-up. There were also significant correlations between the slopes of the session impacts that increased linearly across the sessions and post-intervention psychological distress. Specifically, greater increases in problem solution across the sessions were associated with lower levels of distress at three month follow up; similarly, participants who experienced increasing levels of support and relief over the course of the sessions had less distress at both post-intervention assessment points.

Hence, this study suggests that both task and interpersonal impacts experienced by stress management participants are associated with beneficial intervention outcomes (e.g., reduced distress). However, once again, this study did not utilise the necessary (mediational) statistical tests that would indicate which (if any) of these impacts were actually functioning as mechanisms of the observed outcome improvements.

Building on the findings of these previous two studies, Bunce and West (1996) used a similar session impact methodology to compare two distinct worksite SMT programmes. These researchers employed a quasi-experimental design to compare three conditions: (1) a traditional second wave CBT-based SMT programme (including

relaxation training, cognitive restructuring, managing emotions, and problem-solving); (2) an innovation promotion programme (IPP), which focused on helping participants to modify work-related stressors at their source (e.g., by developing action plans and improving workplace communication); and (3) a no-treatment control group. The healthcare workers who took part in the training completed session process measures after an initial one day session, and again after an additional half day session (which occurred one week later). The process variables included this study were: session depth; session smoothness; and insights into self and job.

The results indicated that the IPP intervention was superior to the second wave CBT-based SMT in reducing job-related distress and enhancing work innovation, while the CBT programme was superior in reducing more general psychological distress and increasing job satisfaction. These differential effects of the interventions on the two forms of distress were evident at six months post-intervention, but not at the one year follow-up. Further analyses found that some of the between-group outcome differences were attenuated when session process variables were controlled. Specifically, controlling for session smoothness reduced the between-group difference in job-related distress from the 5% to the 10% significance level. Similarly, the between-group difference in job satisfaction was less pronounced after the variance attributable to session insights had been accounted for. These findings suggest that contrasting interventions *can* be shown to have differential outcome effects (when more specific outcome measures are selected), and that process variables common to both interventions can mask some of these (often subtle) outcome differences.

In sum, the research that has investigated processes of change in worksite SMT programmes has been conducted with varying degrees of sophistication. The fundamental

question that lies behind this research concerns the extent to which SMT outcomes are due to the *technical content* of an intervention (e.g., cognitive restructuring), or to more *non-specific* interpersonal processes (e.g., experiencing warmth and support from a stress management group) (Bunce & West, 1996). Some of the early placebo studies suggested that the benefits of worksite stress management may be due to non-specific effects, although this research approach has since been questioned on both methodological and practical grounds (e.g., Auerbach, 1989; Bunce 1997). Studies that have dismantled multicomponent SMT programmes, such as stress inoculation training, suggest that the technical content of such interventions *is* important, and that the coping skills components are the active ingredients (e.g., West et al., 1984). More recently, attempts to directly measure process variables suggest that different SMT technical components have specific impacts on participants, and that non-specific interpersonal processes (such as support) are associated with SMT outcomes.

The use of the session impact methodology in the studies by Reynolds and colleagues (1993a&b) and Bunce and West (1996) undoubtedly represented an improvement in SMT process research, not least because the hypothesised process variables were directly measured and statistically associated with SMT outcomes. However, this methodological approach is not without its limitations. First, it is difficult to interpret the findings of these SMT process studies without the rigorous statistical procedures that are required to establish whether the session impacts were the mechanisms (or mediators) by which the interventions worked. An equally plausible interpretation of the findings from these studies is that the stress management interventions *independently* produced changes on the session impacts and the outcome variables (Bond & Bunce, 2000; 2001). In other words, it is impossible to tell whether the

session impacts were part of the process of change or merely additional outcomes of the SMT programmes.

A second major concern relates to the rather vague session impact constructs that have been used to reflect the technical content of interventions. For example, the *personal insights* impact is generally defined as "realising or understanding something new about myself", while the *awareness* impact relates to "becoming more aware of feelings or experiences I had been avoiding" (Bunce & West, 1996; Reynolds et al., 1993a).

While it can be seen why such "task" (or technique-oriented) impacts have been differentiated from more non-specific (or interpersonal) intervention effects, these constructs still appear to be too generic to reflect the technical content, or theoretical orientation, of any one stress management approach; indeed, such impacts could be expected from almost any psychotherapeutic intervention. Such a view is reflected in the clinical literature, where process of change research is more clearly guided by the theoretical models underpinning the interventions being evaluated. For example, most clinical evaluations of second-wave CBT have assessed changes in the form and/or frequency of dysfunctional cognitions, using measures such as the dysfunctional attitude scale (DAS) or the automatic thoughts questionnaire (ATQ), both of which reflect the underlying theory of emotional disorders and, hence, therapeutic change (e.g., Beck, et al., 1979; Burns & Spangler, 2001; DeRubeis et al., 1990; Persons & Burns, 1985; Whisman, 1993). In view of the fact that the most common stress management intervention - stress inoculation training - is underpinned by the same cognitive modification rationale, it is rather surprising that worksite SMT process researchers have paid little attention to such theoretically specific variables.

1.4.3 Investigating the Mediators and Moderators of Change

The present thesis seeks to address some of these theoretical and methodological shortcomings of previous stress management process research. It does so by following the recommendations of Bunce (1997), who called for a "new generation" of worksite SMT research that systematically examines the *mediators* and *moderators* of change: two analytical procedures that are now routinely employed in clinical evaluations of CBT to test underlying cognitive-behavioural theories of psychological distress (e.g., Hayes et al., 2006; Whisman, 1993).

In a seminal article, Baron and Kenny (1986) reviewed the conceptual, strategic, and analytical distinctions between mediators and moderators. This section provides a brief overview of these distinctions, and discusses the importance of these "third variable" functions for understanding why, and indeed for whom, stress management training is effective.

Mediator Variables

Baron and Kenny define a *mediator* as the "generative mechanism" through which an independent variable (e.g., an intervention) influences a dependent (or outcome) variable (p. 1173). Hence, the identification of a mediator can, for example, help to explain *how* or *why* an intervention outcome effect occurred, by establishing a causal sequence between three (or more) relevant variables. This casual sequence is more clearly illustrated in the path diagram in Figure 1.1.

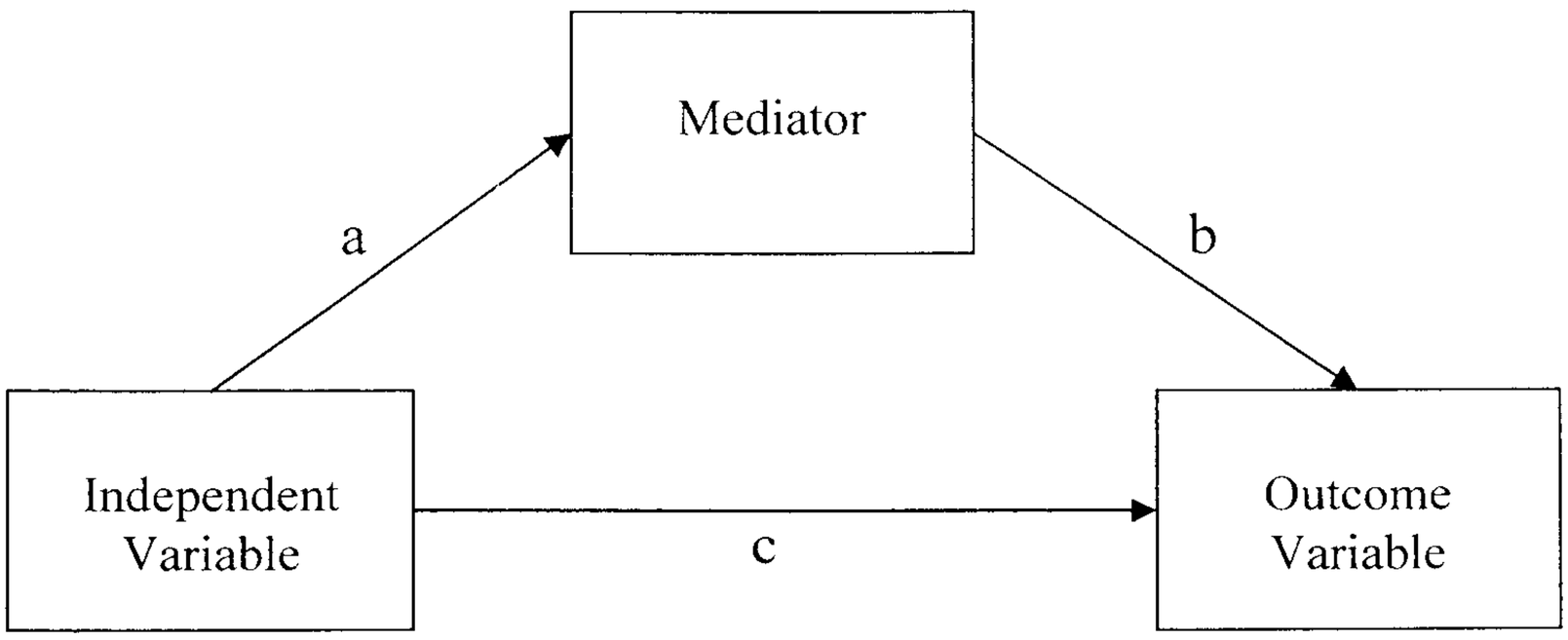

Figure 1.1 A mediator model (from Baron & Kenny, 1986, p. 1176)

According to Baron and Kenny (1986), a variable can only be said to be functioning as a mediator when the following four conditions are met:

1. The independent variable (e.g., an intervention) is significantly related to (or has a significant effect on) the outcome variable. Without this significant relationship, there is no effect to be mediated.

2. The independent variable is significantly related to the hypothesised mediator variable (i.e., path *a* in Figure 1.1).

3. The hypothesised mediator variable is significantly related to the outcome variable (i.e., path *b*).

4. The previously significant relationship between the independent and outcome variables (i.e., path *c*) is reduced to non-significance, after controlling for paths *a* and *b*. If path *c* is reduced to zero in this last condition, this provides evidence of *full* mediation; however, if path *c* is reduced (but not completely eliminated), *partial* mediation is indicated.

As is evident from these four criteria (and Figure 1.1), a mediator assumes the role of both a dependent variable (in condition 2) and an independent (or predictor) variable (in conditions 3 and 4). Statistically, these conditions are tested in a series of hierarchical regression equations that constitute "four tests" for establishing mediation (e.g., Baron & Kenny, 1986; Bond & Bunce, 2001).

There are good theoretical and practical reasons for investigating mediators of change in stress management (and other) intervention research. From a practical standpoint, the identification of potent mediators can lead to improvements in the effectiveness and efficiency of worksite SMT programmes. This could be achieved by increasing the number of techniques that are likely to specifically and directly target the identified mechanism(s) of change, and discarding those that do not (Bond & Bunce, 2001; Whisman, 1993). In terms of theory, as discussed above, stress management mediation research would provide a robust test of underlying (cognitive-behavioural) models of therapeutic change, thereby also potentially contributing to our understanding of the aetiology and maintenance of the mental health outcomes under study (e.g., anxiety, stress, and/or depression) (e.g., Bond & Bunce, 2000; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Whisman, 1993).

Moderator Variables

In contrast to a mediator, which represents the intervening mechanism by which an independent variable influences a dependent variable, a *moderator* is defined as a "variable that affects the *direction and/or strength* of the relation between an independent or predictor variable and a dependent or criterion variable" (Baron & Kenny, 1986, p. 1174; italics added). The essential function of a moderator variable is illustrated in Figure 1.2.

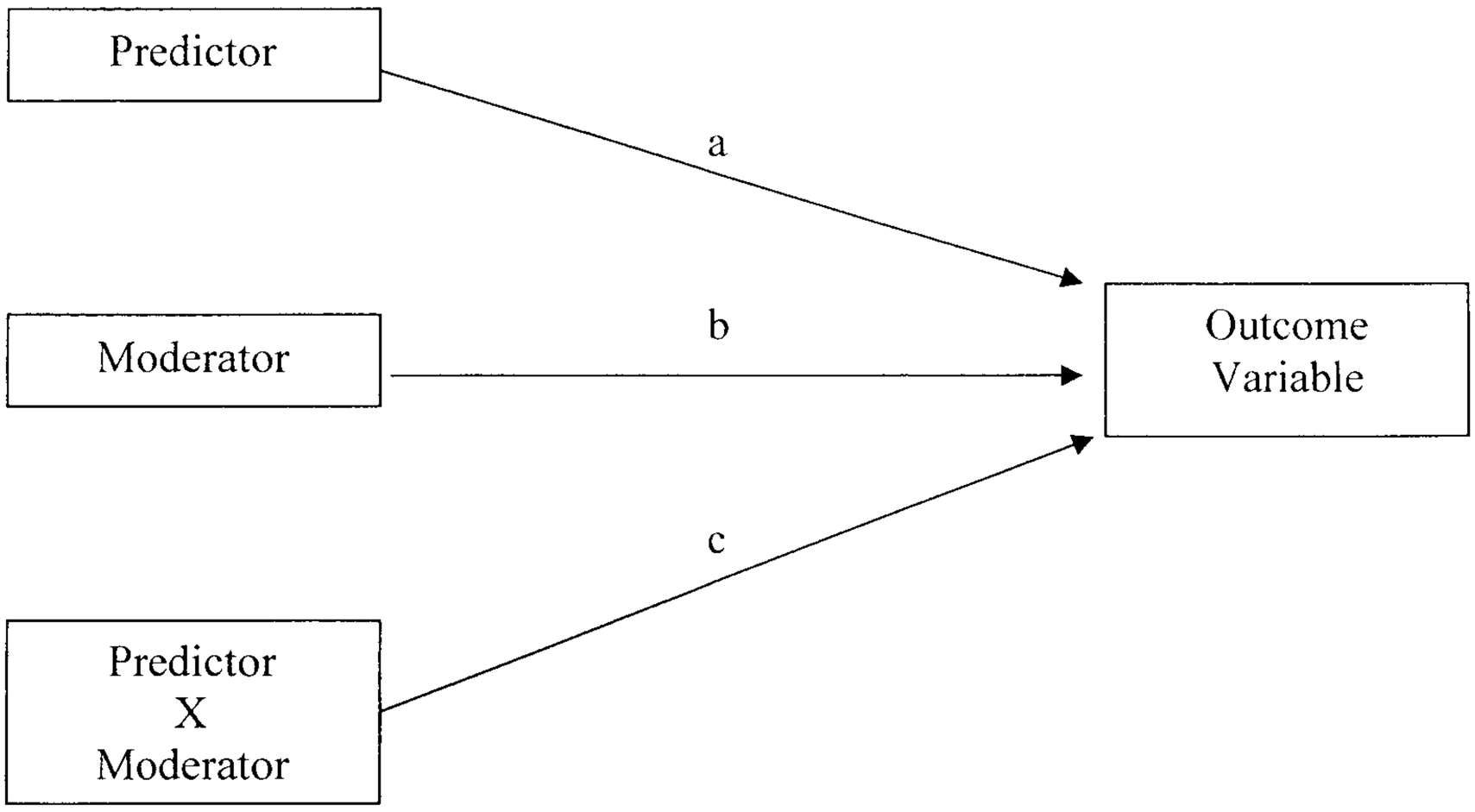

Figure 1.2 A moderator model (from Baron & Kenny, 1986, p. 1174)

Analytically, a moderator hypothesis is supported when the interaction (or product) term depicted in Figure 1.2 is significantly related to the outcome variable (i.e., path *c* in Figure 1.2), after controlling for the main effects of both the predictor and the hypothesised moderator (i.e., paths *a* and *b*, respectively). Tests for moderation are typically conducted using either analysis of variance or (preferably) moderated multiple regression, with the choice of analysis partly dependent on the level of measurement of the predictor and moderator (i.e., whether they are continuous or categorical variables) (Baron & Kenny, 1986).

Whereas identifying mediator variables will help to explain why an SMT programme is effective, moderator variables can enhance our understanding of the circumstances in which an intervention is likely to be effective, as well as the characteristics of the individuals who benefit most (Bunce, 1997). For example, a number of stress management authors have noted how worksite stress management interventions are typically offered to all employees, regardless of their initial levels of psychological

distress (e.g., Briner & Reynolds, 1994; Murphy, 1984; 1996; van der Klink et al., 2001). As a result, it is possible that participants with low levels of pre-intervention distress would "dilute" the observed effectiveness of these programmes (Bunce, 1997; Bunce & Stephenson, 2000). Although this issue is frequently discussed in the worksite SMT literature, there appear to be no studies that have tested the moderating effects of baseline levels of strain on SMT outcomes, using the rigorous analytical procedures outlined above.

1.5 Thesis Outline

The present thesis aims to enhance the theoretical and methodological yield of worksite stress management research by investigating the mediators and moderators of change. First, to address the lack of theoretical grounding in previous SMT research, the following strategies will be employed: 1) change will be assessed on constructs that are hypothesised to reflect the cognitive-behavioural theories underpinning the SMT programmes being delivered; and 2) the statistical procedures outlined above will be used to establish whether these constructs are actually functioning as *mediators* (or mechanisms) of the mental health improvements that typically result from these worksite interventions.

More specifically, a principal aim of this thesis is to compare the psychological mechanisms underpinning the outcomes of a "third wave" CBT worksite intervention (acceptance and commitment therapy) on the one hand, with a more traditional "second wave" CBT worksite programme (stress inoculation training) on the other. The specific constructs that are hypothesised to mediate change in these two contrasting interventions are discussed in the first two empirical studies contained in this thesis (Chapters 2 and 3).

In addition to investigating theoretically derived mechanisms of change in ACT and SIT interventions, the present thesis also examines a potential *moderator* of change in these worksite stress management programmes. Specifically, the study described in Chapter 4 addresses two related empirical questions: 1) whether the variance in baseline levels of distress experienced by worksite stress management participants moderates (or "dilutes") the observed effectiveness of these interventions; and 2) whether any pre- to post-intervention improvements in mental health experienced by initially distressed SMT participants would meet the stringent criteria for clinically significant and reliable change.

CHAPTER 2

CHAPTER 2: Study I

Acceptance and Commitment Therapy and Stress Inoculation Training at Work: Investigating the Mediators of Change

Abstract

One hundred and fifty four local government employees were randomly allocated to one of three groups: 1) a stress management training (SMT) programme based on Acceptance and Commitment Therapy (ACT, $n = 47$); 2) Stress Inoculation Training (SIT; $n = 56$); or 3) a waitlist control group ($n = 51$). Both interventions were delivered via three half day sessions spread over three months. The ACT intervention cultivated mindfulness and values-based action skills to increase employees' willingness to experience difficult thoughts and feelings. In contrast, SIT imparted relaxation, cognitive restructuring, and problem-solving coping skills. Both ACT and SIT were associated with significant reductions in psychological distress across a six month assessment period. Consistent with the underlying models of change, the improvements in mental health in the ACT condition were mediated by an increase in psychological flexibility, while the benefits of SIT were mediated (at least in part) by a reduction in dysfunctional cognitions. The theoretical and technical differences between these two approaches were also reflected in participants' use of thought reappraisal strategies and in their beliefs about the importance of controlling difficult thoughts. Worksite SMT programmes appear to offer a useful, yet underutilised, arena for testing cognitive-behavioural theories of change.

Introduction

Worksite stress management training (SMT) is probably the most widely implemented, and empirically evaluated, type of intervention for the prevention and reduction of occupational stress. Worksite SMT programmes are typically comprised of a combination of cognitive-behavioural therapy (CBT) techniques, such as cognitive restructuring and relaxation training, and are designed to enhance employees' coping resources. Large-scale reviews of the worksite stress management literature suggest that these CBT-based interventions are generally effective for reducing various manifestations of psychological distress (e.g., anxiety, stress symptomatology) and for increasing coping skills (e.g., Murphy, 1996; Saunders et al., 1996; van der Klink et al., 2001); although, the effects of these training programmes on work and organisational outcomes, such as job satisfaction and absenteeism, appear to be less predictable (e.g., Bond & Bunce, 2000; Bunce & West, 1996; Reynolds et al., 1993a).

Whilst the worksite stress management movement has wholeheartedly embraced CBT technologies, it is apparent that researchers have generally failed to use empirical evaluations of SMT programmes to test the cognitive-behavioural theories underpinning these interventions. Consistent with this lack of theoretical focus, researchers have rarely assessed how SMT programmes actually work; that is, they have not evaluated change on the core theoretical constructs by which these interventions are presumed to produce their effects (e.g., dysfunctional cognitions or metacognitive skills). In contrast, in the clinical literature (which is more theoretically and methodologically advanced), empirical assessments of CBT are typically conducted *with the expressed purpose* of rigorously testing the particular model of psychological distress and therapeutic change (e.g., Beck's cognitive model of psychopathology) that gave rise to the intervention being evaluated

(e.g., cognitive therapy) (e.g., Burns & Spangler, 2001; DeRubeis et al., 1990; Hayes et al., 2006; Whisman, 1993).

The low priority given to testing CBT theories in stress management research can pose a particular problem when seeking to identify the mechanisms of change in worksite interventions. As discussed in the general introduction, the few studies that have sought to measure SMT processes of change have employed fairly generic indicators of the "interpersonal" and "task" impacts of stress management sessions, which were not specifically derived from the CBT theoretical model underlying the interventions that were being evaluated (Bunce & West, 1996; Reynolds et al., 1993a&b). For example, interpersonal (or "non-specific") impacts reflect the support and relief that may be associated with participating in a stress management group, while task impacts include the enhanced problem definition and personal insight that can stem from various stress management techniques (Reynolds et al., 1993b). While this session impact methodology has produced some interesting findings (see Bunce, 1997 for a review), it does not provide a rigorous evaluation of the psychological mechanisms thought to be responsible for the therapeutic benefits of cognitive-behavioural interventions (e.g., Barber & DeRubeis, 1989; Beck et al., 1979; Free, 1999; Whisman, 1993; Teasdale et al., 1995).

Fortunately, there appears to be no practical or conceptual barriers preventing worksite SMT researchers from more rigorously testing cognitive-behavioural theories of change, in much the same way as these tests are conducted in clinical research (Bunce, 1997; Whisman, 1993). As Bunce (1997) notes, this would involve researchers assessing the effects of worksite SMT programmes on theoretically derived variables, and the application of mediation analyses to establish whether these variables are actually functioning as mechanisms of change.

In addition to addressing these theoretical and methodological issues, it is important that worksite SMT research incorporates the recent developments that have been taking place in the theory and practice of CBT. In particular, a "third wave" (Hayes, 2004a) of CBTs has recently emerged, which is characterised by a shift away from the traditional ("second wave") CBT emphasis on modifying the content of people's unwanted psychological experiences (negative thoughts and feelings); instead, the third wave CBTs generally seek to alter the fundamental way that people relate to these undesirable experiences (e.g., Baer, 2003; Hayes, Strosahl et al., 2004; Linehan, 1993; Segal et al., 2002). These third wave therapies are united by their use of *mindfulness* techniques, which encourage people to observe non-judgmentally the ebb and flow of their psychological content, without becoming overly entangled in that content or seeking to modify its form or frequency.

At the forefront of this new generation of CBTs is *acceptance and commitment therapy* (ACT; Hayes et al., 1999), a mindfulness-based approach that has recently been adapted for use in the worksite training context (Bond, 2004; Bond & Bunce, 2000; Bond & Hayes, 2002). While a few studies have demonstrated the effectiveness of ACT as a worksite stress management intervention (Bond & Bunce, 2000; Dahl et al., 2004; Hayes, Bissett et al., 2004), no research has directly compared ACT with a more traditional second wave worksite SMT programme, such as stress inoculation training (SIT). Previous stress management research suggests that both ACT and stress inoculation training (SIT) can be effective in improving employees' general mental health (e.g., Bond & Bunce, 2000; Bunce, 1997; Keogh et al., 2006; Saunders et al., 1996). However, the contrasting theoretical and technical orientations of these two intervention approaches would suggest that they operate via distinct mechanisms (or mediators) of change.

Hence, a principal objective of the present study was to examine the theoretically specified, and distinct, mechanisms of change by which ACT and SIT are hypothesised to produce their benefits in the workplace. In so doing, this study not only tests core theoretical propositions of second and third wave CBTs, it also enhances the theoretical yield, and methodological sophistication, of stress management research, by focusing on mediating variables.

The Hypothesised Mediator of Change in Stress Inoculation Training (SIT): Dysfunctional Cognitions

As discussed in the general introduction to this thesis, stress inoculation training (SIT) is one of the most widely endorsed multicomponent interventions to have emerged from the "second generation" CBTs (e.g., Meichenbaum, 1985; 1993b; Meichenbaum & Deffenbacher, 1988). Indeed, the SIT protocol has essentially provided the blueprint for the majority of worksite coping skills programmes that have been evaluated over the past 25 years or so (e.g., Ganster et al., 1982; Novaco, 1977; Saunders et al., 1996; van der Klink et al., 2001).

While the multifaceted nature of SIT is perhaps one of its most useful features, some authors have noted that its use of a range of different intervention techniques (e.g., relaxation, cognitive restructuring, and problem-solving strategies) poses a problem when attempting to identify a single, underlying cognitive-behavioural rationale for this approach (Gardner, Rose, Mason, Tyler, & Cushway, 2005; Huebner, 1988; Orsillo et al., 2004). Nevertheless, a glance at the general SIT literature suggests that the most prominent theoretical explanation for the effectiveness of SIT is provided by Beck's cognitive model of psychopathology, which lies at the heart of second wave CBT (e.g., Beck et al., 1979; Meichenbaum, 1985). To reiterate, Beck's model is based on the

following basic assumptions: a) that most forms of psychological distress stem from the dysfunctional content of people's cognitions; and b) that psychological distress can, therefore, be alleviated by teaching individuals how to modify the form and/or frequency of dysfunctional thinking (e.g., Beck, 1976; Beck et al., 1979; Beck & Emery, 1985; and see section 1.2.1 in the general introduction).

The conceptual and technical overlaps between SIT and Beck's model were highlighted by Meichenbaum (1985), who described how the cognitive restructuring procedures at the heart of SIT are based on Beckian principles and techniques; others have further suggested that this cognitive restructuring skills component constitutes SIT's most potent ingredient (Block, 2002; Gardner, et al., 2005; Jaremko, 1979). In fact, in many cases, the technical content of SIT would be almost indistinguishable from any other Beck-oriented intervention; in that, most Beckian cognitive-behavioural therapists employ relaxation training, problem-solving, and behavioural techniques as ways to facilitate the ability of clients to identify and modify the content of dysfunctional cognitions (e.g., Block, 2002; Orsillo et al., 2004; Robins & Hayes, 1993).

Thus, when attempting to identify a prominent mediator of change in SIT, it seems logical to consider the variables that reflect Beck's cognitive model of psychopathology. In the clinical literature, research has particularly focused on testing Beck's hypothesis that second wave CBT (i.e., cognitive restructuring) reduces depression by helping people to modify problematic cognitive content. To this end, various cognitive constructs have been investigated as potential mechanisms of change, including negative "automatic" thoughts, attributional style, and dysfunctional attitudes or beliefs. While the results of this research have been mixed (see Whisman, 1993 for a review), a number of studies

have provided at least some support for Beck's cognitive mediation hypothesis (e.g., Beckham, 1990; DeRubeis et al., 1990; Whisman, 1993).

One of the measures most frequently employed in this second wave CBT mediation research is the Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978). The DAS is designed to tap the content of particular core beliefs (or "schemas") that - according to Beck's cognitive model of psychopathology - represent risk factors for depression and other forms of psychological/ emotional distress (e.g., Beck et al., 1979; Beck & Emery, 1985). These beliefs take the form of conditional propositions, the content of which tends to cluster around the following two themes: 1) gaining approval and respect from others (*need for approval*) (e.g., "I should be able to please everybody"); and 2) maintaining high levels of performance in all endeavours (*perfectionism*) (e.g., "If a person is not a success, then his life is meaningless"). According to Beck, these core dysfunctional cognitions underpin the negative distortions, or biases, that are typically found in the automatic thoughts of distressed individuals (Beck et al., 1979; Free, 1999). Hence, beneficial changes in the core beliefs represented in the DAS are viewed as a principal mechanism of change in second wave CBT (DeRubeis et al., 1990).

Although the DAS was originally constructed to reflect Beck's cognitive model of depression, there are good empirical reasons to support the use of this scale as a potential mediator of change in a SIT-based worksite intervention. First, as discussed above, SIT is theoretically and technically related to Beck's cognitive modification approach. Second, a number of clinical researchers have found that the dysfunctional cognitions represented on the DAS also play an important role in other forms of psychological distress (e.g., general mental health, anxiety, and stress) (e.g., Beck, 1993; White, 2000; Burns & Spangler, 2001; Whittal & Dobson. 1991). Moreover, occupational researchers have

found that employees with higher scores on the DAS experience significantly higher levels of psychological distress and lower levels of job satisfaction, suggesting that the core cognitions in the DAS also have predictive utility amongst non-clinical, working populations (Guppy & Weatherstone, 1997; Judge & Locke, 1993).

Additional support for evaluating change in dysfunctional cognitions as a potential mechanism in SIT is provided by a recent study by Keogh, Bond, and Flaxman (2006). These researchers implemented a multicomponent, second wave CBT stress management programme (based on SIT; Flaxman, Bond, & Keogh, 2002) with a group of 15 to 16 year old UK school pupils who had been randomly selected from their school year cohort. A ten-week SMT programme resulted in significant improvements in general mental health for the 40 pupils who were allocated to the intervention group (compared to a no-treatment control group). Further analyses suggested that these mental health improvements were partly mediated (or accounted for) by reductions in the pupils' dysfunctional cognitions (measured by the DAS). This mediation finding is consistent with the second wave CBT theory outlined above: that restructuring dysfunctional cognitions will result in improved mental health (Keogh et al., 2006). The present study extends this line of research, by investigating whether change in dysfunctional cognitions also mediates the effect of SIT on mental health in the workplace.

The Hypothesised Mediator of Change in Acceptance and Commitment Therapy (ACT): Psychological Flexibility

Whereas stress inoculation training (SIT), like other second wave CBTs, seeks to change the content of dysfunctional cognitions, ACT targets the problematic functions of undesirable psychological events (e.g., difficult thoughts) and aims to change the fundamental way in which a person relates to such events (Hayes et al., 1999). In ACT,

this focus is achieved via six interrelated therapeutic processes: contact with the present moment; acceptance; cognitive defusion; self-as-context; values; and committed action. These components of ACT are conceptualised as psychological skills that can be established through various mindfulness and experiential techniques, and value/goal clarification exercises. The six ACT components can be further grouped into two broad skill sets: *acceptance/mindfulness* (i.e., the willingness to experience undesirable internal events); and, *values-based action* (i.e., the ability to take action even in the face of such events. These skills combine to enhance *psychological flexibility*[5] : the ability to contact present moment experience, and to engage in consistent action that moves one in valued life directions, even in the face of difficult psychological content (Hayes, Strosahl et al., 2004).

The two broad sets of ACT skills, and hence psychological flexibility, are typically measured using the Acceptance and Action Questionnaire (AAQ; Hayes, Strosahl, Wilson et al., 2004). Consistent with the ACT model of psychopathology, a growing body of research that has employed the AAQ indicates that psychological *in*flexibility is significantly related to various forms of psychopathology, including depression, various phobias, self-harm, posttraumatic stress, and generalised anxiety (see Hayes et al., 2006 for a review of this research). Moreover, in clinical and health intervention studies, increases in psychological flexibility have been found to mediate a number of favourable ACT outcomes, including reductions in depression, successful smoking cessation, improved self-management amongst diabetics, and alleviations in distress amongst psychotic inpatients (e.g., Hayes et al., 2006; Hayes, Masuda et al., 2004).

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[5] This construct has previously also been referred to as psychological acceptance and, conversely, experiential avoidance (e.g., Bond & Bunce, 2000; Hayes, Strosahl, Wilson et al., 2004)

Of particular relevance to the present study is the research conducted by Bond and Bunce (2000), which provided the first empirical evaluation of ACT as a worksite stress management intervention. These investigators randomly allocated employees of a large UK media organisation to receive an ACT intervention, an innovation training programme (that was designed to help participants identify and modify sources of stress at work), or to a wait-list control group. Across a six month assessment period, general mental health increased significantly in the ACT group, but not in the innovation training or control groups. Furthermore, mediation analyses indicated that this beneficial effect of ACT on mental health was fully mediated by increases in the employees' psychological flexibility, and *not* by improvements in the content of their dysfunctional cognitions (as measured by the DAS). This pattern of ACT mediation was again examined in the present worksite intervention study.

Metacognitive Strategies and Beliefs

The theoretical and technical differences between ACT and SIT are also likely to be reflected in the contrasting metacognitive strategies that they promote for dealing with difficult thought content. For example, as described previously, SIT involves a considerable cognitive restructuring component, which teaches people how to recognise and reappraise negatively distorted thoughts about particular events (Meichenbaum, 1985). In stark contrast, ACT interventions encourage individuals to "give up the struggle" with the content of difficult thoughts, in order to observe them mindfully and non-judgementally (i.e., learning to view thoughts "as thoughts") (Hayes, Strosahl, Bunting et al., 2004).

Hence, SIT is much more "control-oriented" than ACT, in that SIT imparts thought reappraisal skills to provide individuals with a greater level of control over difficult thoughts (Meichenbaum, 1985; 1993b). From an ACT perspective, such attempts to modify cognitive content can reflect experiential avoidance (an unwillingness to stay in contact with difficult psychological content), which is viewed as part of the problem in psychological distress, rather than the solution (e.g., Hayes et al., 1996; Hayes et al., 1999). In view of these fundamental differences between the two approaches, it seems likely that ACT would be associated with a decrease in thought reappraisal, while SIT may well lead to an increase in the use of this cognitive coping strategy. On the same basis, it is conceivable that ACT and SIT interventions would also result in a differential impact on people's beliefs about the need to control undesirable thoughts. The present study examines both of these hypotheses.

The Present Study

The first aim of this study was to compare the efficacy of SIT and ACT interventions for improving employees' mental health. Based on the outcome findings of previous worksite SMT research (e.g., Bunce, 1997), it was predicted that ACT and SIT would have a broadly similar impact on general mental health (reduced psychological distress). The present study was also designed to examine the theoretically derived mechanisms of change in SIT and ACT. Following from Beck's cognitive model of psychological distress (e.g., Beck, 1976), it was hypothesised that a reduction in dysfunctional cognitions would mediate the impact of SIT on general mental health. In contrast, based on the ACT model of psychopathology (e.g., Hayes, 2004b) and the findings of Bond and Bunce (2000), it was predicted that psychological flexibility would

function as the principal mediator of change in an ACT intervention. Finally, in view of the technical differences between ACT and SIT, it was predicted that SIT would be associated with an increase in the use of thought reappraisal, while ACT would lead to a reduction in the use of this coping strategy; and, following the same rationale, that ACT (but not SIT) would result in a reduction in employees' beliefs about the importance of controlling difficult thoughts.

Method

Design

This randomised controlled group study compared three conditions: (1) an acceptance and commitment therapy (ACT)-based stress management training programme [ACT]; (2) a traditional second wave CBT stress management training programme, based on stress inoculation training [SIT]; and (3) a wait-list control group [control]. Various outcome and mediator measures were administered at baseline (Time 1), three months after an initial training phase (Time 2), and again three months after a final session of training (Time 3). Hence, Time 3 occurred six months after Time 1 (see Procedure for further details).

Participants

Participants were employees of two large local government organisations in London who had volunteered for stress management training. The volunteers responded to advertisements for the training (see Appendix 1), which were sent through internal electronic mail systems, and strategically placed on notice boards throughout the two organisations. One hundred and fifty four participants (68% female) who volunteered for the training completed questionnaires at the first two assessment points (i.e., Time 1 and Time 2). Of these participants, 47 had previously been randomly assigned to the ACT group, 56 to the SIT group, and 51 to the control group. The mean age of the participants was 39.6 years (sd = 8.6; range 18-63). They had, on average, worked in their current organisation for 9.5 years (sd = 6.9; range 0-29), and they worked an average of 37 hours per week (sd = 6.0; range 14-55), with 17% working in excess of 40 hours per week. Twenty five percent classified themselves as single, 61% as married or with a partner, and

13% as divorced or separated. Fifty one percent indicated that a UK school qualification (e.g., 'O' or 'A' level) was their highest education level completed, while 30% held a university undergraduate degree, and 14% a postgraduate degree. Sixty two percent classified their job role as clerical or administration, 2% as manual, 26% as middle management/technical, and 11% as senior management/professional. Participants were mainly drawn from the housing and social services divisions within the two participating organisations. As a result, they were responsible for the administration of housing or other social security benefits, council tax collections, or for the provision of other community and environmental services (e.g., libraries, parks, social care facilities, and social housing maintenance). The majority of participants had job roles that involved daily telephone and/or face-to-face interaction with members of the public.

Measures

Participants completed a battery of self-report questionnaires at the three assessment points (Time 1, Time 2, and Time 3). The following instruments, which reflect the various hypothesised outcome and mediator variables, were included. Copies of these questionnaires can be found in Appendix 2.

Outcome Variables

The General Health Questionnaire (GHQ-12; Goldberg, 1978) was used to measure participants' general psychological distress. This 12-item scale has been widely used in occupational health research and has been shown to have very good psychometric properties (e.g., Banks et al., 1980; Bunce & West, 1996; Goldberg & Williams, 1988; Hardy et al., 1999; 2003; Reynolds et al., 1993b). Respondents were asked to indicate

whether they had recently experienced a range of common symptoms of mental ill-health (e.g., "Have you recently….lost much sleep over worry?"), which were rated on a 4-point response scale (e.g., *not at all* to *much more than usual*). Higher scores on the GHQ reflect greater levels of psychological distress. For the present study, the Likert scoring method was used, which assigns values of 0, 1, 2, or 3 to each of the four response options (hence, scores could range from 0 to 36). Cronbach alphas for the GHQ were .90, .93, and .92 at the three measurement time points in this study.

Two additional instruments were chosen for their potential to reflect key theoretical and technical difference between the ACT and SIT interventions. First, the Thought Control Questionnaire (reappraisal scale) (Wells & Davies, 1994) was used to assess the extent to which participants sought to reappraise intrusive and distressing thoughts (e.g., "When I experience an unpleasant/ unwanted thought…..I challenge the thought's validity"). The TCQ employs a 4-point response scale, ranging from *never* to *almost always*. Non-clinical samples tend to score higher on the reappraisal subscale of the TCQ than individuals diagnosed with a clinical disorder (such as generalised anxiety disorder) (Wells, 2000). There was acceptable internal consistency for this scale across the three time points in the current study (Cronbach alphas: .72 at Time 1; .77 at Time 2; and .80 at Time 3).

Additionally, the Metacognitions Questionnaire (MCQ; negative beliefs scale) (Cartwright-Hatton & Wells, 1997) was administered to tap participants' beliefs about the need to control difficult thoughts (e.g., "I should be in control of my thoughts all the time"). Respondents' were asked to indicate their level of agreement with 13 such items on a 4-point scale (*do not agree* to *agree very much*). Higher scores on this instrument

tend to be found amongst clinical populations (Wells, 2000). Cronbach alphas were .83, .84, and .86 at Time 1, Time 2, and Time 3, respectively.

Mediator Variables

Psychological flexibility was measured using a 17-item version of the Acceptance and Action Questionnaire (AAQ). The AAQ is designed to reflect the key processes targeted in ACT interventions (Hayes et al., 2006). Specifically, the scale assesses a person's willingness to experience undesirable thoughts and feelings (e.g., "It's OK to feel depressed or anxious"), and a person's ability to take action in the presence of difficult thoughts and feelings (e.g., "There are not many activities that I stop doing when I am feeling depressed or anxious"). Respondents indicated their level of agreement with each item on a 7-point response scale ranging from *never true* to *always true*. Recent research that has employed the AAQ suggests that it is psychometrically sound (e.g., Bond & Bunce, 2003; Hayes et al., 2006; Hayes, Strosahl, Wilson et al., 2004). In terms of validity, a recent review of 27 studies that employed the AAQ found that higher scores on this measure (i.e., greater psychological flexibility) were reliably associated with a range of favourable outcomes, such as lower levels of depression, stress, and anxiety, and better job performance (Bond & Hayes, 2005). In the present study, the AAQ had acceptable reliability at each of the three time points (alphas: .79; .80; and .84). The items were scored such that higher scores indicated higher levels of psychological flexibility.

The 40-item version of the Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978) was used to assess participants' core dysfunctional cognitions. As discussed in the introduction, the DAS is one of the most widely used measures for evaluating change in second wave CBT interventions (e.g., DeRubeis et al., 1990; Rector et al.,

1999; Whisman, 1993). The scale contains a number of conditional propositions that tend to cluster around two themes: perfectionism (e.g., "If a person is not a success, then his life is meaningless") and need for approval (e.g., "I should be able to please everybody") (e.g., Cane et al., 1986; Persons et al., 1991). According to Beck's cognitive model of psychopathology, strong endorsement of DAS items reflects a cognitive vulnerability for depression and other forms of negative affect (e.g., Beck, 1976; Beck et al., 1979; Free, 1999; Segal & Shaw, 1988). Respondents were asked to indicate their level of agreement with each item on a response scale ranging from 1 (*disagree totally*) to 7 (*agree totally*). In the present study, the alpha coefficients for the DAS were .90, .92, and .92 at each of the three measurement points. Higher scores on the DAS indicate a higher level of dysfunctional thinking.

The SMT Programmes

The two training programmes (i.e., ACT and SIT) were delivered during working hours to small groups of employees at the two participating organisations. The average training group (across all sessions) was comprised of four or five participants. The "2 + 1" method of delivery was used for both interventions, whereby participants received three sessions of training - two on consecutive weeks, and a third "booster" session three months later (see Barkham & Shapiro, 1990; Bond & Bunce, 2000). Each training session lasted for approximately two and a half to three hours. Both training programmes were delivered by the author of this thesis.

There were some similarities in the general structure of the ACT and SIT programmes. First, both interventions began with a general discussion of the nature and consequences of stress. Second, both programmes involved a mixture of group discussion

and didactic instruction, and provided participants with opportunities to practice techniques during each session. Finally, both intervention groups received homework assignments at the end of each session, along with supporting handouts and audiotapes to facilitate learning. However, as discussed in the introduction, there are marked differences between ACT and SIT interventions in terms of their respective rationales and technical content. The following section illustrates some of these differences by providing a brief overview of the content of the three sessions for each programme. (The handouts contained in Appendices 3 and 4 describe the ACT and SIT interventions in more detail, and illustrate some of the language that was used in the sessions).

ACT

The ACT SMT programme closely followed a comprehensive treatment protocol developed by Hayes et al. (1999), and two subsequent ACT manuals that were specifically developed for group worksite interventions (Bond, 2004; Bond & Hayes, 2002). Similar to other ACT interventions, this worksite programme was comprised of various metaphors, mindfulness and "cognitive defusion" techniques, and value and goal clarification exercises. As previously described, these ACT techniques fall into two broad skill categories: mindfulness/acceptance; and values-based action.

ACT: Session 1

The aims of the first ACT session were to: (1) undermine unhelpful experiential avoidance strategies; (2) show that, in the realm of undesirable thoughts and emotions, control is the problem, not the solution; and (3) introduce participants to mindfulness techniques (Flaxman & Bond, 2006).

At the beginning of this session, the trainer asked participants to: a) list their undesirable symptoms or signs of stress, b) indicate how these symptoms can interfere with effective and enjoyable living, and c) describe any coping strategies they use to change, remove, or avoid such symptoms. The group then discussed the relative effectiveness of various coping strategies. In facilitating this discussion, the trainer particularly focused on the ineffectiveness of many avoidance and internal control strategies (e.g., thought suppression or situational avoidance) for dealing with stress symptoms (e.g., worry and anxiety) and for pursuing one's goals. The trainer introduced the idea that control strategies tend to be extremely effective for humans in the world "outside the skin", but can be ineffective and counterproductive when applied to the inner psychological (or "virtual") world. A number of widely recognised ACT techniques were used to illustrate this idea. For example, a *polygraph metaphor* was used to highlight the paradoxical and futile nature of many internal control efforts (e.g., "relax, or I'll shoot you!"), and how this differs from overt behaviour that *can* be deliberately and consciously controlled (e.g., "do the washing up, or I'll shoot you!").

During this first phase of ACT, the trainer repeatedly encouraged participants to look to their own experience (e.g., "how has that worked for you?") as a guide to the ineffectiveness of many avoidance-based coping strategies. This erosion of confidence in experiential avoidance was designed to induce a state of readiness amongst participants for learning alternative, acceptance-oriented coping techniques. In ACT, this psychological state is termed *creative hopelessness* (although this term was not used with participants), and it is used as a springboard for the introduction of various acceptance- and mindfulness-based exercises (Bond & Hayes, 2002; Hayes et al., 1999).

Towards the end of session 1, the trainer introduced a *two scales metaphor* to illustrate the alternative to ineffective control and avoidance strategies: learning (through mindfulness) to become more willing to experience undesirable thoughts and emotions. Participants then practised a 10 to 15 minute mindfulness exercise (*leaves on the stream)*, which encouraged them to "just notice" their thoughts and other internal events, as they came and went, without trying to control, change, or avoid them. This exercise was also distributed on audiotapes to allow participants to practice outside the sessions.

ACT: Session 2 (one week later)

The primary aims of Session 2 were: (1) for participants to identify and note down their deeply held values and goals; (2) to help participants make experiential contact with the "observing self", as distinct from one's fluctuating thoughts and emotions; (3) to introduce additional mindfulness and cognitive defusion exercises; and (4) to highlight the link between mindfulness and one's ability to move consistently in valued life directions (Flaxman & Bond, 2006).

This second session began with a discussion of people's experiences with the *leaves on the stream* mindfulness exercise. The trainer re-emphasised that the exercise was designed to promote mindfulness/acceptance (e.g., catching a glimpse of one's thoughts "as thoughts"), and *not* for removing or changing any difficult psychological content shows up (i.e., experiential avoidance). Following this discussion, the trainer introduced a shorter mindfulness exercise, which required participants to imagine themselves in a cinema, and to just watch any thoughts that drifted into their awareness being projected onto the white screen in front of them. During this exercise, the trainer encouraged participants to experience the distinction between being "fused" with one's

thoughts (i.e., when they have been sucked into the scenario unfolding on the screen) on the one hand, and mindfully and non-judgementally observing their thoughts (i.e., from the perspective of an audience member) on the other.

The next phase of the training was designed to help participants clarify their values and goals. The trainer began by outlining the distinction between values and goals (in ACT, a value is defined as a general, chosen life direction, such as "being a supportive colleague"). Participants then spent approximately 15-20 minutes of the session completing a written *values assessment* exercise (from Hayes et al., 1999, pp. 224-225; and see Appendix 3), which asked them to note down their most important values (along with any corresponding goals and actions) within various life domains (e.g., career/employment, recreation/leisure). Following this, the trainer facilitated a group discussion of how "difficult" psychological content (e.g., negative thinking, anxiety, low self-confidence) - and particularly our attempts to avoid that content - can interfere with values-based living.

Following this values work, the trainer introduced various techniques that were designed to promote and strengthen the *self-as-context* (or the "observing self"), a core process in ACT interventions (Hayes, 2004b; Hayes et al., 1999). The aim this section of the training was to help participants establish a sense of self that is distinct from their difficult psychological content. The goal is to encourage a person to make experiential contact with themselves as the "conscious vessel" that contains, but is not threatened by, difficult internal events (Hayes et al., 1999).

The idea of the observing self was introduced by way of a cloud and sky metaphor (from Hayes et al., 1999), where the clouds are the "verbal chatter" of the mind, behind which lies blue sky. This was followed by an *observer exercise* (e.g., Bond & Hayes,

2002). In this, participants were encouraged to make contact with the observing self, a sense of self that is not the content of their mind (e.g., their fears or unhappiness); but, rather, the context in which that content occurs; a place that they can get to by being in the present moment, through acceptance/mindfulness. The observer exercise was accompanied by a *chessboard metaphor* (Hayes et al., 1999, pp.190-192). In this ACT metaphor (which was introduced in the session with a real chessboard and pieces), the board can be thought of as the observing self, and the pieces on the board as all the different thoughts and emotions that one experiences. The trainer emphasised the distinction between being at "piece level", as when we have been pulled into a struggle with particular psychological content, and being at "board level" which equates to a sense of the observing self (i.e., mindfully observing the pieces).

Following this exercise, a *Passengers on the Bus* metaphor was introduced to illustrate how undesirable psychological content and experiential avoidance strategies can interfere with our ability to move in valued life directions. The trainer encouraged participants to view their valued life directions - clarified earlier in the session - as an effective guide to action, in contrast to fluctuating, unpredictable thoughts and internal states (i.e., the passengers on the bus), which can deflect us from value-congruent behaviour.

Finally, towards the end of session 2, the ACT groups practised an abbreviated version of a *Tin Can Monster* exercise (Bond & Hayes, 2002), an experiential technique that encouraged participants to "give up the struggle" with undesirable psychological content. This exercise was also included on the audiotapes distributed in session 1.

ACT: Session 3 (three months later)

The aims of the final ACT session were to: (1) provide additional practice of mindfulness and cognitive defusion skills; (2) discuss any psychological barriers to values-based action; and (3) further emphasise the link between mindfulness and values-based action skills (Flaxman & Bond, 2006).

The final ACT training session, was designed partly as a "booster session" in that core techniques (e.g., *Leaves on the Stream*; *Observer Exercise)* were practised and reviewed. This session also introduced techniques that were designed to further undermine internal barriers to values-based living. For example, a *Bubble in the Road* metaphor was used to illustrate the link between being willing to experience unwanted psychological content, and our ability to keep moving in valued directions. Similarly, a *Taking Your Mind for a Walk* exercise was used to illustrate how it is possible to keep moving in chosen directions even when faced with unhelpful "mind chatter".

SIT

The SIT intervention closely followed the published protocols for this widely implemented second wave CBT approach (e.g., Meichenbaum, 1985; Meichenbaum & Deffenbacher, 1988). Additionally, some techniques and exercises were borrowed or adapted from other second wave CBT manuals such as 'Stresspac' (White, 1997; 2000) and 'Mind over Mood' (Greenberger & Padesky, 1995).

As described in the introduction to this thesis (see section 1.2.2), SIT is characterised by three overlapping phases: *conceptualisation*, coping *skills acquisition and rehearsal*, and *application* of coping skills outside of the training sessions. Hence,

elements of each of these phases were incorporated into the following three session training programme.

SIT: Session 1

The aims of the first session were to: 1) provide participants with a conceptualisation of stress in accordance with the second wave CBT model; 2) introduce progressive muscular relaxation; and 3) emphasise the importance of cognition in most stress reactions.

Similar to the ACT intervention (described above), the first session began with a general discussion on the nature and symptoms of stress. Examples of stress symptoms were elicited from the group and categorised as bodily responses, thinking responses, or action (or behavioural) responses. This was followed by a brief discussion of the origins of the stress response (the fight or flight response), and how this natural human process can become problematic. Particular emphasis was placed on the interacting nature of the physiological, cognitive, and behavioural response modalities in psychological and emotional distress, which can produce "vicious cycles" of stress. In order to illustrate this transactional process, the trainer encouraged participants to generate examples of how our negative thoughts and interpretations are often closely linked to unhelpful emotional and behavioural reactions.

This conceptualisation of stress was used to provide an overview of the core techniques that would be introduced over the three SIT sessions. Specifically, each modality was described as a point of entry for particular intervention strategies. For example, participants were informed that a relaxation training component would be included as a method for managing physiological stress symptoms (e.g., bodily tension),

while cognitive (or 'thinking') techniques would be introduced to help them deal with the cognitive manifestations of stress (e.g., worry and negative thinking).

This initial conceptualisation phase was followed by the introduction of progressive muscular relaxation training (PMR). Participants were first introduced to a basic physiological rationale for why relaxation techniques can help to prevent and reduce stress. This rationale focused on the links between the skeletal musculature and the other bodily systems (e.g., heart rate and the release of adrenaline) (adapted from McGuigan, 1993). Following this discussion, participants practised a 20-minute muscular relaxation exercise that was delivered via audiotape (White, 1997). As with most forms of relaxation training, this exercise required participants to tense specific muscle groups in sequence, to notice the tension, and then release the tension and notice the subsequent feelings of relaxation (see Bernstein & Borkovec, 1973 for a comprehensive description of these techniques). During the discussion that followed this exercise, the trainer strongly emphasised the importance of practise in developing the relaxation coping skill. Each participant received a copy of the relaxation tape so that they could practise during the following week (i.e., before the second SIT session).

Towards the end of the first session, a cognitive skills component was introduced. The trainer illustrated the importance of the content of cognition in emotion and behaviour with a version of Ellis's A-B-C exercise (e.g., Ellis, 1994), in which 'A' represents an activating event, 'B' represents a thought, belief or interpretation of that event, and 'C' represents the emotional or behavioural consequences. Participants were encouraged to consider and discuss the types of cognitions that are linked to unhelpful emotional and behavioural outcomes. Following this, participants were provided with a self-monitoring homework exercise (see Appendix 4). This exercise was designed to

increase awareness of the content of the "automatic" thoughts that they experienced in difficult situations during the week, and the link between these cognitions and felt emotion or mood.

SIT: Session 2

The aims of the second SIT session were as follows: 1) to introduce abbreviated relaxation exercises; 2) to discuss common cognitive distortions; and 3) to provide instruction on cognitive restructuring techniques.

At the beginning of session 2, participants' experiences with the PMR exercise were discussed. The trainer again emphasised the importance of continued practise in developing the relaxation skill, and provided information on shorter (e.g., four muscle group) relaxation exercises that could be used as the skill developed. Participants were particularly encouraged to begin employing brief muscular relaxation techniques in their daily lives (e.g., during a stressful working day).

The remainder of session 2 was devoted to the cognitive coping skills that lie at the heart of SIT (Meichenbuam, 1985). First, the self-monitoring homework exercise from session 1 was discussed. The trainer provided instruction on techniques designed to help participants identify (or "catch") negative automatic thoughts (e.g., by becoming aware of the thoughts passing through one's mind during a difficult situation). This was followed by a brief overview and discussion of the common distortions that can be found in the content of stress-related thoughts (e.g., jumping to conclusions, overgeneralisation) (adapted from Burns, 1999). The trainer and participants then spent some time collaboratively working on a cognitive restructuring (or "thought challenging") exercise. The trainer ran through a completed example of a Thought Record (see Appendix 4),

which provided guidance on how to challenge the validity of the content of problematic thoughts (e.g., by evaluating the evidence for and against particular interpretations of events). Each participant was then encouraged to complete a thought record in the session for a current or recent situation that was troubling him/her. The trainer introduced a number of common cognitive restructuring techniques to help them with this process, including checking for evidence, thinking in shades of grey, and conducting a cost-benefit analysis (see Appendix 4). This cognitive restructuring procedure was described as a skill that can be enhanced with repeated practise (just like relaxation). Participants were also introduced to a "downward arrow" technique that was designed to identify any core dysfunctional beliefs (e.g., need for approval or perfectionism) underlying stress-related thoughts (Free, 1999). Participants were provided with a number of blank thought records and encouraged to complete approximately 20 of these forms before the third and final session of training.

SIT: Session 3

The aims of the final SIT session were: 1) to review participants' progress with the relaxation and cognitive restructuring techniques; 2) provide an overview of effective problem-solving; and 3) introduce coping self-statements for dealing with challenging events.

Session 3 began with a short relaxation exercise (White, 1997), followed by a general discussion of people's use of the relaxation and cognitive restructuring techniques over the preceding three months. The trainer then ran through another example of a thought record to reinforce the cognitive restructuring procedures.

This was followed by an overview of the key stages in effective problem-solving (adopted from Meichenbaum, 1985). Specifically participants were introduced to a typical sequential problem solving algorithm that included the following six steps: (1) defining the problem; (2) brainstorming solutions; (3) weighing up the pros and cons; (4) choosing a solution and planning for action; (5) doing it!; and (6) reviewing the outcome (see Appendix 4 for further details). Participants were encouraged to provide real world examples of problems, and the group then worked together to generate solutions at each of the six steps.

Finally, participants were introduced to coping self-statements to help them a) deal with future stressful events, and b) control negative, stress-related thoughts (Meichenbaum, 1985). Participants were provided with a number of examples of self-statements for use at various stages of a stressful event: preparing for a stressor, confronting a stressor, coping with any difficult feelings, and evaluating coping efforts after the event. Many of these examples were designed to act as cues for the activation of the other coping strategies learned over the three SIT sessions (e.g., "The stress is reminder to use my relaxation exercise"). The trainer encouraged participants to use these examples as a guide for developing their own personalised set of coping self-statements.

Procedure

During 2001, the two local government organisations were approached, and agreed to take part in a large-scale stress management training research project. The organisations performed the same functions for the local communities in two separate areas of Greater London. It was therefore decided to conduct identical randomised controlled studies at the two organisations and merge the data to create one large sample.

The six month evaluation period reported in this first study reflects the period from February 2002 to August 2002 in organisation A, and the period November 2002 to May 2003 in organisation B. In both organisations, the control groups received the training following these initial evaluation periods. The recruitment and randomisation procedures employed at the two organisations were identical. In the two months prior to the first training sessions, adverts for the training were placed on notice boards and sent via the internal electronic mail systems (see Appendix 1). Volunteers for the training were asked to contact an internal representative in the occupational health department (organisation A) or learning and development department (organisation B). The lists of volunteers were subsequently forwarded to the present author, who randomly assigned participants to the ACT group, the SIT group, or the wait-list control group. The in-house project manager then organised training dates and rooms for the ACT and SIT participants, with approximately 10 participants allocated to each individual training group. The participants allocated to the ACT and SIT groups received a letter informing them of the dates and locations of their training sessions. In both organisations, ACT and SIT sessions were conducted in the same weeks, with two sessions of training typically conducted on each day (i.e., one session between 9.30am and 12.30pm, and another session between 1.30pm and 4.30pm). Participants in the control groups received a letter explaining that, because of high demand, they had been placed on a waiting list and would receive the training in six months time. The control participants were also informed that they would be asked to complete two sets of questionnaires in the months prior to their training, and another set of questionnaires when they attended their first session of training.

Participants in the ACT and SIT groups completed questionnaires at the beginning of session 1 (Time 1) and again at the beginning of session 3 (Time 2). Participants in the

control groups received the same questionnaires in the post at the same time intervals (copies of the questionnaires can be found in Appendix 2). The ACT and SIT participants then received the final (Time 3) questionnaires in the post, three months after their final session of training. At the same time, the control participants completed Time 3 questionnaires at the beginning of their first training session. Table 2.1 illustrates the main features of this experimental design.

Table 2.1
Study I Research Design

Condition	**Time 1**	Time 1 (+ 1 week)	**Time 2** (Time 1 + 3 months)	**Time 3** (Time 1 + 6 months)
ACT	OX	X	OX	O
SIT	OX	X	OX	O
Control	O		O	OX

Note. O = questionnaire administration; X = training session

Results

Overview

The results are organised into three main sections to reflect different aims of the data analysis. The first section provides an evaluation, by way of analyses of variance (ANOVA), of the effectiveness of ACT and SIT for improving participants' general mental health. The second section summarises the output from various analyses that were conducted to test the two mediation hypotheses. Then, the third and final section assesses the impact of the two training programmes on metacognitive strategies and beliefs.

Participant Attrition

As Bunce and West (1996) note, participant attrition and listwise deletion are common problems in this type of longitudinal intervention research, and can result in effects being overlooked due to inadequate sample sizes and statistical power (i.e., a Type II error). In the present study, three strategies were employed to make maximum use of the available data, therefore reducing the likelihood of a Type II error. First, as mentioned previously, this study was conducted at two similar local government organisations, and the data from each were merged, to ensure that the overall sample size would provide a sufficient level of power to detect both outcome and mediation effects. Second, in order to take advantage of the larger sample size at Time 2 (see below), separate analyses were conducted to evaluate changes from Time 1 (baseline) to Time 2 (3 months later), and from Time 1 to Time 3 (6 months later). Finally, where a participant had missed off a small number of items (< 20%) within a particular scale, the mean of that individual's responses to the other items in that scale was entered into the missing data cells, thus reducing the impact of missing values on the sample size.

Attrition in the present study resulted from non-attendance at one (or more) of the three training sessions, and/or a failure to complete questionnaires at one (or more) of the three measurement time points. Between training sessions 1 and 2 (which occurred one week apart), the attrition rates in the two intervention groups were minimal, with 11% of participants in the ACT group, and 7% of the SIT group, failing to return for session 2. Between sessions 2 and 3 (which occurred three months apart), 40% of ACT, and 33% of SIT participants dropped out of the training. Informal enquiries revealed a wide range of reasons for failing to attend training sessions, including work scheduling, absenteeism, turnover, programme content, annual vacations, and simply forgetting to attend.

In addition to the attrition that resulted from non-attendance at the training sessions, 43% of ACT, and 49% of SIT participants, who had attended all three sessions, subsequently failed to return questionnaires at Time 3 (which were sent to participants three months after the final training sessions). In the control group, 72% of participants who completed questionnaires at Time 1 also responded at Time 2, with 44% of the original control group completing questionnaires at all three time points.

Thus, the overall attrition rates for each group were as follows: ACT - 69%; SIT - 69%; control - 55%. A chi-square test found no evidence of a differential attrition rate between the three groups. Also, comparisons of those who dropped out of the study and those who remained revealed no significant Time 1 differences on any of the biographical, outcome, or mediator variables.

As a result of participant attrition, most of the analyses reported below are based on the following group sizes: *Time 1 to Time 2*: ACT = 47; SIT = 56; and, control = 51; *Time 1 to Time 3*: ACT = 26; SIT = 28; and, control = 32.

Baseline Levels of Distress and Bivariate Correlations

The means, standard deviations, and zero-order correlations for the main study variables are presented in Table 2.2. The Time 1 GHQ mean of 14.72 (Likert scoring method) indicates that the employees who volunteered for the present study were experiencing above average levels of psychological distress. Indeed, this baseline GHQ mean is higher than that reported in three previous worksite stress management studies conducted in the UK (M = 12.46 in Bunce & West, 1996; M = 12.19 in Bond & Bunce, 2000; and M = 12.10 in Reynolds et al., 1993b). The bivariate relationships displayed in Table 2.2 are generally consistent with the two mediation hypotheses, inasmuch as the measures of psychological flexibility (AAQ) and dysfunctional cognitions (DAS) were both significantly associated with psychological distress (GHQ). None of the biographical variables were significantly associated with the main study variables, and hence they were not controlled for in any of the analyses reported below.

Table 2.2
Means, Standard Deviations, and Zero-Order Correlations for Study Variables at Time 1 (Whole Sample)

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Psychological distress	14.72	6.40	-						
2. Psychological flexibility	68.36	12.64	-.49	-					
3. Dysfunctional cognitions	129.27	29.43	.43	-.51	-				
4. Thought reappraisal	13.93	3.11	-.05	.00	.07	-			
5. Negative metacognitive beliefs	24.15	6.75	.13	-.38	.44	.21	-		
6. Age	39.56	8.61	.05	-.05	-.02	-.09	-.07	-	
7. Gender			.12	-.11	.05	-.06	.03	.19	-
8. Years with organisation	9.45	6.93	.06	-.02	.04	.00	.01	.49	-.06

Note. Average N = 245. Significance levels: $r > .12$, $p < .05$; $r > .20$, $p < .01$; $r > .35$, $p < .001$.

Outcome Analysis

Psychological Distress: Time 1 to Time 2

As described in the Method section, the General Health Questionnaire (GHQ-12) was used as an indicator of general mental health (with higher scores indicating higher levels of psychological distress). To examine the effectiveness of ACT and SIT for reducing GHQ scores from Time 1 to Time 2, a 3 x 2 mixed design analysis of variance (ANOVA) was conducted, with intervention Group (ACT vs. SIT vs. control) serving as the between-subjects factor, and Time (Time 1 vs. Time 2) as the repeated measures factor. This initial analysis was followed by within-, and between-group, simple effects tests. When testing for between-group effects at Time 2, Time 1 GHQ scores were entered as a covariate. For all these ANOVA/ANCOVA effects, estimates of effect size (eta-squared [η^2]) are included alongside the significance level. According to Cohen's (1988) criteria, η^2 values of .01, .09, and, .25 indicate small, medium, and large effects respectively.

Table 2.3 summarises the outcome from the initial ANOVA conducted on Time 1 to Time 2 GHQ scores, along with the descriptive statistics for each group. As can be seen in Table 2.3, there was a significant Group by Time (Time 1 to Time 2) interaction for the GHQ, which is illustrated graphically in Figure 2.1. Subsequent within-group analyses revealed significant, and large, reductions in psychological distress from Time 1 to Time 2, in both the ACT group ($F_{(1, 44)} = 17.11$, $p < .001$, $\eta^2 = .28$), and the SIT group ($F_{(1, 54)} = 30.95$, $p < .001$, $\eta^2 = .36$). No significant change in GHQ scores was found in the control group between these first two assessment points.

Comparisons between the three conditions at Time 2 (with Time 1 GHQ as the covariate) revealed significantly lower levels of psychological distress in the ACT group

($F_{(1, 94)} = 17.06$, $p < .001$, $\eta^2 = .15$), and in the SIT group ($F_{(1, 104)} = 22.57$, $p < .001$, $\eta^2 = .18$), when compared to the control group. There was, however, no significant difference in GHQ scores between the two intervention groups at Time 2.

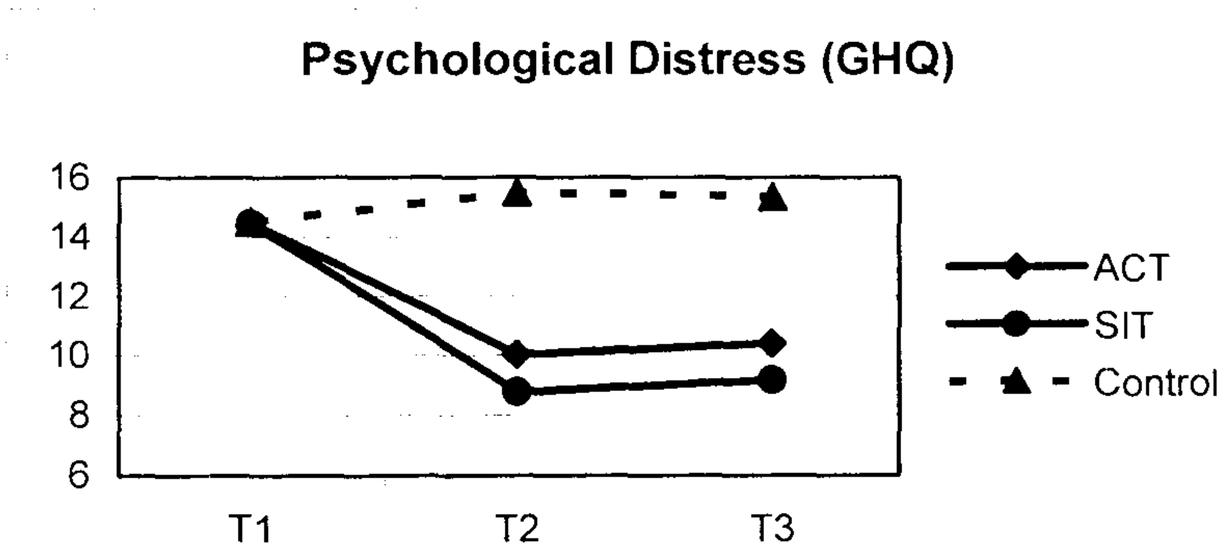

Figure 2.1 ***Changes in psychological distress in each condition***

Psychological Distress: Time 1 to Time 3

Table 2.3 and Figure 2.1 also indicate a significant Group by Time interaction for the GHQ variable across all three time points. Simple effects tests revealed significant reductions in psychological distress from Time 1 to Time 3 in the ACT group ($F_{(1, 25)} = 9.21$, $p < .01$, $\eta^2 = .27$), and the SIT group ($F_{(1, 27)} =$, $p < .001$, $\eta^2 = .34$), whereas no change was observed in the control group. There were no significant changes in GHQ scores between Time 2 to Time 3 in any of the conditions.

Between-group comparisons at Time 3 indicated that both the ACT group ($F_{(1, 53)} = 10.44$, $p < .01$, $\eta^2 = .17$), and the SIT group ($F_{(1, 55)} = 15.21$, $p < .001$, $\eta^2 = .22$), had significantly lower levels of psychological distress than the control group. Once again, however, there was no significant difference in distress between the ACT and SIT groups at Time 3.

Table 2.3

Means, Standard Deviations, and Analysis of Variance (ANOVA) Interaction Statistics for the Outcome and Mediator Variables

	ACT		**SIT**		**Control**		ANOVA			
	M	*SD*	*M*	*SD*	*M*	**SD**	Effect[a]	*F* ratio	*df*	η^2
Psychological distress (GHQ)										
Time 1	14.09	6.02	13.70	5.78	15.35	6.75				
Time 2	9.90	4.44	9.05	5.63	15.27	7.10	G X T (T1 to T2)	6.37**	2, 149	.08
Time 3	10.42	5.42	9.18	5.86	15.36	7.48	G X T (T1 to T3)	6.87**	2, 81	.15
							G X T (T1 T2 T3)	5.67***	4, 162	.12
Psychological flexibility (AAQ)										
Time 1	69.94	12.56	69.06	11.54	68.82	13.80				
Time 2	76.99	10.00	71.92	11.67	68.19	12.61	G X T (T1 to T2)	7.47**	2, 147	.09
Time 3	79.75	10.84	75.93	14.09	66.81	13.27	G X T (T1 to T3)	7.40**	2, 81	.15
							G X T (T1 T2 T3)	5.24**	4, 162	.12
Dysfunctional cognitions (DAS)										
Time 1	125.91	27.34	126.07	25.47	131.69	30.87				
Time 2	115.93	22.89	117.59	27.64	132.36	32.04	G X T (T1 to T2)	4.14*	2, 146	.05
Time 3	114.96	21.76	113.21	24.84	133.42	31.98	G X T (T1 to T3)	6.27**	2, 81	.13
							G X T (T1 T2 T3)	4.56**	4, 160	.10

Note. GHQ = General Health Questionnaire; AAQ = Acceptance and Action Questionnaire; DAS = Dysfunctional Attitude Scale; ACT = Acceptance and Commitment Therapy; SIT = Stress Inoculation Training; ANOVA = analysis of variance; G X T = group by time interaction effect; η^2 = eta-squared (effect size); [a]main effects are not reported. $*p < .05$. $**p < .01$. $***p < .001$.

In sum, the pattern of change on the GHQ outcome variable provides strong support for the first hypothesis, which predicted that the ACT and SIT interventions would be equally effective in improving employees' general mental health. The identical, and statistically large, reductions in psychological distress that were found in the two intervention groups occurred mainly between baseline and Time 2 (3 months later at post-test); very little change occurred between Times 2 and 3, indicating that the significant improvements in mental health observed at Time 2 were maintained at the follow-up (i.e., baseline + 6 months).

Mediation Analysis

The mediation hypotheses predicted that ACT and SIT would improve employees' mental health via different mechanisms of change. Specifically, it was predicted that the ACT intervention would improve general mental health by increasing psychological flexibility, while the SIT intervention would do so by reducing dysfunctional cognitions. In order to test these two hypotheses, the following data analytic strategies were employed: ANOVA was used to assess the general impact of ACT and SIT on the two hypothesised mediators (psychological flexibility and dysfunctional cognitions) across the three measurement time points; then, a series of regression models were estimated to establish whether the statistical requirements for mediation had been met.

Impact of ACT and SIT on Psychological Flexibility and Dysfunctional Cognitions

Table 2.3 summarises the initial analyses of variance conducted to assess changes on the two hypothesised mediator variables (psychological flexibility (AAQ) and

dysfunctional cognitions (DAS)), as a function of intervention group (see also Figures 2.2 and 2.3, below).

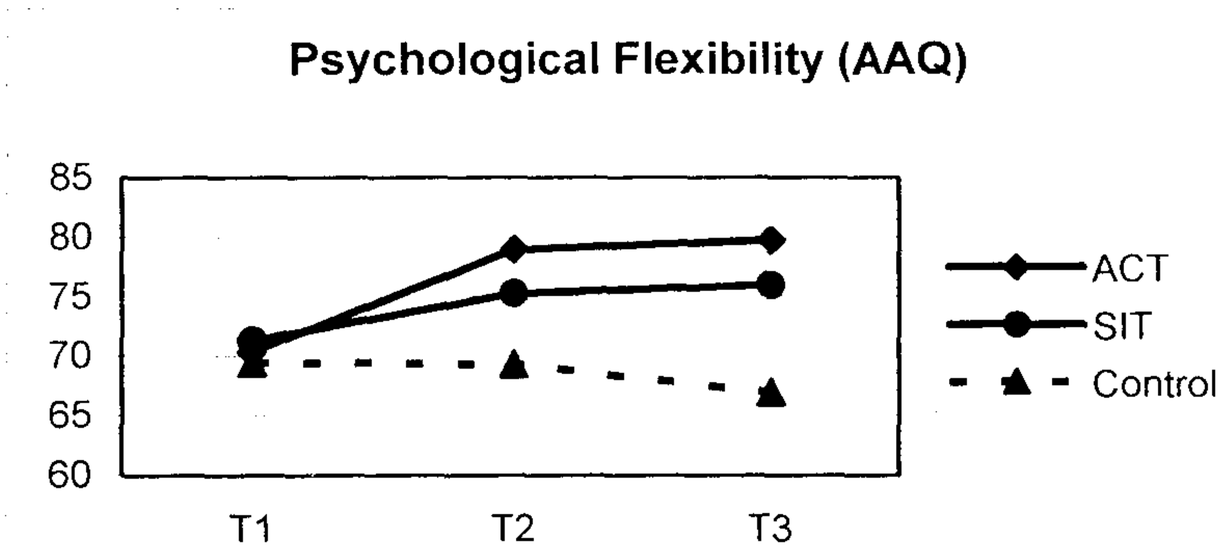

Figure 2.2 Changes in psychological flexibility in each condition.

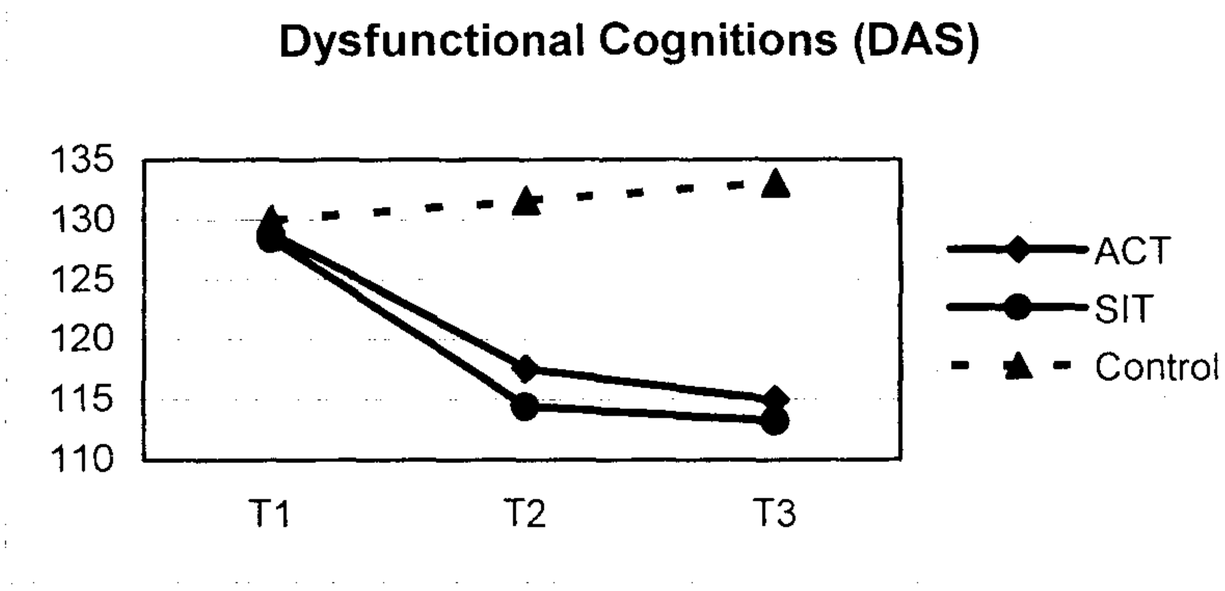

Figure 2.3 Changes in dysfunctional cognitions in each condition.

As can be seen in Table 2.3 (and Figure 2.2), there was a significant overall Group by Time (T1, T2, T3) interaction for the AAQ. Subsequent within-group analyses indicated that, between Time 1 and Time 2, psychological flexibility increased significantly, and to a large extent, in the ACT group ($F_{(1, 45)} = 17.66$, $p < .001$, $\eta^2 = .28$) and, to a lesser (medium) extent, in the SIT group ($F_{(1, 54)} = 5.97$, $p < .05$, $\eta^2 = .10$); there was no change in psychological flexibility in the control group. A similar pattern of within-group change on the AAQ was evident between Time 1 and Time 3 (ACT: $F_{(1, 25)} = 10.27$, $p < .01$, $\eta^2 = .29$; SIT: $F_{(1, 27)} = 5.51$, $p < .05$, $\eta^2 = .17$; control: n.s.). Between

Time 2 and Time 3, there was a non-significant increase in psychological flexibility in the two intervention groups, and a non-significant decrease in the control group.

At both Time 2 and Time 3, the intervention groups had significantly higher levels of psychological flexibility than the control group (Time 2: *ACT vs. control*: $F_{(1, 92)} = 21.43$, $p < .001$, $\eta^2 = .19$; SIT *vs. control*: $F_{(1, 101)} = 4.90$, $p < .05$, $\eta^2 = .05$) (Time 3: *ACT vs. control*: $F_{(1, 53)} = 19.27$, $p < .001$, $\eta^2 = .27$; *SIT vs. control:* ($F_{(1, 55)} = 8.75$, $p < .01$, $\eta^2 = .14$). Additionally, ACT participants had significantly higher levels of psychological flexibility at Time 2 than the SIT group ($F_{(1, 98)} = 7.09$, $p < .01$, $\eta^2 = .07$), although this difference was less pronounced at Time 3 ($\eta^2 = .04$).

As indicated in Table 2.3, and Figure 2.3, there was also a significant interaction for the dysfunctional attitude scale (DAS). Contrary to expectations, both ACT and SIT produced significant, and medium to large, reductions in dysfunctional cognitions between Time 1 and Time 2 (ACT: $F_{(1, 45)} = 11.99$, $p < .01$, $\eta^2 = .21$; SIT: $F_{(1,53)} = 9.48$, $p < .01$, $\eta^2 = .15$), and between Time 1 and Time 3 (ACT: $F_{(1,25)} = 11.86$, $p < .01$, $\eta^2 = .32$; SIT: $F_{(1, 27)} = 8.45$, $p < .01$, $\eta^2 = .24$). There were no significant within-group changes in dysfunctional cognitions between Time 2 and Time 3.

Finally, both intervention groups reported significantly lower levels of dysfunctional cognitions than the control group at Time 2 (ACT $\eta^2 = .10$; SIT $\eta^2 = .07$) and Time 3 (ACT $\eta^2 = .22$; SIT $\eta^2 = .18$), but there were no differences on the DAS between the two intervention groups at either of these measurement points.

Taken together, these results suggest that both interventions impact significantly on the two hypothesised mediator variables. As predicted, the ACT intervention produced the largest increases in psychological flexibility across the three measurement time points, although it was interesting to note that the SIT participants also reported moderate improvements on this variable (particularly between Time 1 and Time 3). There was,

however, very little to distinguish the two interventions in terms of their impact on dysfunctional cognitions, with both ACT and SIT producing medium to large reductions on the DAS.

Four Tests for Mediation

While the preceding section indicates that the two interventions produced significant changes on the hypothesised mediator variables, this initial analysis does not, in and of itself, determine whether these variables are actually functioning as mediators of change. Baron and Kenny (1986) state that a variable functions as a mediator when the magnitude of a significant relationship between an independent variable (IV) (e.g., the ACT intervention) and a dependent variable (DV) (e.g., general mental health) reduces, when controlling for the hypothesised mediator (M) (e.g., psychological flexibility). If the relationship between the IV and DV is reduced to zero (when M is controlled), then M is said to be a full mediator of that relationship; if the relationship between the IV and DV is reduced, but remains statistically significant, then M is said to be functioning as a partial mediator.

To establish whether these conditions for mediation have been met, Baron and Kenny (1986) recommend the estimation of a series of regression equations that constitute four statistical tests for mediation:

Test 1: Establish that the independent (or predictor) variable (IV) is correlated with the outcome variable (DV).

Test 2: Establish that the predictor variable is correlated with the hypothesised mediator (M).

Test 3: Establish that the hypothesised mediator (M) is correlated with the outcome variable (DV), while controlling for the predictor variable (IV). (If test 3 is significant, then partial mediation is already indicated, if the previous two conditions have been met).

Test 4: If M fully mediates the IV – DV relationship, then this relationship should become zero, when controlling for M (the regression equation used for Test 3 can be used to establish this effect).

As outlined in the introduction, a primary aim of the present study was to compare the influence of the two potential mediators of change in each intervention. To make this comparison, these four mediation tests were applied to establish whether one of the hypothesised mediators was accounting for *unique* variance in the outcome variable (GHQ), above and beyond any variance that was being explained by the other mediator. For example, when assessing whether changes in dysfunctional cognitions (DAS) mediated the GHQ improvements observed in the SIT group, changes in psychological flexibility were controlled for. While this analytic approach helps to identify which of the two variables is exerting a stronger unique mediational influence in each intervention, it does generally reduce the power of the tests by increasing the number of predictors in each regression model. To counteract this potential problem (which increases the likelihood of a Type II error), the criteria for statistical significance was reduced to $p < .10$ for the Time 1 to Time 3 mediation tests (Bunce & Stephenson, 2000; Howell, 1992).

The output from each of the four mediation tests is summarised in Tables 2.4 to 2.7. To aid interpretation, the tests were conducted separately for Time 1 to Time 2 (Tables 2.4 and 2.5) and Time 1 to Time 3 (Tables 2.6 and 2.7) data, and each intervention group was separately compared to the control group.

Table 2.4

Regression Analyses for Determining Whether Change in Psychological Flexibility or Dysfunctional Cognitions Mediates the Impact of ACT on Mental Health (Time 1 to Time 2)

Dependent Variable	**Test**	**Predictor**	***ß***	**R^2**
Psychological distress at Time 2	1	Psychological distress at Time 1	.37***	.30***
		Group (ACT vs. control)	-.36***	
Psychological flexibility at Time 2	2	Psychological flexibility at Time 1	.65***	.63***
		Dysfunctional cognitions at Time 1	.28*	
		Dysfunctional cognitions at Time 2	-.46***	
		Group (ACT vs. control)	.23**	
Dysfunctional cognitions at Time 2	2	Dysfunctional cognitions at Time 1	.77***	.68***
		Psychological flexibility at Time 1	.35***	
		Psychological flexibility at Time 2	-.39***	
		Group (ACT vs. control)	-.08	
Psychological distress Time 2	3 & 4	Psychological distress at Time 1	.30**	.41***
		Dysfunctional cognitions at Time 1	-.05	
		Dysfunctional cognitions at Time 2	.00	
		Psychological flexibility at Time 1	.19	
		Psychological flexibility at Time 2	-.48**	
		Group (ACT vs. control)	-.22*	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: ACT = 1 Control = 0; ***ß*** = standardized beta coefficient.

[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

ACT Mediation Effects (Time 1 to Time 2)

As can be seen from Table 2.4, the criteria for partial mediation was met when psychological flexibility was assessed as a mediator of the mental health improvements observed in the ACT group. Specifically, the significant effect of ACT on Time 1 to Time 2 GHQ scores ($\beta = -.36$, $p < .001$) (test 1) was reduced in the final model ($\beta = -.22$, $p < .05$), with the requirements for tests 2 and 3 also being met. It is important to note that this mediation effect existed above and beyond any variance that was attributable to changes in participants' dysfunctional cognitions (measured by the DAS).

When the same analysis was conducted to assess whether a reduction in dysfunctional cognitions was also functioning as a mechanism of change in the ACT intervention, the results were not significant. In this case, the effect of the ACT

intervention on DAS scores (mediation test 2) was not significant (β = -.08), after controlling for the variance attributable to the AAQ.

SIT Mediation Effects (Time 1 to Time 2)

Table 2.5 assesses the pattern of mediation for the SIT intervention group between the first two assessment points. The results of these Time 1 to Time 2 tests suggest that neither an increase in psychological flexibility nor a reduction in dysfunctional cognitions was functioning as a significant mediator of change in the SIT group. Specifically, when the increase in psychological flexibility was tested as a mediator of GHQ change, mediation test 2 was not significant (β = .07). Similarly, when the reduction in dysfunctional cognitions was assessed as a mediator of change (controlling for change in psychological flexibility), the test 3 coefficient was not significant (β = .07).

Table 2.5
Regression Analyses for Determining Whether Change in Psychological Flexibility or Dysfunctional Cognitions Mediates the Impact of SIT on Mental Health (Time 1 to Time 2)

Dependent Variable	**Test**	**Predictor**	**β**	**R^2**
Psychological distress at Time 2	1	Psychological distress at Time 1	.42***	.37***
		Group (SIT vs. control)	-.38***	
Psychological flexibility at Time 2	2	Psychological flexibility at Time 1	.78***	.68***
		Dysfunctional cognitions at Time 1	.36***	
		Dysfunctional cognitions at Time 2	-.43***	
		Group (SIT vs. control)	.07	
Dysfunctional cognitions at Time 2	2	Dysfunctional cognitions at Time 1	.73***	.67***
		Psychological flexibility at Time 1	.32**	
		Psychological flexibility at Time 2	-.45***	
		Group (SIT vs. control)	.11[a]	
Psychological distress Time 2	3 & 4	Psychological distress at Time 1	.38***	.48***
		Psychological flexibility at Time 1	.17	
		Psychological flexibility at Time 2	-.45***	
		Dysfunctional cognitions at Time 1	-.12	
		Dysfunctional cognitions at Time 2	.07	
		Group (SIT vs. control)	-.32***	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: SIT = 1 Control = 0; β = standardized beta coefficient.
[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

ACT Mediation Effects (Time 1 to Time 3)

The same four mediation tests were used to assess the pattern of mediation in the ACT intervention between Time 1 and Time 3 (see Table 2.6). The results of this analysis indicate that an increase in psychological flexibility was functioning as a *full* mediator of Time 1 to Time 3 GHQ change in the ACT group. To elaborate, the significant effect of the ACT intervention on Time 1 to Time 3 GHQ scores (test 1) reduced from β = -.36 (p < .001) to β = -.13 (ns), when the AAQ variable was entered into the equation, with the requirements for mediation tests 1, 2 and 3 also being met.

In contrast, a reduction in dysfunctional cognitions did not appear to be functioning as a mediator of Time 1 to Time 3 GHQ change in the ACT intervention. Specifically, in replication of the Time 1 to Time 2 pattern of mediation, the ACT intervention was not a significant predictor of the Time 1 to Time 3 reduction in dysfunctional cognitions, after controlling for the variance explained by the increase in psychological flexibility.

SIT Mediation Effects (Time 1 to Time 3)

As can be seen in Table 2.7, psychological flexibility did not appear to function as a significant mediator in the SIT intervention. When the variance attributable to the reduction in dysfunctional cognitions had been accounted for, mediation test 2 was not significant (β = .09); that is, the SIT programme did not have a significant impact on psychological flexibility, after controlling for the changes in dysfunctional cognitions observed in this group.

There was, however, some evidence that the Time 1 to Time 3 improvement in mental health in the SIT condition was mediated by a reduction in dysfunctional cognitions. Specifically, the effect of SIT on the GHQ was reduced (from β = -.42 to β = -

.23), when the reduction in dysfunctional cognitions was entered into the equation, with mediation tests 1, 2 and 3 reaching significance at the adjusted alpha level ($p < .10$).

Table 2.6
Regression Analyses for Determining Whether Change in Psychological Flexibility or Dysfunctional Cognitions Mediates the Impact of ACT on Mental Health (Time 1 to Time 3)

Dependent Variable	Test	Predictor	*ß*	R^2
Psychological distress at Time 3	1	Psychological distress at Time 1	.49***	.36***
		Group (ACT vs. control)	-.36**	
Psychological flexibility at Time 3	2	Psychological flexibility at Time 1	.40***	.67***
		Dysfunctional cognitions at Time 1	.35*	
		Dysfunctional cognitions at Time 3	-.76***	
		Group (ACT vs. control)	.22*	
Dysfunctional cognitions at Time 3	2	Dysfunctional cognitions at Time 1	.72***	.80***
		Psychological flexibility at Time 1	.27**	
		Psychological flexibility at Time 3	-.46***	
		Group (ACT vs. control)	.09	
Psychological distress at Time 3	3 & 4	Psychological distress at Time 1	.50***	.56***
		Dysfunctional cognitions at Time 1	.08	
		Dysfunctional cognitions at Time 3	.23	
		Psychological flexibility at Time 1	.38*	
		Psychological flexibility at Time 3	-.30[a]	
		Group (ACT vs. control)	-.15	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: ACT = 1 Control = 0; *ß* = standardized beta coefficient.
[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Summary of Mediation Findings

The mediation tests described above were designed to establish whether increases in psychological flexibility and/or decreases in dysfunctional cognitions were mediating the significant mental health (GHQ) improvements observed in the ACT and SIT groups. Overall, these tests revealed the clearest pattern of mediation for the ACT intervention, which appeared to improve employees' mental health primarily because it increased psychological flexibility, and not because it reduced dysfunctional cognitions.

In contrast, neither psychological flexibility nor dysfunctional cognitions appeared to function as a significant mediator of change in the SIT intervention between Time 1

and Time 2. However, between Time 1 and Time 3, the mental health benefits of SIT were partially mediated by a reduction in dysfunctional thinking.

Table 2.7
Regression Analyses for Determining Whether Change in Psychological Flexibility or Dysfunctional Cognitions Mediates the Impact of SIT on Mental Health (Time 1 to Time 3)

Dependent Variable	**Test**	**Predictor**	***ß***	**R^2**
Psychological distress at Time 3	1	Psychological distress at Time 1	.43**	.36***
		Group (SIT vs. control)	-.42***	
Psychological flexibility at Time 3	2	Psychological flexibility at Time 1	.58***	.72***
		Dysfunctional cognitions at Time 1	.27*	
		Dysfunctional cognitions at Time 3	-.58***	
		Group (SIT vs. control)	.09	
Dysfunctional cognitions at Time 3	2	Dysfunctional cognitions at Time 1	.58***	.72***
		Psychological flexibility at Time 1	.27*	
		Psychological flexibility at Time 3	-.56***	
		Group (SIT vs. control)	-.15[a]	
Psychological distress Time 3	3 & 4	Psychological distress at Time 1	.40**	.53***
		Psychological flexibility at Time 1	.37*	
		Psychological flexibility at Time 3	-.35*	
		Dysfunctional cognitions at Time 1	-.14	
		Dysfunctional cognitions at Time 3	.33[a]	
		Group (SIT vs. control)	-.23*	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: ACT = 1 Control = 0; ***ß*** = standardized beta coefficient.
[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Impact of ACT and SIT on Metacognitive Strategies and Beliefs[6]

In this final results section, ANOVA was used to assess any differential impact of ACT and SIT on participants' use of thought reappraisal strategies, and on their metacognitive beliefs about the need to control unwanted (e.g., stress-related) cognitions. The descriptive and ANOVA statistics for these two variables are reported in Table 2.8, and illustrated graphically in Figures 2.4 and 2.5.

[6] Some participants did not provide scores for these two variables at Time 3, so sample sizes were slightly smaller for this analysis

Table 2.8

Means, Standard Deviations, and Analysis of Variance (ANOVA) Interaction Statistics for the Thought Reappraisal and Metacognitive Belief Variables

	ACT		**SIT**		**Control**		ANOVA			
	M	*SD*	*M*	SD	*M*	**SD**	Effect[a]	*F* ratio	*df*	η^2
Thought Reappraisal (TCQ)										
Time 1	14.24	2.67	14.38	3.06	14.33	3.62				
Time 2	13.96	2.40	14.38	3.43	14.18	4.11				
Time 3	12.48	2.62	15.33	3.77	13.63	3.97	G X T (T1 to T3)	3.42*	2, 66	.09
Metacognitive Beliefs (MCQ)										
Time 1	23.88	5.33	25.11	7.29	24.71	7.21				
Time 2	20.41	5.39	23.19	5.87	23.90	7.34	G X T (T1 to T2)	3.15*	2, 146	.04
Time 3	17.95	4.02	21.17	4.45	23.83	7.10	G X T (T1 to T3)	8.05**	2, 65	.20
							G X T (T1 T2 T3)	5.97***	4, 128	.16

Note. MCQ = Metacognitions Questionnaire; TCQ = Thought Control Questionnaire; ACT = Acceptance and Commitment Therapy; SIT = Stress Inoculation Training; ANOVA = analysis of variance; G X T = group by time interaction effect; η^2 = eta-squared (effect size); [a]main effects are not reported. *$p < .05$. **$p < .01$. ***$p < .001$.

Thought Reappraisal Strategies (TCQ)

Although there was no overall group by time interaction for the thought reappraisal scale, there was a significant interaction for Time 1 to Time 3 scores (illustrated in Figure 2.4). Between these two time points, there was a significant, and statistically large, reduction in the use of thought reappraisal strategies in the ACT group ($F_{(1, 20)} = 13.24$, $p < .01$, $\eta^2 = .40$), and a statistically small (albeit non-significant) increase in the SIT group ($\eta^2 = .03$). As can be seen in Fig. 2.4, most of the changes on this variable occurred between Time 2 and Time 3. ACT participants reported a medium sized (but non-significant) reduction ($\eta^2 = .12$) in the use of thought reappraisal between Times 2 and 3, while a small (also non-significant) increase was observed in the SIT group. The lack of statistical significance associated with these effects may have been due to the small sample size for this analysis. However, as a result of these (non-significant) changes, the ACT participants were reporting a significantly lower level of thought reappraisal than the SIT group at time 3 ($F_{(1, 36)} = 9.81$, $p < .01$, $\eta^2 = .21$).

Metacognitive Beliefs (MCQ)

Table 2.8 indicates a significant overall Group (ACT vs. SIT vs. control) by Time (Time 1, Time 2, Time 3) interaction for this variable (see also Figure 2.5). Subsequent simple effects tests revealed significant, and large, Time 1 to Time 2 reductions in metacognitive beliefs about controlling unwanted thoughts in the ACT group ($F_{(1, 45)} = 20.96$, $p < .001$, $\eta^2 = .32$) and, to a lesser extent, in the SIT group ($F_{(1, 53)} = 7.30$, $p < .01$, $\eta^2 = .12$), with no change reported by the control group. At Time 2, the ACT group had a significantly lower level of these control-oriented beliefs than both the control group ($F_{(1, 92)} = 8.81$, $p < .01$, $\eta^2 = .09$), and SIT group ($F_{(1, 97)} = 5.61$, $p < .05$, $\eta^2 = .06$).

A similar pattern of within-group change was observed in the ACT condition between Time 1 and Time 3 ($F_{(1, 19)} = 24.10$, $p < .001$, $\eta^2 = .56$), whereas the Time 1 to Time 3 reduction in metacognitive beliefs in the SIT group was not significant. At time 3, the ACT group were reporting a lower level of these negative metacognitive beliefs than both the SIT group ($F_{(1, 35)} = 4.39$, $p < .05$, $\eta^2 = .11$) and the controls ($F_{(1, 47)} = 20.82$, $p < .001$, $\eta^2 = .31$). There were no significant changes on this metacognitive belief variable between Time 2 and Time 3.

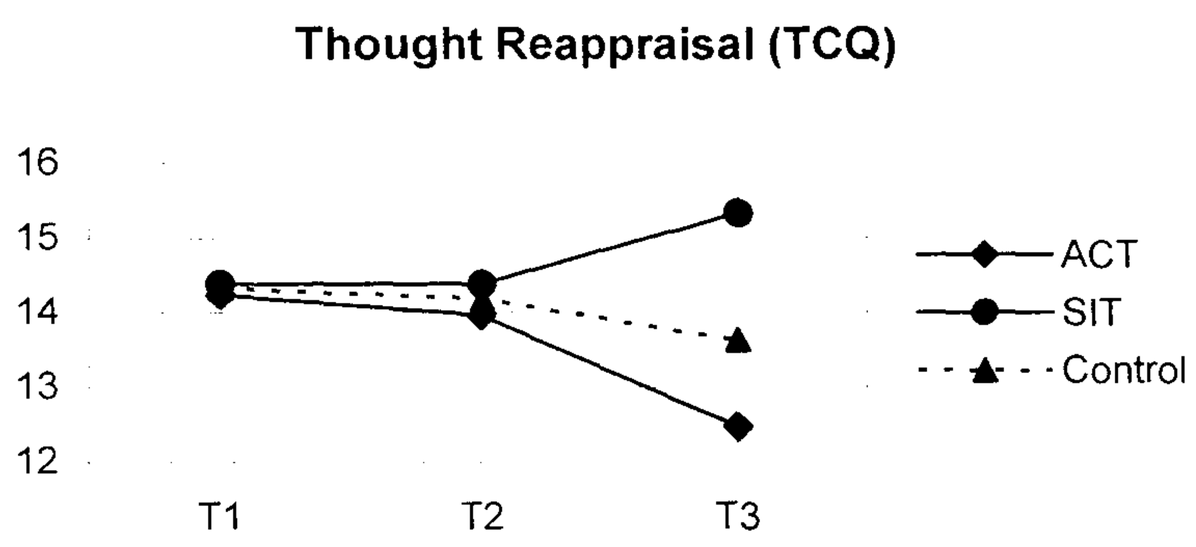

Figure 2.4 Changes in the use of thought reappraisal in each condition.

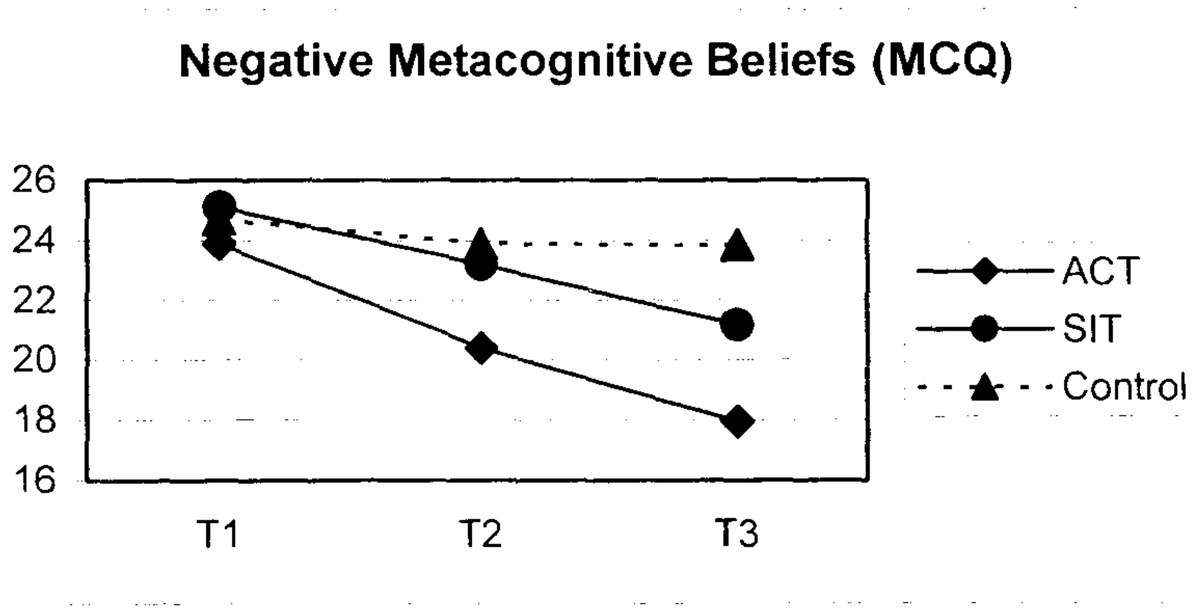

Figure 2.5 Changes in metacognitive beliefs in each condition.

Discussion

Previous research has established that cognitive-behavioural therapy (CBT)-based worksite stress management training (SMT) is an effective method for improving employees' mental health. However, we still know relatively little about the psychological mechanisms that underpin the effectiveness of these popular coping skills interventions. Hence, this study aimed to contribute to the worksite stress management literature in two key ways: 1) by comparing a "third wave" CBT-based intervention (acceptance and commitment therapy [ACT]) with the more traditional "second wave" stress management approach (stress inoculation training [SIT]); in order to 2) investigate the theoretically derived mechanisms of change in each of these interventions.

In support of the main outcome hypothesis, the ACT and SIT interventions resulted in broadly similar improvements in employees' general mental health. Specifically, the ACT and SIT programmes producing virtually identical, and statistically large, reductions in psychological distress across the six month assessment period. These significant improvements in mental health were mainly observed between Time 1 (baseline) and Time 2, which occurred three months after two half-day sessions of training. The outcome analysis further indicated that these mental health benefits were maintained at the six month follow-up. This equivalent impact of the two interventions on general mental health was not surprising, and mirrors similar findings in previous comparative worksite stress management studies (e.g., Bunce, 1997; Sallis et al., 1987).

The significant improvement in mental health found in the SIT group is consistent with the voluminous body of empirical work that has accumulated around this second wave CBT intervention approach (e.g., Meichenbaum, 1993b; Saunders et al., 1996; van der Klink et al., 2001). Moreover, the finding that ACT was as effective as the well-validated SIT protocol provides further support for the incorporation of this third wave,

mindfulness-based, approach into worksite stress management training programmes. The beneficial effect of ACT on psychological distress observed in the present study is in line with three previous ACT worksite studies, which also reported moderate to large improvements in employees' mental health (Bond & Bunce, 2000; Dahl et al., 2004; Hayes, Bissett, et al., 2004).

As noted above, a principal aim of this study was to investigate whether ACT and SIT work through the same, or different, mechanisms (or mediators) of change. As predicted, the improvements in mental health in the ACT condition were clearly mediated by increases in psychological flexibility, but not by a reduction in participants' dysfunctional cognitions. In contrast, in the SIT group, the improvements in mental health were mediated, at least in part, by a reduction in dysfunctional cognitions, but not by changes in participants' psychological flexibility.

This contrasting pattern of mediation in SIT and ACT is broadly consistent with the respective theoretical models of psychological distress and therapeutic change underlying these two intervention approaches. To elaborate, the ACT model of psychopathology posits that favourable therapeutic outcomes can be achieved by altering the way in which people experience or relate to difficult thoughts and feelings, rather than trying to change the form or frequency of those private events (Hayes et al., 1999). This intervention approach stands in stark contrast to the second wave CBT model underpinning SIT, which promotes the modification (or "restructuring") of dysfunctional cognitive content (e.g., Beck, 1976; Meichenbaum, 1985).

However, it is important to note that the reductions in psychological distress found in the SIT condition were only partially mediated by a reduction in dysfunctional thinking (between Time 1 and Time 3), suggesting that additional variables will need to be considered in future SIT mediation research (e.g., measures of physiological tension,

and/or problem-solving skills). Hence, only limited support was found for the second wave cognitive mediation hypothesis: that cognitive restructuring improves mental health by first modifying core dysfunctional cognitions. It is interesting that similarly equivocal mediation findings have been reported in the clinical literature, raising questions about some of the fundamental assumptions of the second wave CBT (cognitive restructuring) approach (e.g., Burns & Spangler, 2001; Hayes et al., 2006; Jacobson et al., 1996; Segal et al., 2002; Teasdale et al., 2002). The theoretical implications of such findings will be discussed in more detail in the general discussion (Chapter 5).

In addition to the different pattern of mediation in the ACT and SIT conditions in the present study, the key theoretical and technical differences between these approaches were reflected in participants' metacognitive beliefs, and in their use of thought reappraisal coping strategies. Specifically, the ACT participants reported a significant reduction in the use of thought reappraisal strategies for dealing with unwanted cognitions, while the SIT group reported a slight increase in the use of these strategies. This pattern of change (see Figure 2.4 in the Results section) reflected the contrasting technical content of the two programmes, in that ACT participants were encouraged (via mindfulness training) to become more willing to experience even undesirable thoughts, while the SIT intervention (via cognitive restructuring) taught participants how to challenge the validity of (i.e., reappraise) such cognitions. These differences in thought reappraisal were only evident between Time 2 and Time 3, suggesting that they emerged after participants had spent some time practicing stress management techniques, such as mindfulness (in ACT) or cognitive restructuring (in SIT).

The fundamental differences between ACT and SIT were also evident in post-intervention changes in participants' beliefs about the importance of controlling unwanted cognitions. Specifically, as expected, there was a much larger reduction in these negative

metacognitive beliefs in the ACT condition than there was in the SIT group. Once again, this finding is consistent with the contrasting principles and procedures at the heart of the two approaches: ACT promotes the idea that cognitive control strategies are part of the problem, and not the solution to psychological distress; SIT, on the other hand, trains participants in the use of cognitive coping skills that are essentially designed to give them a greater degree of control over the content of their cognitions. The smaller (yet still significant) reduction in negative metacognitive beliefs found in the SIT group (between Time 1 and Time 2) may indicate that the cognitive restructuring techniques provided SIT participants with a more useful, and less "punishing", way of managing their undesirable cognitions, thereby reducing belief in the consequences of not controlling difficult thoughts (cf. Wells, 2000).

These theoretically consistent findings appear to provide support for rigorously testing cognitive-behavioural models of change in worksite stress management research. However, it is worth noting that the baseline level of psychological distress reported by the employees in this study were above average, and higher than that reported in three previous worksite stress management studies (Bond & Bunce, 2000; Bunce & West, 1996; Reynolds et al, 1993b). In fact, at intake, some 50% of the participants in the present study would have likely been diagnosed as suffering from a minor psychiatric disorder (typically anxiety and/or depression), according to the commonly employed diagnostic criteria of the GHQ (Goldberg & Williams, 1988). Hence, for this high proportion of distressed individuals, the delivered stress management programmes (i.e., ACT or SIT) would be classified as "curative" rather than "preventive" in orientation (Bunce & West, 1996; Murphy, 1984). It is, of course, conceivable that the large effects of ACT and SIT on general mental health (and hence the observed pattern of mediation) would be dependent on participants' initial levels of psychological distress. However, this

empirical issue was not addressed in the present study, and is, instead, the principal focus in Chapter 4 of this thesis.

While the outcome and mediation findings summarised above were broadly consistent with predictions, some of the results of this study were, perhaps, more unexpected. In particular, it was not predicted that ACT and SIT would produce similarly large reductions in dysfunctional cognitions (measured by the DAS). This reduction in dysfunctional cognitions appeared to be an outcome of ACT rather than a mediator of change. This finding appears inconsistent with Bond and Bunce (2000), who found no significant change on the DAS following a similar ACT intervention. However, closer inspection of the DAS means in the two studies may help to explain this discrepancy. In the Bond and Bunce study, the Time 1 DAS mean[7] for the ACT group was 117.50, in comparison with a mean of 125.91 in the present study. Hence, there may have been a "floor effect" in Bond and Bunce's study. In the clinical literature, DAS means of less than 120 are typically found in non-clinical (e.g., student) control populations; scores of 125 and above indicate a higher cognitive risk for emotional distress; and scores greater than 140 are most likely to be found in depressed populations (e.g., Hamilton & Abramson, 1983; Kuiper, Olinger, & Air, 1989; Power et al., 1994; Swallow & Kuiper, 1990). Taken together, these results suggest that the significant effect of ACT on the DAS may be restricted to employee groups with at least moderate pre-intervention levels of dysfunctional thinking.

There is a second possible interpretation of the effect of ACT on participants' dysfunctional cognitions. Previous clinical and experimental research has found that ACT impacts on the *believability* of undesirable thoughts, as distinct from any impact on the *frequency* with which such cognitions are experienced (e.g., Bach & Hayes, 2002;

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[7] DAS mean obtained from the authors

Masuda, Hayes, Sackett, & Twohig, 2004; Hayes, Bissett et al., 1999; Hayes, Bissett, et al., 2004; Zettle & Hayes, 1986). These findings are consistent with the ACT model of psychopathology, which does not view even frequently experienced negative thoughts as necessarily problematic, and, instead, focuses on how a person relates to such thoughts (e.g., the extent to which an individual is "fused" with the literal content of difficult thoughts). Additionally, some clinical authors have suggested that the DAS may actually be tapping the strength of a respondent's belief in the propositions contained in the scale (e.g., "I should be able to please everybody"), rather than the frequency with which those cognitions are experienced (e.g., Hollon, Kendall, & Lumry, 1986; Sheppard & Teasdale, 2000; Teasdale et al., 2001; Wenzlaff et al., 2002). This raises the possibility that, in the present study, the DAS improvements found in the ACT group were partly reflecting a reduction in the believability of dysfunctional cognitions, independent of any changes in their form or frequency. ACT clinical researchers have investigated this issue by employing scales that includes both believability and frequency response options, such as the automatic thoughts questionnaire (ATQ) - a measure of depression-related cognitions (e.g., Zettle & Hayes, 1986). While such disorder-specific scales were deemed unsuitable for the non-clinical population in this study, it would be of interest to investigate whether ACT leads to change in the frequency and/or the believability of the core dysfunctional cognitions represented in the DAS. This empirical issue was therefore investigated in a second ACT worksite intervention study, which is described in the following chapter.

Despite the generally favourable results summarised above, this study is not without its limitations. These include the exclusive reliance on self-report measures, the relatively high level of participant attrition, and the lack of more objective work- and organisation-oriented outcomes (e.g., absenteeism and performance). As these

methodological issues are relevant to all three studies contained in this thesis, they are addressed in more detail in the general discussion (Chapter 5).

With regard to the inclusion of work-related measures, it should be noted that this study did employ a measure of participants' overall job satisfaction. However, the previously inconsistent findings for this construct in SMT research made it difficult to formulate a specific hypothesis; it was subsequently found that neither ACT nor SIT had a significant impact on job satisfaction. This finding is not unusual in the SMT literature (e.g., Bond & Bunce, 2000; Murphy, 1996; Reynolds et al., 1993b; Sallis et al., 1987), and suggests that job satisfaction may not be the most relevant work-related variable for investigating the benefits of CBT-based worksite interventions. Once again, it may be more profitable to assess changes on work variables that more clearly reflect the cognitive-behavioural models underpinning the particular interventions being delivered. This more theoretically guided measurement approach is adopted in the second worksite intervention study in this thesis, which, in addition to examining the believability/ frequency issue mentioned above, evaluates the impact of ACT on a measure of work-related *learning.* As will be shown, learning constructs have been conceptually and empirically linked to the ACT model of human distress and its mindfulness-based intervention technology.

In sum, the ACT and SIT worksite programmes delivered in the present study were found to be equally effective in improving employees' general mental health. However, the beneficial outcomes of these two intervention approaches appeared to be mediated by distinct processes of change; ACT was effective primarily because it was able to increase participants' psychological flexibility, while SIT was effective (at least in part) because it reduced participants' dysfunctional cognitions. Theoretically consistent differences between these two intervention approaches were also observed on measures of

metacognitive strategies and beliefs. These outcome and mediation findings lend support to the view that worksite SMT programmes provide a useful context for rigorously testing cognitive-behavioural theories of therapeutic change.

CHAPTER 3

CHAPTER 3: Study II

Acceptance and Commitment Therapy in the Workplace: Impact on Psychological Flexibility, Employee Mental Health, and Learning at Work.

Abstract

This study was designed to investigate further the efficacy of Acceptance and Commitment Therapy (ACT) as a worksite stress management training (SMT) programme. Eighty-one local government employees were randomly allocated to an ACT group (n = 50), or to a wait-list control group (n = 31). The ACT intervention was delivered to small groups of employees via three training sessions spread over three months. Across a seven month assessment period, the ACT intervention was associated with a significant reduction in psychological distress, a reduced frequency of dysfunctional cognitions, and an increase in learning at work. A small reduction in distress was also found in the control group. As predicted, the improvements in mental health in the ACT group were mediated by an increase in psychological flexibility but not by a reduction in the frequency of dysfunctional thoughts. The observed impact of ACT on mental health appeared to be "diluted" by a subgroup of participants with a low baseline level of strain. Discussion focuses on the theoretical implications of these findings, and on the possible moderating influence of employees' initial levels of strain in worksite SMT research.

Introduction

The intervention study described in the previous chapter demonstrated the utility of employing ACT as a worksite training intervention. This "third wave" CBT approach was found to be as effective as the well-validated stress inoculation training (SIT) procedure for improving mental health in the workplace. Consistent with its underlying model of therapeutic change, the benefits of ACT on employees' mental health were primarily mediated by increases in *psychological flexibility*, which is defined as one's ability to contact the present moment and to take goal-directed action without being deterred by undesirable thoughts, feelings, and/or physiological sensations (e.g., Hayes, 2004b; Hayes, Strosahl et al., 2004). The present study was designed to extend this line of ACT worksite research by further investigating the somewhat unexpected reduction in dysfunctional cognitions found in the ACT condition in the previous study. More specifically, this second worksite intervention study was conducted to examine whether ACT leads to a reduction in the believability and/or the frequency of the dysfunctional cognitions contained in the dysfunctional attitude scale (DAS), and whether these changes would mediate the impact of ACT on employees' general mental health. A second objective of this study was to test the theoretically derived hypothesis that ACT, through the promotion of psychological flexibility, would have a beneficial impact on work-related learning.

The Impact of ACT on Dysfunctional Cognitions: Believability or Frequency?

While the majority of the findings in the first study were in line with predictions, the significant, and statistically large, impact of ACT on participants' dysfunctional cognitions (as measured by the DAS) was more unexpected. The large reduction on the

DAS contrasts with two previous studies, which found no significant ACT intervention effects on this widely used measure of dysfunctional thinking. In an early clinical evaluation of ACT, Zettle and Rains (1989) compared a group-based ACT intervention with two forms of Beckian cognitive therapy for alleviating depression (e.g., Beck et al., 1979). While the three interventions produced equivalent reductions in depression, significant changes on the DAS were found only in the two cognitive therapy conditions. In view of these results, Zettle and Rains argued that ACT and cognitive therapy were operating via dissimilar processes of therapeutic change. Similarly, in a more recent study, Bond and Bunce (2000) found no significant change on the DAS following their successful ACT worksite intervention, which was similar to the one delivered in the study described in Chapter 2; although, as noted previously, Bond and Bunce's (2000) participants were reporting considerably lower Time 1 scores on the DAS than those observed in the first study in this thesis, and this may have created a floor effect in their study.

In each of these intervention studies, the DAS was employed as an indicator of dysfunctional cognitive content in order to test a key ACT theoretical proposition: that significant improvements in mental health can be obtained by targeting the unhelpful *contexts* of experiential avoidance and cognitive fusion (by promoting psychological flexibility), without having to modify the form or frequency of people's undesirable cognitions. Notwithstanding the somewhat unexpected impact of ACT on dysfunctional cognitions, this theoretical proposition was essentially supported in the previous study. That is, the observed reductions in dysfunctional thinking did not function as a significant mediator of change in the ACT condition, after controlling for the increases in psychological flexibility observed in this group. However, one important issue that was not addressed in the previous study, nor in the previous two ACT studies that employed

the DAS, is: what is this measure actually assessing? If it is assessing the frequency of dysfunctional cognitions, then there is no clear reason as to why ACT should decrease DAS scores; however, if it is actually assessing the believability of undesirable cognitions, then is not surprising that ACT reduced the scores on this measure. Specifically, the ACT model of change, with its emphasis on cognitive defusion and mindfulness, predicts that ACT interventions will lead to a significant reduction in the believability (and hence the impact) of difficult thoughts, independent of any changes in the form or frequency of those thoughts (Hayes et al., 1999).

A number of ACT researchers have tested this hypothesis by modifying scales of unwanted thoughts to assess the extent to which people actually believed these unwanted thoughts if or when they occur. For example, in another early ACT study, Zettle and Hayes (1986) sought to investigate the processes of change in Beck's cognitive therapy (CT) and an early version of ACT for reducing depression. These researchers employed the automatic thoughts questionnaire (ATQ), a measure of depressogenic thoughts that taps both the frequency that people experience such thoughts, and the extent to which they actually believe these thoughts when they do experience them. While there was no differential impact of cognitive therapy and ACT on the frequency of negative cognitions (both ACT and CT significantly reduced the frequency of negative thoughts), significantly lower believability scores were found in the ACT condition at post-treatment. Hence, reductions in the believability of automatic negative thoughts occurred independently of changes in the frequency of those thoughts (Zettle & Hayes, 1986). Interestingly, in this study, ACT was found to be slightly more effective than cognitive therapy in reducing depression.

The impact of ACT on the believability of difficult cognitions was also investigated in a more recent clinical study. Bach and Hayes (2002) randomly assigned 80

inpatients with chronic psychotic symptoms (e.g., auditory hallucinations) to receive treatment as usual (TAU), or TAU plus four sessions of ACT. Participants completed measures assessing the frequency of hallucinations as well as the believability of those symptoms. Data on rehospitalisation were then collected during a four-month follow-up period. The participants who received ACT actually reported an *increase* in symptom frequency compared to the TAU group, but indicated significantly lower levels of believability in those symptoms, when they did occur. Moreover, during the follow-up period, participants who had received ACT were hospitalised at a significantly lower rate than TAU participants. Thus, modifying these patients' fundamental relationship with their disturbing symptoms (i.e., reducing symptom believability) was found to be of greater therapeutic importance than reducing the frequency with which those symptoms were experienced.

Finally, in a previously described ACT worksite study, Hayes, Bissett et al. (2004) evaluated the impact of a one day ACT workshop on burnout and stigmatizing attitudes amongst substance abuse counsellors. Compared to multicultural training and an education control group, the counsellors who attended the ACT workshop reported significantly lower levels of believability in stigmatizing attitudes towards their clients. Furthermore, these reductions in believability were found to mediate the impact of ACT on stigma and burnout.

Taken together, these results show that ACT can reduce the believability and impact of difficult cognitions, independent of changes in the frequency with which such thoughts are experienced. These findings are consistent with the therapeutic emphasis in ACT, which focuses on how people relate to their undesirable thoughts and feelings, and does not directly seek to modify the content of those private experiences.

Thus, when assessing the impact of a worksite ACT intervention on the dysfunctional cognitions represented in the DAS, it would be of theoretical interest to examine whether ACT is having an impact on the extent to which people believe the propositions contained in the scale, and/or the frequency with which those cognitions are experienced. The present study investigated this issue by adapting a short version of the DAS to assess people's dysfunctional beliefs both in terms of their frequency and believability. Based on the research reviewed above and the ACT model of change, it is predicted that ACT will have a greater impact on the believability than the frequency of core dysfunctional cognitions.

ACT, Psychological Flexibility, and Learning at Work

In addition to investigating the impact of worksite stress management training (SMT) programmes, such as ACT, on employee mental health, it is important to examine the effectiveness of these interventions on work-related criteria. Demonstrating that worksite SMT programmes have an impact on work-related outcomes may help to raise the profile of these interventions amongst organisational decision-makers. While this issue has been frequently acknowledged in the SMT literature, the findings for work-related outcome variables (e.g., motivation and job satisfaction) have been inconsistent (e.g., Bond & Bunce, 2000; Murphy, 1996; van der Klink et al., 2001). This may be due to the fact that the work-related constructs typically employed in SMT research have not been derived from the cognitive-behavioural models of human functioning underpinning these interventions. For example, there appear to be no theoretical reasons to explain why coping skills interventions (such as ACT) would lead to an increase in job satisfaction. However, recent theoretical and empirical work in the ACT literature suggests that this mindfulness-based intervention approach, with its emphasis on increasing psychological

flexibility, may help to enhance learning – a variable that has obvious implications for performance in the workplace.

A core assumption underlying ACT is that excessive entanglements (or "fusion") with difficult psychological content (i.e., psychological *in*flexibility) can result in people being insensitive to, and hence less able to learn from, the natural contingencies that exist in the external (e.g., working) environment (e.g., Bond & Flaxman, in press; Hayes et al., 1999; Zettle & Hayes, 1987). On the basis of this theoretical formulation, Bond and Flaxman (in press) hypothesised that those workers with higher levels of psychological flexibility - who are less concerned with changing or avoiding undesirable thoughts and feelings - would be better able to engage with difficult work tasks; and, as a result, would learn how to deal with them effectively. Conversely, individuals with lower levels of psychological flexibility are likely to be less engaged with stressful work situations, because of their desire to remove or avoid any undesirable psychological events (e.g., anxiety) that may be elicited by doing so. Bond and Flaxman (in press) tested this hypothesis in a longitudinal study involving call centre employees of a large financial services organisation in the UK. As hypothesised, psychological flexibility was a significant and longitudinal predictor of both mental health and an objective measure of job performance (performance-to-target ratios). Moreover, the beneficial impact of psychological flexibility on these two outcomes was partially mediated by an objective measure of work-related learning (customer service test performance). Hence, the higher levels of mental health and performance observed in those employees with higher level of psychological flexibility was due, at least in part, to the fact that they were more successful at learning how to effectively perform important work tasks.

Additional support for this link between psychological flexibility and work-related learning was found in the ACT intervention study conducted by Bond and Bunce (2000).

Specifically, these researchers found that their ACT stress management intervention, which was implemented in a UK media organisation, significantly improved participants' potential to be innovative at work (e.g., identifying improved methods of working); and, this effect of ACT on innovation propensity was mediated by an increase in psychological flexibility. It was notable that the improvements in innovation found in the ACT condition were of a similar magnitude to those observed in a comparison group of participants who had attended an innovation training programme.

In view of this recent empirical work, it seems that work-related learning represents a theoretically coherent construct for assessing the impact of ACT interventions in the workplace. This more theoretically guided approach to outcome measurement may, in turn, help to address some of the equivocal findings for work-oriented criteria that have been observed in previous SMT research (e.g., Murphy, 1996; Reynolds et al., 1993b; van der Klink et al., 2001).

The Present Study

The present ACT worksite intervention study builds upon the findings of the previous study, reported in Chapter 2. Specifically, the first objective of this study was to investigate further the impact of ACT on employees' dysfunctional cognitions, by examining whether this intervention approach produces changes in the believability and/or the frequency of the cognitions represented in the dysfunctional attitude scale (DAS). Based upon the ACT model of change, and previous findings from the clinical literature, it is hypothesised that ACT will lead to significant reductions in the believability of these cognitions, but will have a smaller effect on the frequency with which they are experienced. It is further predicted that reductions in the believability, but not the frequency, of dysfunctional cognitions would mediate the impact of ACT on

employees' general mental health. A second aim of this study was to extend previous worksite SMT outcome research by investigating the effect of ACT on work-related learning. Following from the rationale and research outlined above, it is hypothesised that ACT will again result in a significant increase in levels of psychological flexibility, and that these improvements in flexibility will account for increased levels of learning; in other words, it is predicted that psychological flexibility will be the mechanism (or mediator) by which ACT enhances learning at work.

Method

Design

This second intervention study employed a similar design to the previous study. Participants were randomly allocated to either an ACT intervention group or to a wait-list control group. As in Study I, ACT was delivered in a 2 + 1 format, with two sessions of training on consecutive weeks and a third session three months later. A battery of questionnaires was administered at baseline (Time 1), three months after the initial two sessions of training (Time 2), and again approximately four months after the final training session (Time 3). Hence, the final assessment point occurred seven months after Time 1 (see Procedure section for further details).

Participants

Participants were employees of one of the local government organisations that had participated in Study I (organisation A). They had responded to adverts for "Work and Life Effectiveness Training" (i.e., ACT), which were circulated throughout the organisation (see Appendix 5). One hundred and forty eight employees who volunteered for the training subsequently completed questionnaires at Time 1. Of these participants, n = 92 had been randomly allocated to the ACT group and n = 56 to the control group. The average age of participants was 43 (range 25 to 63), and a large majority (82%) were female. Fifty eight percent had been educated to degree level. Forty four percent classified their job as clerical/ admin, 34% as senior management/ professional, and 22% as middle management/ technical. Participants worked 37 hours per week, on average, with 10% working 45 or more hours per week. The volunteers were drawn from various departments within the organisation, including council tax, environmental health, housing

and social services, education, finance, and libraries. In performing their job roles, most participants had daily (and often difficult) contact with members of the public.

Measures

As in Study I, the General Health Questionnaire (GHQ-12; Goldberg, 1978) was used to assess participants' general psychological distress. In this short version of the GHQ, respondents are asked to indicate whether they had experienced 12 common symptoms of distress over the last few weeks (e.g., "Have you recently….. felt constantly under strain?"). In the present study, the Likert method of scoring was used, which assigns values of 0, 1, 2, or 3 to the four response options (e.g., *Not at all* (0), *No more than usual* (1), *Rather more than usual* (2), M*uch more than usual* (3)). Cronbach alphas for the GHQ-12 were .87, .90, and .92 at Time 1, Time 2, and Time 3, respectively.

Work-related learning was measured using an unpublished scale that was developed by Bond (2002). This scale consists of nine items, which tap the extent to which respondents feel they have been able to learn how to deal with work demands (e.g., "When faced with demanding tasks at work, I am able to find successful ways to accomplish them"). Participants responded to each item on a six-point scale, ranging from *strongly disagree* to *strongly agree*. Higher scores indicate higher levels of learning. This learning scale demonstrated an adequate level of internal consistency in the present study (Cronbach alphas: .65 at Time 1; .72 at Time 2; and .66 at Time 3).

A modified version of the Dysfunctional Attitude Scale (DAS) was used to measure the frequency and believability of participants' dysfunctional cognitions. Twelve items were chosen from the 40-item scale to reflect the two main themes identified in previous research on the DAS: perfectionism (e.g., "If I do not do well all the time, people will not respect me"), and need for approval (e.g., "My value as a person depends greatly

on what others think of me") (e.g., Cane et al., 1986). For the DAS-frequency scale, respondents were asked to indicate how frequently they had experienced the 12 thoughts over the last month, with response options ranging from *Not at all* (1) to *All the time* (5). For the DAS-believability items, respondents were asked how strongly they have believed these thoughts when they have occurred, using a scale ranging from *Not at all* (1) to *Totally* (5). The alpha coefficients for the DAS-frequency scale were .83, .85, and .84 at the three measurement time points.

Unfortunately, during the initial ACT sessions, a number of participants expressed confusion over the DAS-believability scale (which immediately followed the frequency scale in the questionnaire pack; see Appendix 6). For example, a common question (which was not accounted for in the instructions) was how to respond if a thought in the DAS had *not* occurred over the last month. While the trainer was able to clear up some of this confusion in the ACT sessions, this was not possible for the control group (who received the questionnaires in the post). Concerns over the reliability and validity of the DAS-believability scale were subsequently confirmed by a significant Time 1 difference between the ACT and control groups on this measure. It was therefore decided to drop the DAS-believability scale from the study.

Psychological flexibility was measured with a revised version of the Acceptance and Action Questionnaire (AAQ). This revised scale was developed by ACT clinicians and researchers because of dissatisfaction with the wording of some of the items in the earlier version of the AAQ (which was used in the previous study). This more recent version of the AAQ contains 49 items that reflect various aspects of psychological flexibility (e.g., "My thoughts and feelings do not get in the way of how I want to live my life" (+); "I worry about not being able to control my worries and feelings" (-)). These items were rated on a scale ranging from *never true* (1) to *always true* (7). Previous

research indicates that higher scores on this longer version of the AAQ (i.e., higher levels of psychological flexibility) are associated with lower levels of depression, anxiety, and stress (Bond & Hayes, 2005). In the present study, alpha coefficients for this measure were as follows: .87 at Time 1; .91 at Time 2; and .93 at Time 3.

Procedure

During the summer of 2003, the occupational health department of the local government organisation was invited to participate in a "Work and Life Effectiveness Training Project". A health promotion officer volunteered to act as the in-house project manager, providing a contact point for employees to register their interest in the training and organising suitable rooms. Between October and December 2003, an advert for the training was placed on notice boards and an intranet system at the organisation. Approximately 200 employees registered an interest in the training. The present author randomly assigned these employees to either the ACT group or the control group. At the beginning of December 2003, all volunteers received a letter, which either: 1) provided dates and locations for the training sessions (i.e., the ACT group); or 2) informed the volunteer that, due to high demand for the training, he/she had been randomly allocated to a waiting-list and would begin the training in September 2004 (i.e., the control group). As mentioned above, 148 of the original pool of volunteers subsequently returned questionnaires at Time 1.

The content and delivery format of the ACT intervention were the same as described in the previous Method section. To reiterate, each ACT participant received three sessions of training, two on consecutive weeks, and a third session three months later (i.e., a 2 + 1 method of delivery). Each session lasted for approximately two and half to three hours. The first ACT sessions were conducted at the organisation in the final

week of January 2004, the second sessions took place in the following week, and the third sessions occurred in early May. In each training week, the same session was repeated eight times, with morning and afternoon sessions on four days in each week. If participants were unable to attend their scheduled session, they were encouraged to attend one of the other sessions in the same week. Across all sessions, the average training group consisted of approximately five employees (range 2 to 10). The ACT participants completed Time 1 questionnaires at the beginning of session 1, and the Time 2 questionnaires at the beginning of session 3 (i.e., approximately three months later). The control group participants received the same questionnaires in the post at the same time points. The Time 3 questionnaires were then sent to the ACT participants four months after their final session of training (in September 2004). The control participants completed the Time 3 questionnaires at the same time at the beginning of their first training session. Table 3.1 illustrates the key features of this experimental design.

Table 3.1
Study II Research Design

Condition	**Time 1**	Time 1 (+ 1 week)	**Time 2** (Time 1 + 4 months)	**Time 3** (Time 1 + 7 months)
ACT	OX	X	OX	O
Control	O		O	OX

Note. O = questionnaire administration; X = training session

Results

Overview

The results are organised into two main sections. The first section assesses the impact of the ACT intervention on general mental health (GHQ), and on the learning at work outcome variable, in comparison to the control group. The second section evaluates the effects of ACT on psychological flexibility and on the frequency of dysfunctional cognitions, and summarises the output from the mediation analyses.

Participant Attrition

As in the previous study, attrition resulted from non-attendance at the training sessions, and/or a failure to return usable questionnaires at one (or more) of the three measurement time points. In the ACT group, 90% of participants who attended the first ACT session returned for session 2 (1 week later). Out of the original 99 participants who attended the first training session, 69% ($n = 68$) subsequently attended all three sessions (although, nine people failed to return questionnaires at either Time 1 or Time 2), and 59% ($n = 40$) of these ACT participants also completed questionnaires at the follow-up (Time 3).

In the control group, 56 participants responded to questionnaires at Time 1, 47 at Time 2 (83%), and 35 at Time 3 (62%) (seven participants completed questionnaires at Times 1 and 3 only). There was a small difference in the overall attrition rate between the two conditions, with 60% of the initial ACT group and 42% of the controls dropping out of the study at some point (with most dropping out between Time 2 and Time 3). The lower attrition rate in the wait-list control group was probably due to the fact that these participants completed the Time 3 measures at the beginning of their first ACT session, while the initial ACT intervention group received the Time 3 measures in the post.

However, chi-square tests and ANOVA indicated no significant differences on any of the biographical or Time 1 study variables between those who dropped out of the study and those who provided data at all three time points.

Baseline Levels of Distress and Bivariate Correlations

The overall means, standard deviations, and zero-order correlations for the main study variables are presented in Table 3.2. As in study 1, the Time 1 GHQ mean of 14.88 (Likert scoring method) indicates that the employees who volunteered for the present study were experiencing a higher baseline level of psychological distress than was reported in three recent worksite stress management studies (Bond & Bunce, 2000; Bunce & West, 1996; Reynolds et al., 1993b). The correlations displayed in Table 3.2 are not entirely consistent with the main study hypotheses; specifically, while psychological flexibility was significantly related to lower distress ($p < .01$), it was only weakly associated with learning at work ($p < .10$). None of the biographical variables were significantly associated with the main study variables, and hence they were not controlled for in any of the analyses reported below.

Table 3.2
Means, Standard Deviations, and Zero-Order Correlations for Study Variables at Time 1 (Whole Sample)

Variable	*M*	*SD*	1	2	3	4	5	6
1. Psychological distress	14.88	6.05	-					
2. Learning at work	40.23	5.54	-.19	-				
3. Psychological flexibility	208.00	25.14	-.26	.15	-			
4. Frequency of dysfunctional cognitions	29.43	8.13	.28	-.09	-.37	-		
5. Age	42.75	8.47	.09	-.05	-.03	.16	-	
6. Gender			.03	.17	-.07	.08	-.13	-
7. Years with organisation	9.77	8.09	.12	.07	-.03	.16	.47	-.09

Note. Average $N = 145$. Significance levels: $r > .17$, $p < .05$; $r > .20$, $p < .01$.

Outcome Analysis

In contrast to the first study, an initial ANOVA did not reveal an overall significant Group by Time interaction for the GHQ ($F_{(2, 124)} = 1.99$, $p > .10$, $\eta^2 = .03$). This was, at first, rather puzzling, as the ACT intervention, organisational context, and sample characteristics were similar to those reported in Chapter 2. Subsequent inspection of the data revealed two possible reasons for these discrepant GHQ findings: (1) in this study, the control group reported small reductions in psychological distress across the seven month evaluation period; and (2) a small group of participants with high baseline levels of general mental health (i.e., low GHQ scores) appeared to be "diluting" the observed effect of the ACT intervention on the GHQ (cf. Bunce & Stephenson, 2000; Gardner et al., 2005). While the first issue (control group improvement) was not observed in the previous study, it is not uncommon in stress management intervention research (e.g., Barkham & Shapiro, 1990; Murphy, 1996; Williams, Kolar, Reger, & Pearson, 2001). The second issue suggests that, in the present study, participants' initial levels of strain were *moderating* the observed effectiveness of the ACT intervention; or, to put it another way, those participants who already had average, or above average, levels of mental health (i.e., low GHQ scores) were unlikely to report much (if any) improvement in mental health following the ACT intervention. (The reader is referred back to Section 1.4.3 of the introduction for a more detailed description of moderator variables). This type of moderating effect is one of the issues addressed in Chapter 4, and so it will not be discussed in any detail here. However, in order to reduce the influence of this low strain group in the present study, all participants (in both the ACT and control groups) who reported a Time 1 GHQ score of 9 or below were excluded from the analysis; this cut-off represents 1 standard deviation below the Time 1 GHQ mean, and also equates to the average GHQ-12 score for a working population reported by Banks et al. (1980). This

approach seemed justified on the grounds that the principal aim of this study was to further investigate the *mediators* of change in an ACT worksite intervention, which requires a reasonably strong intervention-outcome effect (Baron & Kenny, 1986). As a result of this strategy, data for 7 (Time GHQ mean = 7.7) and 9 (Time GHQ mean = 7.3) participants were removed from the ACT and control groups, respectively. Table 3.3 displays the final group sizes for the analyses reported below. There were no significant Time 1 differences between the ACT and control groups on any of the biographical or study variables.

Table 3.3
Final Group Sizes for Outcome and Mediation Analyses

	Time 1 to Time 2	Time 1 to Time 3
ACT	50	33
Control	31	27

Psychological Distress: Time 1 to Time 2

Following the removal of these low strain participants, the effectiveness of ACT for reducing psychological distress between Time 1 to Time 2 was assessed using a mixed design analysis of variance (ANOVA), with intervention Group (ACT vs. control) serving as the between-subjects factor, and Time (Time 1 vs. Time 2) as the within-subjects factor. As in the previous study, this initial analysis was followed by within- and between-group simple effects tests. When testing for between-group GHQ effects at Time 2, Time 1 GHQ scores were entered as a covariate. For all these ANOVA and ANCOVA effects, estimates of effect size (eta-squared [η^2]) are included alongside the significance level. To reiterate, according to Cohen's (1988) criteria, η^2 values of .01, .09, and, .25 indicate small, medium, and large effects, respectively.

This analysis revealed a marginally significant (p = .06) Group by Time interaction for general mental health from the first to the second assessment points (see

Table 3.4). The nature of this effect is illustrated graphically in Figure 3.1. Simple effects tests revealed significant, and statistically large, improvements in mental health (i.e., reduced levels of psychological distress) between Time 1 and Time 2 in the ACT group ($F_{(1, 49)} = 17.68$, $p < .001$, $\eta^2 = .27$). There was also a small, but non-significant, reduction in psychological distress in the control group between these first two assessment points. At Time 2 (i.e., three months after two sessions of training), the ACT group had significantly lower levels of psychological distress than did the control group ($F_{(1,78)} = 6.59$, $p < .05$, $\eta^2 = .08$).

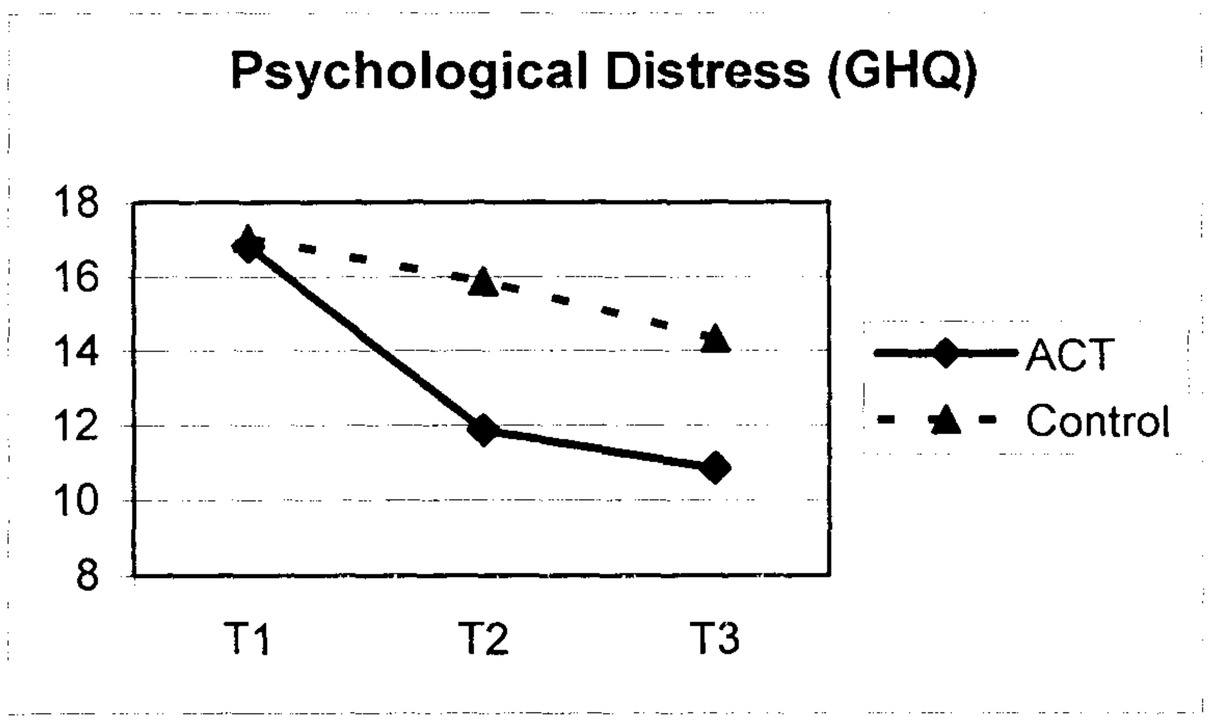

Figure 3.1 Changes in psychological distress

Psychological Distress: Time 1 to Time 3

As can be seen in Table 3.4 (and Figure 3.1), there was also a marginally significant ($p = .08$) Group by Time interaction effect for the GHQ between Times 1 and 3. Subsequent within-group tests again revealed significant, and statistically large, reductions in psychological distress in the ACT group ($F_{(1, 32)} = 24.33$, $p < .001$, $\eta^2 = .43$). There was also a significant, albeit less pronounced, reduction in distress in the control group between Time 1 and Time 3 ($F_{(1, 26)} = 4.50$, $p < .05$, $\eta^2 = .15$). There were no significant GHQ changes between Time 2 and Time 3 in either group. Finally,

between-group analyses revealed that, at Time 3, the ACT group had significantly lower levels of distress than did the controls ($F_{(1, 57)} = 4.19, p < .05, \eta^2 = .07$).

In sum, consistent with the findings of the previous study, ACT generally produced large improvements in participants' general mental health across the three measurement time points (a seven month period). As before, the steepest improvement in mental health within the ACT group was observed between Times 1 and 2, and these benefits were maintained (and even slightly enhanced) at follow-up (Time 3). However, as mentioned above, the Group by Time interaction effects were less pronounced in this study, partly because of the small-to-medium reductions in GHQ scores observed in the control group.

Learning at Work: Time 1 to Time 2

Table 3.4 and Figure 3.2 summarise the pattern of change found for the learning at work variable. As is evident from Table 3.4, there were no significant interaction effects for this learning measure. However, simple main effects tests revealed a significant, and medium to large, improvement in learning in the ACT group between the first two measurement points ($F_{(1, 51)} = 13.99, p < .001, \eta^2 = .22$). There was no significant change on this learning variable in the control group between the first two assessment points. Between-group analysis at Time 2 (controlling for Time 1 learning scores) revealed significantly higher levels of work-related learning in the ACT group than in the control group ($F_{(1, 80)} = 4.28, p < .05, \eta^2 = .05$).

Table 3.4

Means, Standard Deviations, and Analysis of Variance (ANOVA) Interaction Statistics for the Outcome and Mediator Variables

	ACT		**Control**		ANOVA			
	M	*SD*	*M*	**SD**	Effect[a]	*F* ratio	*df*	η^2
Psychological distress								
Time 1	16.83	5.53	17.03	4.91				
Time 2	11.88	6.44	15.87	6.79	G X T (T1 to T2)	3.69*	1, 79	.05
Time 3	10.85	6.92	14.33	6.38	G X T (T1 to T3)	3.14*	1, 58	.05
Learning at work								
Time 1	40.00	5.87	38.82	5.59				
Time 2	42.38	6.17	39.39	5.28				
Time 3	43.24	4.73	39.89	6.23				
Psychological flexibility								
Time 1	205.29	25.49	202.59	18.99	G X T (T1 to T2)	9.49**	1, 80	.11
Time 2	220.13	30.02	200.05	22.29	G X T (T1 to T3)	7.31**	1, 56	.12
Time 3	231.33	36.06	202.86	22.58	G X T (T1 T2 T3)	4.89**	2, 104	.09
Frequency of dysfunctional cognitions								
Time 1	29.84	8.14	31.14	8.51				
Time 2	27.07	8.47	31.19	8.51				
Time 3	25.74	8.23	30.11	8.58				

Note. ACT = Acceptance and Commitment Therapy; Control = Control group; ANOVA = analysis of variance; G X T = Group by Time interaction effect; η^2 = eta-squared (effect size); [a]only significant interaction effects are shown.

*$p < .10$. **$p < .01$.

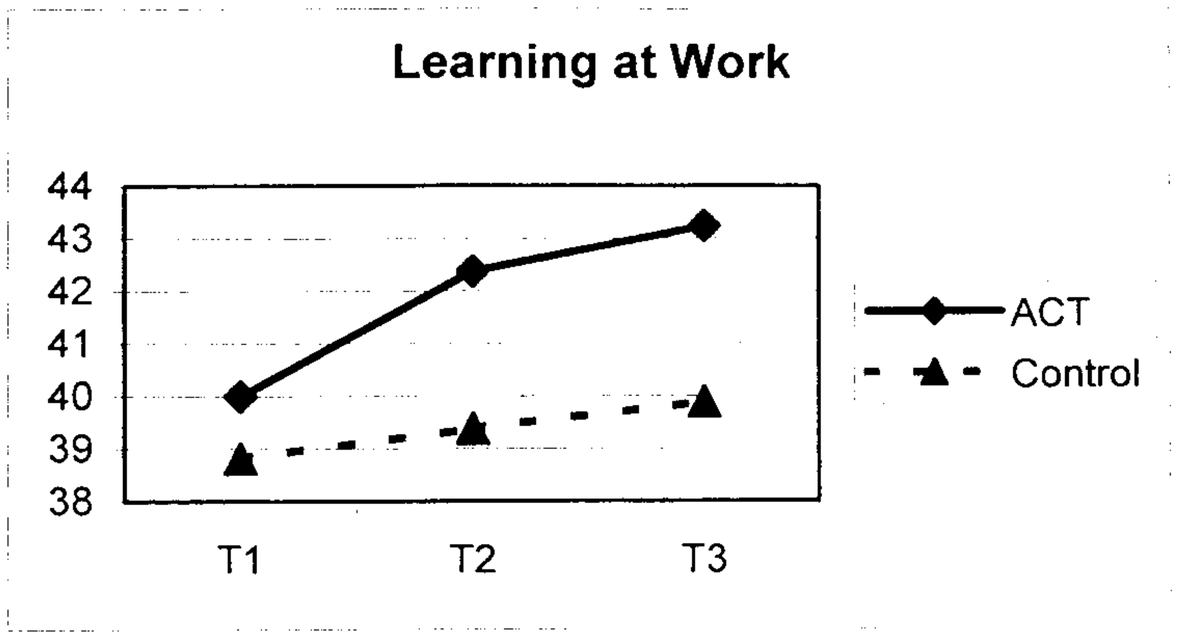

Figure 3.2 Changes in work-related learning

Learning at Work: Time 1 to Time 3

Between Time 1 and Time 3, the improvements in learning in the ACT group were of a large magnitude ($F_{(1, 33)} = 15.78$, $p < .001$, $\eta^2 = .32$). It was apparent that most of the improvements in learning in the ACT group occurred between Time 1 and Time 2, with no significant change occurring between Time 2 and Time 3. Once again, there were no significant changes in learning found in the control group. At Time 3, the difference in learning between the ACT group and the control group was not significant.

Thus, the ACT intervention did appear to have some benefits for learning at work. Although there was no Group by Time interaction effect for this learning variable, the results of the simple effects tests were generally consistent with hypotheses. It is notable that the increases in work-related learning in the ACT group were, in statistical terms, between three and seven times larger than those observed in the control group.

Mediation Analysis[8]

A principal objective of the present study was to further investigate the mediating role of psychological flexibility within an ACT worksite intervention. Specifically, a key aim of this study was to establish whether the beneficial impact of ACT on general mental health would be mediated by increases in psychological flexibility, while controlling for an additional component of dysfunctional cognitions (frequency) that was not controlled in the previous study. A second aim was to assess whether the improvements in work-related learning that resulted from the ACT intervention (reported above), would also be mediated by increases in psychological flexibility.

Two data analytic strategies were employed to test these hypotheses. First, ANOVA/ANCOVA were used to evaluate the general impact of ACT on a relatively new measure of psychological flexibility (AAQ-49), and on the frequency of dysfunctional thinking. Following this, a series of regression models were estimated to establish whether Baron and Kenny's (1986) four statistical requirements for mediation had been met.

Impact of ACT on Psychological Flexibility and Frequency of Dysfunctional Cognitions

Table 3.4, and Figures 3.3 and 3.4, detail the analyses of variance conducted to assess the impact of ACT on psychological flexibility and on the frequency of dysfunctional cognitions. As can be seen in Table 3.4, there was a significant Group by Time interaction for the AAQ (psychological flexibility) across all three measurement time points. Subsequent simple effects tests revealed medium to large increases in psychological flexibility in the ACT condition between Time 1 and Time 2 ($F_{(1, 50)} = 13.87$, $p < .001$, $\eta^2 = .22$), and again between Time 2 and Time 3 ($F_{(1, 32)} = 9.66$, $p < .01$, $\eta^2 = .23$), and a large

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[8] A test of the 'believability' hypothesis was not performed because of the unreliability of the DAS believability scale (see Method section)

increase between Time 1 and Time 3 ($F_{(1, 31)} = 11.19$, $p < .01$, $\eta^2 = .27$). There were no significant changes in psychological flexibility found in the control group. Subsequent between-group analyses (controlling for Time 1 AAQ scores) revealed significantly higher levels of psychological flexibility in the ACT group at both Time 2 ($F_{(1, 79)} = 11.63$, $p < .001$, $\eta^2 = .13$), and Time 3 ($F_{(1, 55)} = 9.89$, $p < .01$, $\eta^2 = .15$).

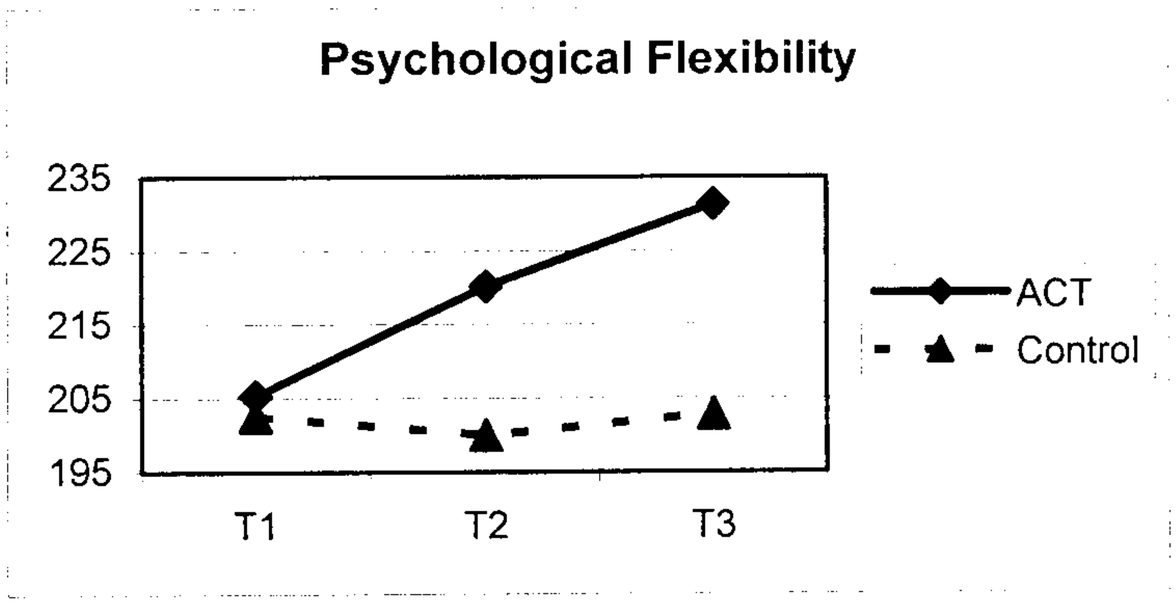

Figure 3.3 Changes in psychological flexibility

As is evident from Table 3.4 (and Fig. 3.4), there were no significant Group by Time interaction effects for the frequency of dysfunctional cognitions (DAS-F). However, tests of simple main effects did reveal moderate to large reductions in the frequency of dysfunctional thinking in the ACT group between Time 1 and Time 2 ($F_{(1, 51)} = 7.00$, $p < .05$, $\eta^2 = .12$), and between Time 1 and Time 3 ($F_{(1, 33)} = 11.79$, $p < .01$, $\eta^2 = .26$). In the control group, there was no change on this variable between Time 1 and Time 2, and a moderate (and marginally significant) reduction between Time 1 and Time 3 ($F_{(1, 26)} = 3.15$, $p < .10$, $\eta^2 = .11$). No significant changes in the frequency of dysfunctional cognitions were found between Times 2 and 3 in either group. Finally, the ACT group were experiencing a significantly lower frequency of dysfunctional cognitions than the control group at Time 2 ($F_{(1, 80)} = 4.19$, $p < .05$, $\eta^2 = .05$), although this small between-group effect became non-significant at Time 3.

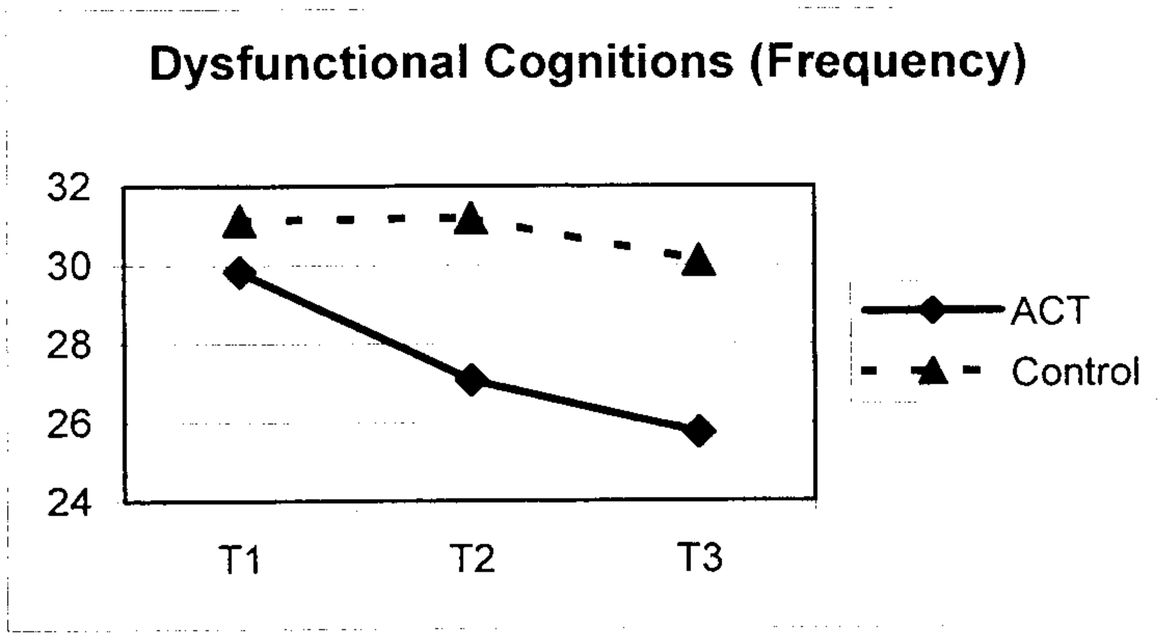

Figure 3.4 Changes in the frequency of dysfunctional cognitions

To summarise, the ACT intervention was, once again, very effective in increasing participants' psychological flexibility. It was interesting to note that the size of this effect was very similar to that observed in the previous study, even though different versions of the AAQ were used. The findings for the DAS-frequency scale suggest that participation in the ACT intervention also resulted in moderate to large reductions in the frequency of dysfunctional cognitions; although, at Time 3, there was no significant difference between the ACT and control groups on this measure.

Four Tests for Mediation

In order to provide a stringent test of the mediation hypotheses, a series of regression equations was estimated, as specified by Baron and Kenny (1986). To reiterate, these four tests are as follows:

Test 1: Establish that the independent (or predictor) variable (IV) is correlated with the outcome variable (DV).

Test 2: Establish that the predictor variable is correlated with the hypothesised mediator (M).

Test 3: Establish that the hypothesised mediator (M) is correlated with the outcome variable (DV), while controlling for the predictor variable (IV).

Test 4: If M fully mediates the IV – DV relationship, then this relationship should become non-significant, when controlling for M (the regression equation used for Test 3 can be used to establish this effect).

When these tests were applied to the general mental health outcome variable (GHQ), the variance explained by changes in psychological flexibility (AAQ) was assessed while controlling for the variance attributable to changes in the frequency of dysfunctional cognitions (DAS-F). This strategy was designed to establish the extent to which the reductions in psychological distress in the ACT condition were mediated by increases in psychological flexibility, above and beyond any reductions in the frequency of dysfunctional thinking. For the learning at work variable, only psychological flexibility was tested as a mediator of change, as there was no specific hypothesis linking the frequency of dysfunctional thinking to work-related learning. The output from these mediation tests is summarised in Tables 3.5 to 3.8, and discussed below. To aid interpretation, the tests were conducted separately for Time 1 to Time 2 effects (Tables 3.5 and 3.7), and Time 1 to Time 3 effects (Tables 3.6 and 3.8).

Mediation of Psychological Distress (Time 1 to Time 2)

The analyses summarised in Table 3.5 indicate that increases in psychological flexibility fully mediated the mental health improvements that resulted from the ACT

intervention. To elaborate, the previously significant effect of group (ACT vs. control) on general mental health observed between Time 1 to Time 2 (β = -.27) (test 1), was reduced to non-significance in the final model (β = -.07) (test 4), with the requirements for mediation tests 2 (β = .23) and 3 (β = -.57) also being met.

In contrast, the output summarised in Table 3.5 shows that, even though the ACT intervention reduced the frequency of dysfunctional cognitions, this reduction did not serve as a mediator by which ACT improved participants' mental health. Specifically, the effect of group on the frequency of dysfunctional thinking was not significant (β = -.08), while controlling for the changes in psychological flexibility, indicating that the statistical requirements for mediation test 2 had not been met.

Table 3.5
Regression Analyses for Determining Whether Change in Psychological Flexibility or Frequency of Dysfunctional Cognitions Mediates the Impact of ACT on Mental Health (Time 1 to Time 2)

Dependent Variable	**Test**	**Predictor**	**β**	**R^2**
Psychological distress at Time 2	1	Psychological distress at Time 1	.24*	.14**
		Group (ACT vs. control)	-.27*	
Psychological flexibility at Time 2	2	Psychological flexibility at Time 1	.46***	.50***
		Dysfunctional cognitions at Time 1	-.02	
		Dysfunctional cognitions at Time 2	-.32**	
		Group (ACT vs. control)	.23**	
Dysfunctional cognitions (frequency) at Time 2	2	Dysfunctional cognitions at Time 1	.50***	.45***
		Psychological flexibility at Time 1	.13	
		Psychological flexibility at Time 2	-.35**	
		Group (ACT vs. control)	-.08	
Psychological distress Time 2	3 & 4	Psychological distress at Time 1	.20*	.38***
		Dysfunctional cognitions at Time 1	-.11	
		Dysfunctional cognitions at Time 2	.16	
		Psychological flexibility at Time 1	.23*	
		Psychological flexibility at Time 2	-.57***	
		Group (ACT vs. control)	-.07	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: ACT = 1 Control = 0; β = standardized beta coefficient.
[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3.6

Regression Analyses for Determining Whether Change in Psychological Flexibility or Frequency of Dysfunctional Cognitions Mediates the Impact of ACT on Mental Health (Time 1 to Time 3)

Dependent Variable	Test	Predictor	*β*	R^2
Psychological distress at Time 3	1	Psychological distress at Time 1	.20	.10*
		Group (ACT vs. control)	-.26*	
Psychological flexibility at Time 3	2	Psychological flexibility at Time 1	.44***	.49***
		Dysfunctional cognitions at Time 1	.15	
		Dysfunctional cognitions at Time 3	-.41**	
		Group (ACT vs. control)	.27*	
Dysfunctional cognitions (frequency) at Time 3	2	Dysfunctional cognitions at Time 1	.67***	.61***
		Psychological flexibility at Time 1	.14	
		Psychological flexibility at Time 3	-.32**	
		Group (ACT vs. control)	-.03	
Psychological distress at Time 3	3 & 4	Psychological distress at Time 1	.25*	.46***
		Dysfunctional cognitions at Time 1	-.15	
		Dysfunctional cognitions at Time 3	.25	
		Psychological flexibility at Time 1	.32	
		Psychological flexibility at Time 3	-.66***	
		Group (ACT vs. control)	.01	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: ACT = 1 Control = 0; *β* = standardized beta coefficient.

[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Mediation of Psychological Distress (Time 1 to Time 3)

A very similar pattern of mediation was evident between baseline and follow-up (see Table 3.6). Once again, group (ACT vs. control) was found to be a significant predictor of the improvement in psychological flexibility between Time 1 to Time 3 (*β* = .27) (test 2), while controlling for any changes in the frequency of dysfunctional cognitions; and, in the final model, the increase in psychological flexibility significantly predicted reduced psychological distress (*β* = -.66) (test 3), while the previously significant Group effect (*β* = -.26) (test 1) was reduced to non-significance (*β* = .01) (test 4). Taken together, these results, as hypothesised, indicate that increased levels of psychological flexibility fully mediated the mental health improvements observed in the ACT group.

Furthermore, Table 3.6 indicates, once again, that a reduction in the frequency of dysfunctional cognitions did not mediate the Time 1 to Time 3 mental health improvement observed in the ACT condition. As with the Time 1 to Time 2 findings, group did not significantly predict change in the frequency of dysfunctional cognitions (β = -.03) (test 2), once the variance attributable to psychological flexibility had been taken into account. This a pattern of mediation findings suggests that the increases in psychological flexibility in the ACT group were leading to a reduction in the frequency of dysfunctional cognitions.

Mediation of Learning at Work (Time 1 to Time 2)

The regression model summarised in Table 3.7 indicates that psychological flexibility also mediated the learning improvements observed in the ACT group. Specifically, the significant effect of group on learning (β = .17), was reduced to non significance in the final model (β = .07), with the requirements for test 2 (β = .30) and test 3 also being met (β = .36).

Table 3.7
Regression Analyses for Determining Whether Change in Psychological Flexibility Mediates the Impact of ACT on Learning at Work (Time 1 to Time 2)

Dependent Variable	**Test**	**Predictor**	**β**	**R^2**
Learning at Time 2	1	Learning at Time 1	.64***	.47***
		Group (ACT vs. control)	.17*	
Psychological flexibility at Time 2	2	Psychological flexibility at Time 1	.54***	.40***
		Group (ACT vs. control)	.30**	
Learning at Time 2	3 & 4	Learning Time 1	.60***	.55***
		Psychological flexibility at Time 1	-.14	
		Psychological flexibility at Time 2	.36**	
		Group (ACT vs. control)	.07	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: ACT = 1 Control = 0; β = standardized beta coefficient.
[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 3.8

Regression Analyses for Determining Whether Change in Psychological Flexibility Mediates the Impact of ACT on Learning at Work (Time 1 to Time 3)

Dependent Variable	**Test**	**Predictor**	***β***	**R^2**
Learning at Time 3	1	Learning at Time 1	.56***	.38***
		Group (ACT vs. control)	.15	

Note. Test refers to Baron and Kenny's (1986) four tests of mediation; Group coding: ACT = 1 Control = 0; ***β*** = standardized beta coefficient.

[a] $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Mediation of Learning at Work (Time 1 to Time 3)

As is evident from Table 3.8, Group (ACT vs. control) was not a significant predictor of Time 1 to Time 3 change on the learning variable (Beta = .15), indicating that the statistical requirements for mediation test 1 had not been met. Hence, no further meditation tests were conducted for this variable.

To summarise, both this experiment and the previous one showed that the reductions in psychological distress seen in an ACT worksite intervention were mediated by one particular psychological characteristic: psychological flexibility. Specifically, the increases in psychological flexibility that resulted from ACT fully mediated (or accounted for) the beneficial impact that this intervention had on people's mental health. Furthermore, this result was found even after controlling for another potential mediator of the observed improvements in mental health: frequency of dysfunctional cognitions. Finally, the Time 1 to Time 2 improvement in work-related learning that resulted from the ACT intervention was also mediated by an increase in psychological flexibility, although the Time 1 to Time 3 improvement in learning was not.

Discussion

The results of this second randomised controlled study broadly supported, and indeed extended, the ACT findings from the previous study. In particular, ACT was, once again, found to produce large improvements in employees' mental health (reduced psychological distress); and, as predicted, these benefits were mediated by increases in psychological flexibility, but not by reductions in participants' dysfunctional cognitions. Moreover, ACT, via the promotion of psychological flexibility, had a moderate to large effect on work-related learning across the first two assessment points.

One of the intended aims of this study was to assess the differential impact of ACT on the believability and frequency of the dysfunctional core cognitions included in the dysfunctional attitude scale (DAS). Unfortunately, this believability hypothesis could not be tested, due to unforeseen problems with the modified scale. However, it was possible to assess the impact of ACT on the frequency with which employees experienced dysfunctional cognitions, thereby extending and clarifying the results of the previous study. While ACT led to moderate reductions in the frequency of dysfunctional thinking, these changes did not serve as the mechanism by which ACT improved people's mental health. Instead, psychological flexibility was found to be functioning as the principal mediator of change, even after controlling for these reductions in the frequency of participants' dysfunctional thoughts. In fact, the reduced frequency of dysfunctional cognitions appeared to be an outcome of ACT, which was itself mediated by increases in psychological flexibility. This pattern of mediation is generally consistent with previous clinical research, which has found that ACT impacts on how people relate to their undesirable cognitions (through the promotion of mindfulness and cognitive defusion), regardless of any changes

in the form or frequency of those cognitions (e.g., Bach & Hayes, 2002; Hayes et al., 1999; Zettle & Hayes, 1986).

A key difference between this study and the previous one was that, in the present study, there was no initial group by time interaction effect for the general mental health outcome variable (GHQ). This was partly due to the fact that the control group in the present study experienced a small to moderate improvement in mental health across the seven month evaluation period. It is certainly not unusual to see such control group change in stress management research (e.g., Agras et al., 1987; Barkham & Shapiro, 1990; Gardner et al., 2005; McLeroy et al., 1984; Murphy, 1996). While it is not always clear why wait-list control participants improve prior to receiving an intervention, there are a number of possible explanations, including regression to the mean, spontaneous remission, increased expectation of benefit, and the effects of completing various measures of stress and coping (Agras et al., 1987). Barkham and Shapiro (1990) note that small therapeutic effects might be expected from the point at which a moderately distressed employee takes action toward dealing with the problem (i.e., volunteering for a worksite stress management programme).

However, closer inspection of the data from these first two studies suggests that, in the present study only, a group of initially low strain participants were "diluting" the observed outcome effectiveness of the ACT intervention. This issue has been frequently discussed, but rarely tested, in the worksite SMT literature, and it has important implications for the reported effectiveness of these programmes. To address this issue, Bunce (1997) has recommended that researchers investigate initial level of strain as a potential *moderator* of change in worksite SMT programmes. This analytical approach was employed in the final study in this thesis, which is described in the following chapter.

A second objective of the present study was to evaluate the efficacy of ACT for improving learning at work. As discussed in the study introduction, learning constructs have been conceptually and empirically linked to the ACT model of human functioning (e.g., Bond & Flaxman, in press). Hence, the inclusion of a learning outcome variable was in line with the recommendation of Murphy (1996), who encouraged researchers to make better use of underlying theoretical models when generating hypotheses about the effects of SMT programmes on work-related criteria. The results provided at least some support for the hypothesis that psychological flexibility would mediate the beneficial impact of ACT on learning at work. Specifically, an increase in psychological flexibility partially mediated the improvement in learning between Time 1 and Time 2, but not between Time 1 and Time 3. It is possible that the non-significant mediation effect for learning from Time 1 to Time 3 was due to the smaller sample at the final assessment point, and the resultant lack of statistical power to detect between-group effects. Indeed, there was a clear trend at Time 3 toward higher levels of work-related learning in the ACT condition, compared to the control group (see Fig. 3.2).

The Time 1 to Time 2 mediation finding for the learning variable adds to the growing body of research that has highlighted the importance of psychological flexibility for learning and performance in various contexts (e.g., Bond & Bunce, 2000; 2003; Bond & Flaxman, in press; Gardner & Moore, 2004). These associations between psychological flexibility and learning appear to be fairly robust, inasmuch as they have been observed on various learning indicators, including the self-report measure of learning at work used in the present study, a measure of employee attitudes toward innovation (Bond & Bunce, 2000), and an objective measure of learning on a new computer software system (Bond & Flaxman, in press).

To summarise, this second intervention study provided further support for the efficacy of ACT as a worksite SMT programme. Mediation tests revealed that this intervention approach was effective primarily because it increased psychological flexibility, and not because it reduced the frequency of employees' stress-related cognitions. Results from this study raise the question of whether the benefits of SMT will only occur for employees who are presenting with at least moderate levels of psychological distress; a third and final study was therefore designed to examine this issue in more detail.

CHAPTER 4

CHAPTER 4: Study III

For Whom, and to What Extent, is Worksite Stress Management Training Effective?

Abstract

A large body of outcome research supports the use of cognitive-behavioural stress management training (SMT) programmes for improving employees' mental health. However, very little research has focused on the characteristics of the employees who are most likely to benefit from these worksite interventions. The current study merged the data from the two previous worksite SMT studies to investigate the moderating role of participants' initial level of strain. This larger sample contained two hundred and forty four local government employees who had been randomly assigned to one of three conditions: 1) Acceptance and Commitment Therapy (ACT, n = 104); 2) Stress Inoculation Training (SIT, n = 53); or 3) a wait-list control group (n = 87). Participants in the ACT and SIT conditions attended three sessions of training spread over three months. A measure of general mental health was administered at baseline (Time 1), three months after two training sessions (Time 2), and again three or four months after a third training session (Time 3). Both interventions led to significant and statistically large reductions in psychological distress across this assessment period. As predicted, the effects of ACT and SIT on employees' mental health was significantly moderated by initial level of strain, with much larger reductions in distress being observed in a subgroup of high strain participants. Approximately 70% of the initially distressed employees who received ACT or SIT improved to a clinically significant degree. Discussion focuses on the importance of accounting for sample heterogeneity when evaluating worksite SMT interventions.

Introduction

The previous two studies investigated the mediators of change in two contrasting worksite stress management training (SMT) programmes. This approach followed the recommendations of Bunce (1997), who called for a much more systematic examination of the psychological mechanisms underpinning the outcomes of these CBT-based interventions. However, Bunce also highlighted the importance of examining another type of SMT process variable: *moderators* of change. As discussed previously (see section 1.4.3), a moderator variable can alter the strength (and even the direction) of a relationship between an independent variable (e.g., an intervention) and a dependent variable (e.g., improved mental health) (Baron & Kenny, 1986). Whereas identifying mediating variables, such as psychological flexibility, enhances our understanding of how or why stress management interventions are effective, identifying moderator variables can provide important information on the individual or situational characteristics that may enhance or detract from intervention effects.

One variable that has the potential to moderate the effectiveness of worksite SMT programmes is the initial level of strain being experienced by the employees who participate in these interventions. Although this issue is frequently highlighted in the stress management literature, it has rarely been tested (e.g., Bunce, 1997; Bunce & Stephenson, 2000; Gardner et al., 2005; Murphy, 1996; Reynolds & Briner, 1994). A related question concerns the extent of improvement that can be expected in those employees who do enter SMT programmes with moderate or high levels of distress. In particular, some commentators have questioned whether CBT-based worksite stress management programmes are sufficient to produce clinically meaningful change for people in such a

state of distress (Reynolds & Briner, 1994). To address these empirical issues, a primary objective for this study was to investigate whether baseline level of strain would function as a significant moderator of change in two SMT programmes (ACT and SIT). A second objective was to assess the extent to which any mental health improvements, experienced by initially high strain SMT participants, would meet the stringent criteria for clinically significant and reliable change.

Level of Strain as a Moderator of Change in Worksite SMT Programmes

Most worksite SMT programmes are classified as preventive (as opposed to curative) in nature, in view of the fact that they are open to all employees, regardless of their pre-intervention levels of psychological distress (e.g., Murphy, 1984; Reynolds & Shapiro, 1991; van der Klink et al., 2001). While this recruitment approach helps to reduce any stigma that might be associated with volunteering for stress management in the workplace, it does introduce a high level of participant heterogeneity into empirical evaluations of these programmes (Bunce, 1997; Bunce & Stephenson, 2000). This represents a key difference between stress management and clinical research, in that clinical studies typically employ strict selection criteria to ensure a reasonable level of sample homogeneity (e.g., Barkham & Shapiro, 1990; Burns & Spangler, 2001; Elkin et al., 1989; Rector et al., 1999; White et al., 1992; White, 2000).

As a result of this preventive orientation in worksite stress management research, it is possible that initially low strain SMT participants would "dilute" (or moderate) the observed impact of these interventions on mental health outcomes (Bunce & Stephenson, 2000); or, to put it another way, stress management researchers are less likely to find significant pre- to post-intervention reductions in distress amongst employees who are

mentally healthy to begin with (Murphy, 1996). In view of the potential impact of participant level of strain on the findings of stress management research, it is surprising that investigators have generally failed to test baseline strain as a moderator of SMT outcomes (Bunce, 1997). However, there is some evidence in the stress management literature that greater mental health benefits are obtained by employees who enter SMT with initially elevated levels of strain.

In their meta-analytic review of worksite stress management research, van der Klink et al. (2001) compared the overall effect sizes from studies that were remedial in orientation (i.e., specifically targeted workers with above average levels of distress) with the more common preventive programmes. They found a larger effect for remedial programmes (d = .59) than preventive programmes (d = .32), suggesting that greater SMT benefits accrue to those employees with initially higher levels of distress. However, the reviewers were able to find only 4 remedial studies, compared to 44 that were classified as preventive.

A similar approach was adopted by Saunders et al. (1996), in their review of the effects of SIT on performance anxiety, state anxiety, and performance. They compared studies in which participants had been pre-screened and selected because of high anxiety, with those based on more "normal" populations. For performance anxiety, a significantly stronger effect size (r = .75) was found for those studies conducted with normal anxiety populations, compared to studies involving participants with elevated anxiety (r = .46). In contrast, for state anxiety and performance outcomes, slightly stronger effects of SIT were found in anxious populations (r = .42 [state anxiety]; r = .35 [performance]), compared to those studies involving more functional participants (r = .27 [state anxiety]; r = .24 [performance]). The reviewers concluded that SIT is effective regardless of whether

participants are drawn from high-anxiety or normal-anxiety populations. Although, it should be noted that only a minority of the SIT studies reviewed by Saunders et al. were conducted at the worksite. Taken together, these two meta-analytic reviews suggest a slight trend toward larger SMT effects, at least for mental health outcomes, for participants with higher baseline levels of strain.

The potentially moderating influence of initial level of strain was also highlighted in a recent worksite SMT study, conducted by Gardner et al. (2005). These researchers allocated a group of UK healthcare workers to receive a cognitive restructuring intervention, a behavioural coping training programme, or to a wait-list control group. Initial results suggested that the two interventions were not particularly effective in reducing psychological distress (GHQ) across a three month assessment period. However, when the analysis was restricted to those employees who were showing some signs of distress at baseline, both SMT programmes were found to produce significant reductions in distress relative to the control group. Although Gardner et al. did not conduct the statistical tests required formally to establish moderation, their less rigorous analyses do suggest that initial level of strain was moderating the effectiveness of their cognitive and behavioural interventions. It is interesting to note the similarity between Gardner et al.'s results and those observed in the previous study in this thesis. In particular, a significant group by time interaction effect for the GHQ also only emerged in the previous study when the initially low strain participants had been removed from the analysis.

The above findings, including those from the previous study, lend support to the view that initial level of strain will function as a moderator of change in CBT-based worksite SMT programmes. However, as far as this author is aware, no previous worksite SMT study has directly tested this assumption, using standard statistical procedures for

establishing moderation (e.g., Baron and Kenny, 1986). Hence, the first aim of the present study was to provide a rigorous assessment of this strain moderation hypothesis.

Assessing Clinically Significant Change

Whilst worksite SMT studies frequently report *statistically* significant improvements in employee mental health, the magnitude of these improvements has rarely been assessed against the stringent criteria of *clinical* significance that are widely employed in psychotherapy research (e.g., Jacobson, Follette, & Revenstorf, 1984; Jacobson & Revenstorf, 1988). In general terms, clinically significant change is inferred when, following an intervention, an individual moves across the threshold from the dysfunctional to the functional range (or population) on the outcome variable of interest (Jacobson et al., 1984). This assessment process is operationalised in a statistical formula that calculates a cut-off point between the dysfunctional and functional distributions, which an individual has to cross post-intervention in order to be classified as "improved" to a clinically significant degree (Jacobson & Truax, 1991). Hence, the identification of this cut-off allows researchers to calculate the proportion of individuals (e.g., therapy clients) who have achieved clinically meaningful change, over and above statistically significant change.

Additionally, assessments of clinical significance require a calculation of the statistical reliability of any pre- to post-intervention improvements. This *reliable change index* (RC; Jacobson & Truax, 1991) takes account of the reliability of the outcome measure(s) being used to evaluate an intervention, and ensures that any change is "real" and not merely an artefact of measurement error. Thus, the cut-off point between the dysfunctional and functional distributions, and the reliable change index, together

constitute a twofold criterion for establishing whether clinically significant improvement has occurred (Jacobson & Revenstorf, 1988).

Very few worksite stress management researchers have used these procedures for assessing the clinical significance of their intervention effects. This problem was discussed by Reynolds and Briner (1994), in a critique of worksite SMT programmes and research. In particular, they suggest that it is unlikely that clinically significant change would occur as a result of CBT-based interventions and question their efficacy for helping distressed workers. However, the large effect sizes reported in the first two studies in this thesis question this conclusion.

Moreover, Reynolds and Briner's (1994) rather pessimistic view of the clinical significance of worksite SMT was not entirely supported by Bunce and Stephenson's (2000) recent review of 27 stress management studies. These researchers extracted relevant statistics to estimate the proportion of these studies (and the measures within them) that achieved clinically meaningful and reliable change. The required data for assessing clinical significance were available in 21 of studies, 14 (67%) of which showed clinically meaningful change. Additionally, the relevant statistical information was identified for 32 separate outcome measures, but only 6 of these met Jacobson and Revenstorf's (1988) criterion for reliable change.

When interpreting the findings of their review, Bunce and Stephenson (2000) again highlight the preventive nature of most worksite SMT studies and point out that the extent of improvement observed in each study is likely to have been diluted by subgroups of initially low strain participants. Indeed, although only three of the reviewed studies focused on more distressed working populations, all demonstrated clinically meaningful and statistically reliable change. This is perhaps not surprising, in that to demonstrate clinical

significance, pre-intervention scores would need to be in the dysfunctional range on the particular outcome measure being used (Jacobson & Truax, 1991). Hence, Bunce and Stephenson urged stress management researchers to begin assessing clinical significance amongst groups of initially more dysfunctional workers. This analytic approach was employed in the present study, which sought to reduce the likelihood of a dilution effect by evaluating clinically meaningful change amongst a subgroup of participants with elevated baseline levels of strain.

The Present Study

Based on the initial findings of the previous study, and other similar results in the worksite SMT literature (e.g., Gardner et al., 2005), it was predicted that initial level of strain would moderate the impact of both ACT and SIT on employee mental health. More specifically, it was hypothesised that much larger reductions in psychological distress (reduced GHQ scores) would be found amongst SMT participants with a higher baseline level of strain, compared to those who were experiencing less strain. Additionally, based on the findings of Bunce and Stephenson (2000), and the extent of client change reported in clinical CBT studies (e.g., Barkham & Shapiro, 1990; Scott & Stradling, 1990; White, 2000), it was hypothesised that approximately half (50%) of the initially high strain ACT and SIT participants would show clinically significant (and reliable) improvement.

Method

Design

The data from the two previous studies were merged for this final study. Participants in the ACT, SIT, and control conditions were split into high strain and low strain subgroups according to their Time 1 scores on the General Health Questionnaire (GHQ). Moderated regression analyses were conducted to investigate whether initial level of strain was moderating the impact of the ACT and SIT interventions on psychological distress. Additionally, the extent of change in the initially high strain subgroup was evaluated against criteria for clinical significance.

Participants

The reader is referred to the two previous Method sections for participant information.

Measures and Procedure

This moderator study focuses on the General Health Questionnaire (GHQ-12; Goldberg, 1978), which represents a key outcome variable in this thesis. As discussed previously, the GHQ is one of the most widely used and well-validated instruments for measuring general mental health (e.g., Goldberg & Williams, 1988; Hardy et al., 1999; McDowell & Newell, 1996). The GHQ-12 asks respondents to indicate the extent to which they have experienced 12 common manifestations of general psychological distress over the last few weeks (e.g., "Have you recently……been losing confidence in yourself?"). The present study utilised the two main scoring methods for the GHQ. First, as in the previous two studies, the Likert method of scoring was employed to assess change in

participants' mental health across the three measurement time points. This method assigns values of 0, 1, 2, and 3 to the four response options in the scale (e.g., *Not at all*, *No more than usua*l, *Rather more than usual*, *Much more than usual*). Second, the 'GHQ' (or binary) scoring method was used to help identify initially high strain and low strain participants. In this second scoring system, the four responses in the GHQ are assigned values of 0, 0, 1, and 1, which are then summed across the 12 items to give a total score with a possible range of 0 to 12. This method is specifically designed to identify individuals who are reporting a level of psychological distress that would make them probable cases of minor psychiatric disorder (Goldberg & Williams, 1988; Hardy et al., 1999; 2003). A recent validation study of the GHQ-12 in a UK working population concluded that the best threshold for "caseness" is 3/4 (Hardy et al., 1999). That is, based on the binary scoring method, those who endorse 4 or more symptoms/ behaviours on the GHQ-12 are classified as probable cases of minor psychiatric disorder, while those scoring 3 or less are classified as non-cases. The 3/4 threshold was applied to the Time 1 GHQ scores in the present study to create high strain (i.e., GHQ cases) and low strain (i.e., GHQ non-cases) subgroups for each condition (i.e., ACT, SIT and control). This high strain/low strain dichotomy was then used to aid interpretation the findings of the moderation analyses described in the following results section.

Results

Overview

The results of this final study are organised into two main sections. The first section summarises the output from moderated multiple regression analyses, and analyses of variance (ANOVA), which assessed the influence of baseline levels of strain on the outcomes of ACT and SIT. Then, the second section employs Jacobson et al.'s formulae (e.g., Jacobson & Revenstorf, 1988) to calculate the proportion of initially high strain ACT and SIT participants who met the criteria for clinically significant and reliable improvement.

Merged Group Sample Sizes

As described in the Method section, the data from the two previous studies were merged for this final analytical chapter. This strategy was supported by the fact that a) Studies I and II were conducted in the same (or similar) local government organisations, and b) there was no difference in baseline levels of distress between the two studies. This produced a larger sample size for the ACT and control groups, but not for the SIT condition (which was only included in the first study). Although participant attrition rates were relatively high across the two studies (see previous Results sections), there were no significant Time 1 differences on the General Health Questionnaire (GHQ) between those participants who dropped out of the two studies and those who remained. Similarly, there were no significant Time 1 GHQ differences between the three groups (i.e., ACT, SIT, and control). In order to take advantage of the larger sample sizes at Time 2, all analyses reported below were conducted separately for Time 1 to Time 2, and Time 1 to Time 3

GHQ scores, and each intervention group was separately compared to the control group (cf. Bunce & West, 1996; Kagan, Kagan, & Watson, 1995).

Table 4.1 displays the sample sizes for the "low strain" (i.e., GHQ non-cases), and "high strain" (i.e., GHQ cases) subgroups within each condition. As can be seen, there were broadly equal numbers of high and low strain participants within each group. The GHQ threshold for caseness (3/4) was also used as the cut-off for the graphs displayed in Figures 4.1 and 4.2, which will be used to aid interpretation of any moderation effects.

Table 4.1
Number of Participants in Each Condition as a Function of GHQ Caseness at Time 1

	Time 1 to Time 2		Time 1 to Time 3	
	Non-cases (low strain) (T1 GHQ < 4)[a]	Cases (high strain) (T1 GHQ ≥ 4)	Non-cases (low strain) (T1 GHQ < 4)	Cases (high strain) (T1 GHQ ≥ 4)
ACT	54	50	31	31
SIT	30	23	15	11
Control	44	43	32	25

[a]case/non-case (3/4) threshold based on the GHQ binary scoring method (0-0-1-1) (see Method section for further details)

Moderation Analysis

Tables 4.2 and 4.3, and Figures 4.1 and 4.2, indicate the GHQ patterns of change (Likert scoring method) within each intervention group, as a function of participants' initial level of strain. In general terms, a moderation (or interaction) effect would be suggested by noticeably different patterns of change between Figures 4.1 (low strain subgroup) and 4.2 (high strain subgroup).

To provide more rigorous tests for moderation, a series of moderated regression equations were estimated in order to establish whether baseline levels of strain (Time 1 GHQ - treated as a continuous variable) was significantly moderating the subsequent impact of the two interventions on general mental health. As noted earlier, in these regression models, moderation is indicated by a significant effect for the interaction term (a

product of the IV and the hypothesised moderator), while controlling for the main effects of the IV and the moderator (Baron & Kenny, 1986). The output from these moderation tests is summarised in Table 4.4 (ACT) and Table 4.5 (SIT). Additionally, ANOVA was employed to investigate within- and between-group simple main effects for the initially high and low strain participant subgroups.

Table 4.2
GHQ Means and Standard Deviations for the Initially Low Strain Participants in Each Condition

	ACT		**SIT**		**Control**	
	M	*SD*	*M*	*SD*	*M*	*SD*
Psychological distress (GHQ)						
Time 1	11.06	2.64	11.40	2.47	10.43	3.02
Time 2	10.46	5.10	8.20	5.16	11.87	4.85
Time 3	9.65	4.67	9.73	5.93	11.72	5.85

Note. GHQ = General Health Questionnaire (Likert scoring method); ACT = Acceptance and Commitment Therapy; SIT = Stress Inoculation Training; means were obtained from those participants who completed all three sets of questionnaires.

Table 4.3
GHQ Means and Standard Deviations for the Initially High Strain Participants in Each Condition

	ACT		**SIT**		**Control**	
	M	*SD*	*M*	*SD*	*M*	*SD*
Psychological distress (GHQ)						
Time 1	20.20	5.11	19.45	4.89	20.99	4.25
Time 2	11.35	6.45	10.27	6.54	17.96	6.43
Time 3	11.58	7.38	9.63	5.80	17.84	7.37

Note. GHQ = General Health Questionnaire (Likert scoring method);; ACT = Acceptance and Commitment Therapy; SIT = Stress Inoculation Training; means were obtained from those participants who completed all three sets of questionnaires.

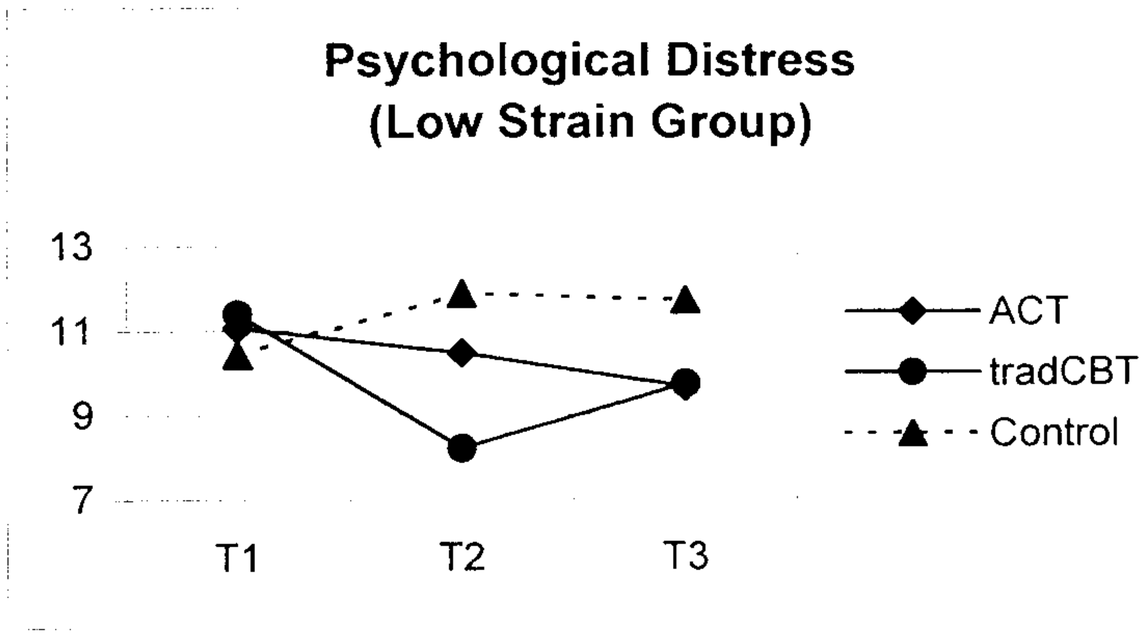

Figure 4.1 Changes in psychological distress in the initially low strain group

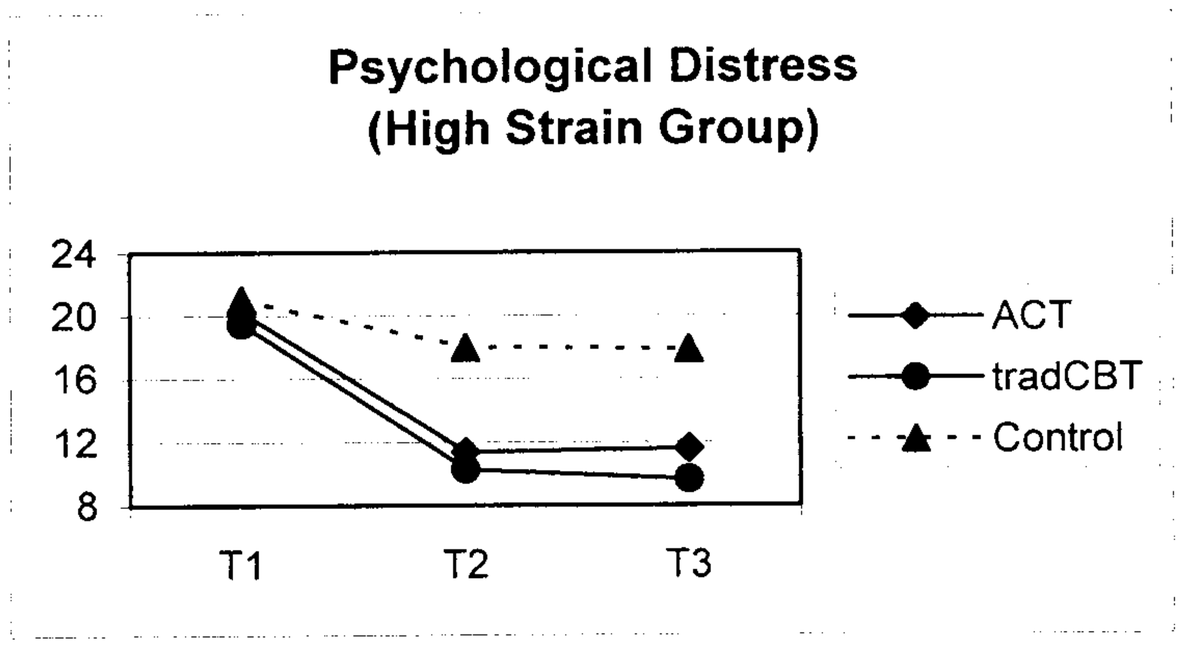

Figure 4.2 Changes in psychological distress in the initially high strain group

ACT Moderation

As can be seen from the upper portion of Table 4.4 (Time 1 to Time 2), there was a significant effect for the moderator product term (Group [*ACT vs. control*] x Strain [*Time 1 GHQ*]), while controlling for the main effects of Group and Strain. Figures 4.1 and 4.2 illustrate the structure of this moderator effect, which was partly the result of a differential pattern of Time 1 to Time 2 GHQ change in the two control groups. ANOVA revealed a marginally significant ($F_{(1, 43)} = 3.61$, $p = .06$, $\eta^2 = .08$) increase in psychological distress (i.e., increased GHQ scores) in the low strain control group between Times 1 and 2 (see Fig. 4.1), while the high strain controls experienced a significant, and moderate, decrease

in distress between these first two measurement points ($F_{(1, 42)} = 4.60$, $p < .05$, $\eta^2 = 10$). The ACT intervention produced significant, and large, improvements in mental health between Times 1 and 2 for the high strain participants only ($F_{(1, 49)} = 76.56$, $p < .001$, $\eta^2 = .61$). For these high strain participants, between-group tests at Time 2 revealed significantly lower levels of distress in the ACT group than in the control group ($F_{(1, 90)} = 24.39$, $p < .001$, $\eta^2 = .21$); however, for the low strain participants, the corresponding Time 2 between-group effect was not significant.

Table 4.4
Moderated Regression Analyses for Determining Whether Initial Level of Strain Moderates the Impact of ACT on Mental Health

Dependent Variable	Predictor	*ß*	R^2
GHQ Time 2	Source	.03	
	Strain [GHQ Time 1]	.58***	
	Group [ACT vs. control]	.29*	
	Group x Strain	-.64***	
	Model Summary		.26***
GHQ Time 3	Source	-.13	
	Strain [GHQ Time 1]	.55***	
	Group [ACT vs. control]	.12	
	Group x Strain	-.44*	
	Model Summary		.24***

Note. GHQ = General Health Questionnaire; Source = study 1 or study 2; *ß* values are standardised beta coefficients
* $p < .10$; ** $p < .05$; *** $p < .001$.

When the same tests were conducted for Time 1 to Time 3 scores (see the lower portion of Table 4.4), the moderator term was marginally significant ($ß = .44$, $p = .06$), which probably reflected a reduced level of statistical power at the final assessment point. Further investigation of this moderating effect revealed a differential impact of ACT on the high and low strain participants. Consistent with the Time 1 to Time 2 pattern of change,

there was only a small (non-significant) reduction in distress in the low strain ACT group between Time 1 and Time 3 ($\eta^2 = .06$). As a result of this, at Time 3, the ACT group had slightly lower GHQ scores than the control group ($F_{(1, 65)} = 2.83$, $p < .10$, $\eta^2 = .04$). In contrast to this small effect for the low strain group, the high strain ACT participants (see Fig. 4.2) experienced significant and large reductions in psychological distress between Time 1 and Time 3 ($F_{(1, 31)} = 42.43$, $p < .001$, $\eta^2 = .58$). At Time 3, the ACT participants in this high strain group had significantly lower levels of distress than the controls ($F_{(1, 56)} = 8.15$, $p < .01$, $\eta^2 = .13$).

Taken together, these moderation results suggest that the ACT intervention had only a small effect for the initially low strain group (between Time 1 and Time 3), but was clearly most effective for those employees who were presenting with at least moderate levels of strain at baseline.

SIT Moderation

The results presented in the upper portion of Table 4.5 suggest that, at least between Time 1 and Time 2, initial level of strain was not significantly moderating the effect of SIT on general mental health. Subsequent simple effects tests revealed that SIT produced significant improvements in mental health (i.e., reduced GHQ scores) between Times 1 and 2, for both high strain and low strain participants. For the low strain participants, SIT was associated with a medium to large reduction in distress between these first two measurement points ($F_{(1, 29)} = 5.90$, $p < .05$, $\eta^2 = .17$) (see Fig. 4.1), although the same intervention clearly had a much larger effect for the high strain participants ($F_{(1, 22)} = 36.43$, $p < .001$, $\eta^2 = .62$) (Fig. 4.2). Subsequent between-group analyses at Time 2 revealed that SIT participants had significantly lower levels of psychological distress than

the controls, in both the low strain ($F(1, 71) = 9.99$, $p < .01$, $\eta^2 = .12$), and high strain ($F(1, 63) = 14.78$, $p < .001$, $\eta^2 = .19$) subgroups.

However, the lower portion of Table 4.5 suggests that initial level of strain was moderating the effect of SIT on mental health between Times 1 and 3. Interestingly, for the low strain participants, the significant benefits of SIT observed at Time 2 deteriorated slightly between Times 2 and 3. At Time 3, the GHQ scores for the low strain participants in the SIT group were identical to those observed in the low strain ACT group, and were slightly lower (i.e., more favourable) than those in the control group ($F(1, 49) = 2.92$, $p < .10$, $\eta^2 = .06$). For the high strain group, the effects of SIT that were observed at Time 2 were maintained at follow-up, at which point the SIT group had significantly lower levels of psychological distress than the controls ($F(1, 35) = 7.78$, $p < .01$, $\eta^2 = .18$).

Table 4.5

Moderated Regression Analyses for Determining Whether Initial Level of Strain Moderates the Impact of SIT on Mental Health

Dependent Variable	**Predictor**	***β***	**R^2**
GHQ Time 2	Source	-.07	
	Strain [GHQ Time 1]	.54***	
	Group [SIT vs. control]	-.16	
	Group x Strain	-.21	
	Model Summary		.39***
GHQ Time 3	Source	-.30**	
	Strain [GHQ Time 1]	.53***	
	Group [SIT vs. control]	.12	
	Group x Strain	-.55**	
	Model Summary		.31***

Note. GHQ = General Health Questionnaire; Source = study 1 or study 2; *β* values are standardised beta coefficients
* $p < .10$; ** $p < .05$; *** $p < .001$.

To summarise, these findings support the hypothesis that the observed effectiveness of ACT and SIT for improving mental health was moderated by participants' initial levels of strain. Any interpretation of these results needs to take account of the differential control

group change between the high and low strain participants. Nevertheless, the general pattern of findings is consistent with the following interpretations: 1) that both interventions were considerably more effective for those participants who had higher levels of baseline strain; and 2) that both interventions offered *some* mental health benefits to the low strain participants, when compared to the low strain control group. One final interesting finding that emerged from this analysis relates to the slightly different pattern of Time 1 to Time 2 GHQ change in the ACT and SIT interventions for the low strain participants (see Fig. 4.1). For this participant subgroup, ACT resulted in a fairly gradual reduction in psychological distress that continued to follow-up; SIT, on the other hand, was associated with an initially more rapid decrease in distress, but this effect deteriorated somewhat between Time 2 and Time 3.

Assessing Clinical Significance

As indicated by the effect sizes reported above, the improvements in mental health for the high strain employees in both interventions were large, in statistical terms (i.e., $\eta^2 > .25$). However, as outlined in the introduction to this study, it is also important to establish whether these improvements would meet the stringent criteria for *clinically* significant change that are widely used in psychotherapy research (e.g., Bunce & Stephenson, 2000; Jacobson & Revenstorf, 1988; Jacobson & Truax, 1991). In general terms, change following an intervention can be considered clinically meaningful for those participants who move from the dysfunctional to the functional population on the variable of interest (in this case the GHQ-12) (Jacobson et al., 1984; Jacobson & Revenstorf, 1988). Hence, the following procedures for assessing clinically significant change were restricted to the initially dysfunctional (i.e., high strain) participants.

Although Jacobson et al. describe various methods for assessing whether clinically significant change has occurred, they particularly encourage researchers to use their least arbitrary criterion, which incorporates information from both dysfunctional and functional populations (Jacobson & Truax, 1991). This method provides a cut-off for clinical significance via the following formula:

$$c = \frac{S_0 M_1 + S_1 M_0}{S_0 + S_1}$$

Where:

c = cut-off for assessing clinically significant change
M_0 = Mean of normative sample
M_1 = Mean of pre-test intervention and control groups
S_0 = SD of normative sample
S_1 = SD of pre-test intervention and control groups

If a distressed participant (and/or group) crosses this cut-off point post-intervention (moving in the direction of improved functioning), it can be concluded that he/she has improved to a clinically meaningful degree (Jacobson & Truax, 1991).

Table 4.6, below, contains the descriptive values for the GHQ-12 (Likert scoring method) that were used to calculate the cut-off point for clinical significance in the present study. The normative GHQ-12 data were obtained from Banks et al. (1980).

Table 4.6
GHQ-12 Means and Standard Deviations Used to Assess Clinical Significance

Symbol	Definition	Value
M_0	Mean of normative sample	8.76
M_1	Mean of pre-test intervention and control groups	20.21
S_0	SD of normative sample	3.93
S_1	SD of pre-test intervention and control groups	4.75
Post-intervention means for comparison with cut-off:		
$M_{2\,[ACT]}$	Mean of ACT group at Time 2	11.35
$M_{2\,[SIT]}$	Mean of SIT group at Time 2	10.27
$M_{3\,[ACT]}$	Mean of ACT group at Time 3	11.58
$M_{3\,[SIT]}$	Mean of SIT group at Time 3	9.63

Using these values to solve Jacobson et al.'s formula:

$$c = \frac{3.93(20.21) + 4.75(8.76)}{3.93 + 4.75}$$

$$= 13.94$$

Thus, those initially high strain participants whose post-intervention GHQ score reduced to 14 or less would be considered improved to a clinically significant degree; or, to put it another way, a GHQ score of ≤ 14 is statistically more likely to have been drawn from the functional than from the dysfunctional population (Jacobson & Truax, 1991).

As is clearly evident from the post-intervention group means displayed in the lower portion of Table 4.6, the two worksite interventions were powerful enough to produce clinically meaningful change for each intervention group, as a whole. However, it is perhaps more informative to use this criterion to calculate the *proportion* of participants within each condition whose mental health improved to a clinically meaningful extent. That is, those participants with GHQ scores that a) decreased from pre- to post-intervention and, b) in doing so, crossed the cut-off point for clinical significance (i.e., 14). The relevant figures are displayed in Table 4.7.

Table 4.7
The Proportion of Initially High Strain Participants Who Met the Criterion for Clinically Meaningful Improvement in Mental Health

	Time 2	Time 3
ACT	64 % (n = 28)	76 % (n = 22)
SIT	68 % (n = 13)	78 % (n = 7)
Control	35 % (n = 15)	37 % (n = 10)

Note. Participants who had a Time 1 GHQ score of ≤ 14 were omitted from these calculations.

As is evident from Table 4.7, while approximately one third of the high strain control participants returned to normal levels of functioning during the six to seven month evaluation period, between two thirds (at Time 2) and over three quarters (at Time 3) of the intervention participants did so.

Across all three groups, those participants who met the criterion for clinically significant change at Time 2 had significantly lower GHQ-12 scores at Time 1 ($M = 18.8$) than those who did not reach the cut-off ($M = 21.3$) ($p < .01$). A similar trend was evident at Time 3 ($M = 19.6$ vs. $M = 21.3$), but this latter difference was not statistically significant. For those participants in the two intervention groups who met the criterion, the average pre- to post-test reduction on the GHQ (Likert scoring method) was in excess of 11 points. However, it should also be noted that psychological distress decreased significantly amongst the minority of intervention participants who *did not* meet the requirement for clinical change, with 50% of these individuals experiencing a GHQ reduction of 4 points or more.

Assessing the Reliability of GHQ Improvements

As discussed in the introduction to this chapter, evaluating the clinical significance of intervention outcomes also requires a second statistical procedure, which is designed to assess the *reliability* of pre- to post-intervention changes (i.e., the *reliable change index* (RC); Jacobson et al., 1984). This second criterion ensures that the pre to post change for each "clinically improved" participant was actually of a sufficient magnitude to exceed the margin of measurement error.

The reliable change index (*RC*) is equivalent to each participant's difference score (in this case, pre minus post) divided by the standard error of measurement:

$$RC = (x_1 - x_2) / S_{diff}$$

Where:

x_1 = a participant's pre-test score
x_2 = the same participant's post-test score
S_{diff} = standard error of the difference between the pre and post scores
[$S_{diff} = \sqrt{2}(S_E)^2$, where: $S_E = s_1\sqrt{1 - rxx'}$; s_1 = standard deviation of pre-intervention scores (see Table 4.6, above); and rxx' = test-retest reliability of the outcome measure (i.e., the GHQ-12)].

Thus, a difference score is calculated for each participant, and these scores are then divided by a common denominator (S_{diff}). If a participant's RC is greater than 1.96, it is unlikely ($p < .05$) that his/her post-intervention score is reflecting change that is due to measurement error; instead, it is likely that the change is reflecting a "real" improvement and not merely chance fluctuations stemming from an imprecise measuring instrument (Jacobson & Truax, 1991). The test-retest reliability for the GHQ-12 has been reported as r = .73 (Goldberg & Williams, 1988; Hardy et al., 1999). Based on this reliability coefficient, S_E = 2.47, and S_{diff} = 3.49; hence, each participant's pre to post, and pre to follow-up, GHQ difference score was divided by 3.49. These calculations revealed that the reductions in psychological distress in the two intervention groups were statistically reliable for the majority of the high strain participants (65% and 66% at Times 2 and 3, respectively).

Table 4.8 indicates the proportion of high strain participants in each group who met *both* of Jacobson et al.'s stringent criteria for assessing clinical improvement; that is, those participants a) whose post-intervention scores ended up in the normative range for psychological distress, and b) who improved to a sufficient magnitude to rule out chance (i.e., measurement error) as a competing explanation. As is evident from this final table, between half and three-quarters of the high strain employees in the intervention groups met

this two-fold criterion for clinically significant improvements in mental health, while approximately one in five of the control participants did so.

Table 4.8
The Proportion of Initially High Strain Participants Who Met the Criteria for Clinically Meaningful and Statistically Reliable Improvement in Mental Health

	Time 2	Time 3
ACT	53 % (n = 23)	62 % (n = 18)
SIT	58 % (n = 11)	78 % (n = 7)
Control	21 % (n = 9)	22 % (n = 6)

Note. Participants who had a Time1 GHQ score of ≤ 14 were omitted from these calculations.

Discussion

The present study had two main objectives: 1) to investigate the previously untested hypothesis that initial level of strain would moderate the effects of ACT and SIT on employee mental health; and 2) to assess the extent of clinically significant improvement experienced by worksite SMT participants with initially elevated levels of strain.

The moderation hypothesis was broadly supported. Specifically, initial level of strain moderated the impact of both the ACT intervention (Time 1 to Time 2 and Time 1 to Time 3) and the SIT intervention (Time 1 to Time 3 only). For both training programmes, much larger reductions in psychological distress were found in those employees who had higher baseline levels of strain. While this finding may not seem particularly surprising, it does have important implications for worksite SMT research. As many authors have noted, previously observed effects of worksite SMT programmes on employee mental health may have been "diluted" by subgroups of non-distressed workers who often volunteer for these interventions (e.g., Bunce & Stephenson, 2000; Murphy, 1996; van der Klink et al., 2001). The results of the present study lend credence to this view. This implies that, at least for moderately distressed employees, worksite stress management interventions are likely to be *more* effective than most published reports suggest. Indeed, as previously discussed, the few worksite SMT studies that have exclusively targeted less functional groups of workers have typically found larger effects than the more common preventative (i.e., open to all) approach (e.g., Bunce & Stephenson, 2000; Saunders et al., 1996; van der Klink et al., 2001).

However, this does not mean to suggest that worksite SMT programmes, such as ACT and SIT, should be restricted to employees who are showing elevated levels of psychological distress. Such an approach could have the undesirable (and unethical) effect

of stigmatising those who are "chosen" to participate in a particular intervention or study. Instead, it is recommended that stress management researchers ensure that their sample sizes are large enough to allow for high strain/low strain subgroup analyses, similar to those conducted in the present study. Moreover, it is worth noting that the level of strain moderation effects observed in the present study relate to the general mental health outcome variable (i.e., the GHQ). Previous findings in the stress management literature suggest that for performance-oriented criteria, SMT programmes can be equally (if not more) effective for participants with lower levels of strain (Saunders et al., 1996). Hence, the present author concurs with Saunders et al.'s conclusion - that CBT-based stress management programmes can benefit both high and low strain employees.

Further investigation of the moderation effects in the present study revealed some other potentially interesting findings. First, there was a different pattern of change observed for the high strain and low strain control groups, and this may have contributed to the significant moderation effects. Specifically, psychological distress increased slightly in the low strain control group, but decreased in the high strain control group. This may reflect regression to the mean – a common statistical phenomenon that has often been used to explain control group change (e.g., Agras et al., 1987; McLeroy et al., 1984). However, perhaps more interesting was the slightly different pattern of change in the ACT and SIT conditions in the low strain group between the first two assessment points. In particular, SIT was associated with an initially steeper reduction in psychological distress than was ACT (see Fig. 4.1); although, this initial between-group difference was no longer evident at the six month follow-up, by which time the low strain SIT and ACT participants were reporting similar levels of mental health. These findings suggest that "second wave" CBT techniques (such as cognitive restructuring) may offer low strain participants some initial

mental health benefits, but these benefits may attenuate over longer time periods. In contrast, ACT was associated with a more gradual improvement in mental health for these more functional participants, which is maintained at follow-up. Future research may wish to investigate this potentially different pattern of effects that ACT and SIT have for initially well-functioning individuals.

Perhaps the most surprising (and impressive) results of this study relate to the assessments of clinical significance. It was hypothesised that about half (50%) of the initially high strain employees in the ACT and SIT interventions would experience clinically meaningful change. This estimate was based on the large effect sizes observed in the first two studies, and on the proportions of clinically improved clients reported in group-based CBT studies in the clinical literature (which appear to range from 60% to 80%, on average) (e.g., Scott & Stradling, 1990; White, 1995; 1998; White, Brooks, & Keenan, 1995). Results indicated that, by the six month follow-up, 62% of the initially high strain ACT participants and 78% of the high strain SIT participants who remained in the study had improved to a clinically significant degree on the GHQ outcome variable; that is, those participants who met Jacobson et al.'s stringent criteria for clinically meaningful and statistically reliable change (e.g., Jacobson & Revenstorf, 1988; Jacobson & Truax, 1991). Moreover, those high strain participants who did *not* meet these criteria for clinically meaningful change still experienced significant reductions in psychological distress (at least 4 points on the GHQ, on average). These results appear to contrast with the view of Reynolds and Briner (1994), who have suggested that CBT-based SMT programmes are unlikely to result in clinically meaningful improvements in employee well-being. Instead, these findings support the view of a number of CBT authors who promote the psychoeducational training format as an effective and efficient method for imparting

cognitive-behavioural skills to large groups of individuals (e.g., Brown et al., 1998; Brown, Cochrane, & Hancox, 2000; Free, 1999; Sank & Shaffer, 1984; Schiraldi & Brown, 2001; White, 2000).

A comparison of Time 1 GHQ scores for those participants who achieved clinically significant improvement and those who did not indicated a slightly higher baseline level of distress in those who did not meet the criterion. This finding suggests that employees with very high levels of psychological distress (who would certainly meet the criteria for a clinical disorder) would benefit from individual CBT sessions, perhaps as an adjunct to a CBT-based worksite SMT programme. This dual approach would help to ensure that these highly distressed individuals improve to a clinically meaningful degree. However, it is unlikely that many of these workers would actually receive (or indeed seek) such individualised therapy, further highlighting the potential utility of easily accessible coping skills interventions (Brown et al., 1998; Jenkins et al., 1998; Schiraldi & Brown, 2001; White, 2000).

To summarise, the present study re-analysed the data from the two previous intervention studies reported in this thesis. Results suggested that baseline level of strain moderated the observed impact of both ACT and SIT on employee mental health, with larger improvements observed amongst those employees experiencing an initially elevated level of distress (as indicated by the GHQ). Further analyses revealed that a high proportion of the initially high strain employees achieved clinically significant change, as a direct result of participating in ACT and SIT interventions at the worksite. These results more broadly support the efficacy of CBT-based stress management programmes, and suggest that sample heterogeneity can have a significant influence on empirical evaluations of these interventions.

CHAPTER 5

CHAPTER 5: GENERAL DISCUSSION

Over the last decade or so, there have been calls for a "new generation" of worksite intervention studies, designed to enhance the theoretical yield and methodological sophistication of stress management training (SMT) research (Bunce, 1997, p. 14; Bunce & Stephenson, 2000; Murphy, 1996). In particular, Bunce (1997) recommended a more systematic examination of: 1) *mediators* of change, thereby increasing our understanding of the psychological mechanisms underpinning worksite SMT programmes; and 2) *moderators* of change, to help identify for whom these interventions are effective. The research programme described in this thesis was specifically designed to meet these recommendations.

The following discussion of the main findings of this research is organised into three sections. The first section (5.1) provides an overview of the results of the three empirical studies contained in this thesis, in relation to the underlying cognitive-behavioural theories of change. Section 5.2 discusses some of the methodological limitations of the research, and outlines potential avenues for future SMT studies. Then, section 5.3 focuses on some of the more practical issues relating to the design and implementation of SMT programmes in the workplace, including how these interventions might be profitably employed alongside organisation-focused initiatives.

5.1 Summary of Findings and Theoretical Implications

Study I

Following recent developments in the theory and practice of cognitive-behaviour therapy (CBT), one of the aims of this research was to directly compare a traditional "second wave" SMT programme (Stress Inoculation Training; SIT) with a more recent "third wave", mindfulness-based intervention approach (Acceptance and Commitment Therapy; ACT). The results of the first study, reported in Chapter 2, indicated that ACT and SIT were equally effective in improving employees' general mental health. Specifically, both interventions were associated with statistically large reductions in psychological distress across the six month assessment period. Most of these reductions in employee distress occurred between Time 1 (baseline) and Time 2 (three months after two sessions of training) and they were maintained at six month follow-up (Time 3). In contrast, the control group in the first study experienced no significant changes in psychological distress across the same assessment period. These outcome findings are consistent with previous stress management research, which has generally supported the use of both ACT and SIT for improving employees' mental health (e.g., Bond & Bunce, 2000; Hayes, Bissett et al., 2004; Murphy, 1996; Meichenbaum, 1993b; Saunders et al., 1996; van der Klink et al., 2001). However, this was the first study to compare directly the efficacy of these two CBT intervention approaches in the workplace.

The similar impact of ACT and SIT on the general mental health outcome variable (GHQ) reflects what has become known as the "equivalence paradox" – a common feature of stress management and psychotherapy intervention research (e.g., Bunce, 1997; Sallis et al., 1987; Shapiro, 1995; Stiles et al., 1986; Whisman, 1993). The paradox refers to the fact that theoretically and technically distinct interventions often lead to broadly similar change

in outcome variables. In both the stress management and psychotherapy literatures, such outcome equivalence has focused research attention on identifying the "active ingredients" of change in various interventions (e.g., Bunce, 1997; Bunce & West, 1996; Gardner et al., 2005; Jacobson et al., 1996; Reynolds et al., 1993a&b; Sallis et al., 1987; Stiles et al., 1986; West et al., 1984).

In the stress management literature, some researchers have suggested that outcome equivalence indicates that the benefits of worksite SMT programmes are mostly due to "non-specific" effects, such as group warmth and/or receiving attention from an empathic trainer (e.g., Drazen et al., 1982; Sallis et al., 1987). These non-specific intervention effects are presumed to be common to all SMT programmes, regardless of their theoretical orientation or technical content. In contrast, others argue that the apparent paradox stems from theoretical and methodological shortcomings in worksite SMT research, and that conceptual and technical differences between interventions will be reflected in more theoretically specific measures of change (e.g., Bond & Bunce, 2000; Bunce, 1997; Bunce & West, 1996; Murphy, 1996; Reynolds et al., 1993a). This second interpretation of the equivalence paradox was tested in the first study, which examined the theoretically derived mechanisms (or mediators) of change by which ACT and SIT are hypothesised to improve mental health.

As predicted, the significant improvements in mental health found in the ACT condition in Study I were mediated (or accounted for) by increases in psychological flexibility, but not by changes in participants' dysfunctional cognitions. This pattern of mediation is consistent with a previous ACT worksite study conducted by Bond and Bunce (2000), and with the growing body of ACT research conducted in clinical settings (see Hayes, Masuda et al., 2004 for a review). It is also consistent with the ACT model of

therapeutic change, which focuses on the way people relate to their undesirable thoughts and feelings, and, unlike traditional (second wave) CBT, does not seek to modify difficult cognitive content (e.g., Hayes et al., 1999; Hayes, Strosahl et al., 2004; Hayes et al., 2006). More specifically, the ACT worksite programme delivered in this thesis, like most other ACT interventions, promoted psychological flexibility via two sets of related skills: 1) *acceptance/mindfulness* skills, which were designed to increase people's willingness to experience undesirable internal events (e.g., negative thoughts); and 2) *values-based action* skills, designed to improve participants' ability to take action even in the face of these undesirable internal events (Hayes, Strosahl et al., 2004; and see the Method section in Chapter 2 of this thesis).

Whereas the mediation findings in relation to ACT were clearly consistent with its underlying theory of change, only partial support was found for the SIT cognitive change mediation hypothesis. To reiterate, following from Beck's cognitive model of psychological distress and therapeutic change, it was hypothesised that the benefits of SIT would be mediated principally by changes in people's dysfunctional cognitions (as measured by the dysfunctional attitude scale (DAS)) (e.g., Beck, 1976; Beck et al., 1979; Meichenbaum, 1985). Contrary to this hypothesis, while SIT was associated with a significant reduction in dysfunctional thinking between Time 1 and Time 2, this change did not serve as a mechanism by which SIT improved participants' mental health. Between these first two assessment points, neither a reduction in dysfunctional cognitions nor an increase in psychological flexibility was explaining unique outcome variance in the SIT condition. Nevertheless, between Time 1 and Time 3, a reduction in dysfunctional cognitions (but not an increase in psychological flexibility) did partially mediate the beneficial impact of SIT on employees' mental health.

This partial mediation effect for the dysfunctional attitude scale (DAS) suggests that additional variables may need to be considered as potential mechanisms of change in SIT. This possibility was discussed in some of the early component analyses of SIT (albeit in the context of coping with pain), which concluded that the effects of this multifaceted approach may be mediated by decreases in dysfunctional thinking *and* by increases in the use of relaxation coping strategies (Horan et al., 1977; Meichenbaum, 1985; Vallis, 1984). Hence, future research could investigate enhanced relaxation skills as a potential mechanism of change in SIT, perhaps by including self-reports and/or physiological indicators of somatic tension (e.g., Abraham & Kumaraiah, 1994; Bruning & Frew, 1987).

It is interesting to note that clinical researchers have also often failed to find empirical support for Beck's core cognitive mediation hypothesis, which assumes that second wave CBT interventions (such as SIT) operate by altering core dysfunctional cognitions (e.g., Burns & Spangler, 2001; Whisman, 1993). For example, a number of studies on the treatment of depression have found that reductions in dysfunctional cognitions are not specific to cognitive restructuring interventions, but also occur in other treatments, such as pharmacotherapy, behaviour therapy, or interpersonal therapy (e.g., Imber et al., 1990; Jacobson et al., 1996; Simons et al., 1984; Whisman, 1993). Moreover, some findings suggest that the benefits of second wave CBT can occur even before the core cognitive restructuring procedures have been implemented, suggesting that the modification of difficult thoughts may not be the principal active ingredient (Gortner et al., 1998; Jacobson et al., 1996). These anomalous findings question some of the core assumptions of Beck's cognitive theory, and have led to the formulation of additional models for explaining client improvement in second wave CBT. For instance, a number of CBT authors endorse a compensatory skills acquisition model of change, which posits that

cognitive restructuring interventions work not by directly modifying the content of people's negative thoughts, but by providing distressed individuals with a set of coping skills that helps them deal with difficult thoughts when they do occur (e.g., Barber & DeRubeis, 1989; 2001; 1992; DeRubeis et al., 1990; Free, 1999; Teasdale, 1985). Barber and DeRubeis (1992; 2001) have developed a measure to tap the compensatory skills taught in second wave CBT (the Ways of Responding scale; WOR), and it would be interesting to assess these skills as a potential mechanism of change in future evaluations of SIT.

Despite the relatively weak support for the SIT mediation hypothesis, the results of the first study are still consistent with the view that SIT and ACT were operating via different mechanisms of change. This conclusion was further supported by the differential impact of the two interventions on participants' metacognitive beliefs, and in their use of thought reappraisal strategies. To elaborate, the ACT participants showed a marked decrease in the use of thought reappraisal between Time 2 and Time 3, while the SIT participants reported an increase in the use of this coping strategy. This pattern of results clearly reflects the contrasting nature of the two interventions: SIT participants were taught how to assess and challenge the validity of stress-related thoughts (i.e., through cognitive restructuring); in contrast, ACT participants were encouraged, through the use of cognitive defusion and mindfulness techniques, to "give up the struggle" with the content of undesirable thoughts. Similarly, the conceptual and procedural differences between ACT and SIT were reflected in the importance that participants attached to controlling undesirable thoughts. As predicted, ACT resulted in a significantly greater reduction in these control-oriented metacognitive beliefs than did SIT.

Although the effect of SIT was not mediated by psychological flexibility, it was still interesting to note the significant (and moderate) increase on this variable in the SIT condition. This finding suggests that SIT contains technical elements that promote psychological flexibility, and which may, therefore, be shared with ACT. One technique that is employed to some degree by both ACT and SIT is metacognitive "distancing" (also referred to as "decentering"), which essentially involves an individual "stepping back" from the content of difficult thoughts in order to view them as psychological events, in and of themselves (e.g., Hayes, 2004b; Orsillo et al., 2004; Segal et al., 2002; Teasdale et al., 1995). Such cognitive distancing occupies a central position in ACT and other mindfulness-based therapies; that is, these approaches encourage people to regard thoughts objectively, without becoming overly entangled in their content or meaning (e.g., Baer, 2006; Hayes, Follette, & Linehan, 2004; Segal et al., 2002). In this way, ACT seeks to reduce cognitive fusion (where the content of one's thoughts is taken literally) and experiential avoidance (the extent to which an individual is unwilling to remain in contact with difficult psychological content) (Hayes, 2004b; Hayes Strosahl et al., 2004).

In SIT (as in other second wave CBTs), a certain amount of distancing occurs as a prerequisite to the core cognitive restructuring procedures. Specifically, SIT participants need to learn how to become more aware of the content of any undesirable "automatic" thoughts (i.e., they need to learn how to notice them), prior to learning how to evaluate the evidence for and against those cognitions (e.g., Free, 1999; Meichenbaum, 1985; Meichenbaum & Deffenbacher, 1988; White, 2000). It is conceivable that this cognitive distancing in SIT may have cultivated mindfulness skills, thereby leading to an increase in psychological flexibility (Hayes, 2004b). This conclusion is supported by the small decrease in negative metacognitive beliefs found in the SIT group, which indicated that

participants had become less concerned with controlling undesirable thoughts (i.e., another indicator of increased psychological flexibility). Interestingly, proponents of the third wave CBTs suggest that cognitive distancing is itself likely to be a potent ingredient in second wave CBT, and that the subsequent cognitive restructuring exercises may be unnecessary (e.g., Hayes et al., 2006; Teasdale et al., 1995; Teasdale et al., 2002; Orsillo et al., 2004; Zettle & Hayes, 1987; Zettle & Rains, 1989).

The most unexpected finding in the first study was that ACT and SIT resulted in similar reductions in dysfunctional cognitions (as measured by the DAS). This finding was surprising for two reasons. First, two previous studies reported no significant effect of ACT on this measure of dysfunctional thinking (Bond & Bunce, 2000; Zettle & Rains, 1989); second, the ACT intervention (unlike SIT) did not promote the modification of these core cognitions. However, as noted previously, the discrepancy between Study I and these previous ACT studies may reflect sample differences. For example, Bond and Bunce's (2000) participants were reporting an initially low level of dysfunctional thinking and this may have created a floor effect in their study.

Notwithstanding these sample differences, the unexpected impact of ACT on participants' dysfunctional cognitions in Study I raised questions about what the dysfunctional attitude scale (DAS) is actually measuring. In particular, there seems to be a lack of agreement in the clinical literature over whether the DAS taps the frequency with which core dysfunctional beliefs occur, or the strength of a respondent's belief in those cognitions if or when they do occur (e.g., Free, 1999; Hollon, Kendall, & Lumry, 1986; Sheppard & Teasdale, 2000; Teasdale et al., 2001; Wenzlaff et al., 2002). This issue may be particularly important when the DAS is being used to evaluate the ACT theoretical model and intervention approach. From an ACT perspective, even frequently experienced

undesirable thoughts are not inherently toxic to an individual's well-being; instead, most forms of psychological distress are presumed to stem from the problematic psychological contexts within which such cognitions are experienced (i.e., how people relate to and experience difficult thoughts) (Hayes, 2004b; Hayes et al., 1999). Consistent with this formulation, previous research indicates that ACT can reduce the believability (and hence the impact) of undesirable cognitions, independent of any changes in the frequency with which those cognitions are experienced (e.g., Bach & Hayes, 2002; Hayes Bissett et al., 2004; Hayes et al., 2006; Masuda et al., 2004; Zettle & Hayes, 1986). This raised the possibility that the large impact of ACT on the DAS in Study I was partly reflecting change in the perceived believability of the dysfunctional cognitions contained in the scale, as distinct from any change in the frequency of those cognitions. This hypothesis was therefore tested in the second ACT study, by modifying the DAS to include both believability and frequency response options.

One final result from Study I that deserves mention is the lack of impact of both ACT and SIT on job satisfaction. This finding mirrors similar results in previous worksite stress management research, and suggests that job satisfaction may not be the most suitable work-related variable for evaluating CBT-based interventions (e.g., Bond & Bunce, 2000; Reynolds et al., 1993b; Murphy, 1988; 1996; Sallis et al., 1987). Indeed, there appears to be no theoretical justification for why these coping skills interventions would increase job satisfaction (which is likely to be affected by a multitude of other factors, including pay, the potential for promotion, the design of work, status of the job, and managerial styles) (e.g., Murphy, 1988; Morrison, Upton, & Cordery, 1999; Nagy, 2002; Wanous, Reichers, & Hudy, 1997). In view of this, the second ACT intervention study, discussed below, included a work-related outcome variable (learning at work) that was clearly linked to the

ACT theory of human functioning and therapeutic change (Bond & Flaxman, in press; Hayes et al., 1999). This strategy followed the recommendation of Murphy (1996), who called for a more theoretically grounded approach to SMT outcome research.

Because ACT and SIT produced similar improvements in employees' general mental health (i.e., on the GHQ), it is difficult, at this stage, to provide organisations and practitioners with clear guidance on which of these two cognitive-behavioural approaches is likely be more effective. As predicted, differences between these two interventions were only found on more specific process of change variables (e.g., psychological flexibility and thought reappraisal). Also, there are still too few clinical comparisons of ACT and second wave CBT to draw definitive conclusions on whether one approach is superior to the other; although, there is some preliminary evidence to suggest that ACT has a more favourable impact on some clinical outcomes (see Hayes et al., 2006 for a review). It is clear that more comparative outcome research is needed to assess the relative efficacy of these second- and third-wave CBT approaches. Nevertheless, the third-wave, mindfulness-based therapies (particularly ACT) are receiving increasing attention in the clinical literature, and it is recommended that worksite SMT researchers keep an eye on these developments.

Study II

The second intervention study had two primary aims. First, to investigate further the impact of ACT on employees' dysfunctional cognitions, particularly focusing on whether ACT leads to change in the believability and/or frequency of the cognitions represented in the dysfunctional attitude scale (DAS). The second aim was to examine the effect of ACT on learning at work, and whether any improvements in learning would be mediated by increases in psychological flexibility.

In contrast to the first study, initial analyses did not indicate a significant group by time interaction for the general mental health outcome variable (the GHQ). This appeared to be due to a slight reduction in psychological distress in the control group in this study, and a small subgroup of initially low strain participants who were "diluting" the observed impact of the ACT intervention on mental heath (cf. Bunce & Stephenson, 2000; Gardner et al., 2005). This latter interpretation of the initial findings was confirmed when the employees with below average levels of strain at Time 1 (i.e., a GHQ score of less than 9) were dropped from the analysis. Subsequent analyses revealed a marginally significant group by time interaction on the GHQ. This reflected a significant (and statistically large) reduction in psychological distress in the ACT condition. Moreover, the ACT group had significantly better mental health than the control group at the two post-intervention measurement time points (i.e., Time 2 and Time 3).

Unfortunately, it became apparent in Study II that there were problems with the believability subscale of the DAS. During the training sessions, a number of participants expressed confusion over the believability scale (which immediately followed the frequency scale in the questionnaire battery – see Appendix 6). While it was possible to provide clarification to the employees in the ACT group (who completed Time 1 and Time 2 questionnaires at the beginning of each training session), it was not possible to do so for the control group (who received the measures in the post). These problems with the DAS-believability scale were subsequently reflected in a significant Time 1 difference on this variable between the ACT and control participants who completed questionnaires at all three time points. It was therefore decided to drop this variable from the study.

Nevertheless, there appeared to be no such problems with the DAS–frequency scale. Although there was no significant group by time interaction for this variable, simple

main effects revealed significant reductions in the frequency of dysfunctional thinking in the ACT group, which were maintained at follow-up. However, consistent with the underlying ACT model of psychological distress and therapeutic change, these changes in the frequency of dysfunctional cognitions did not serve as the mechanism by which ACT improved employee's general mental health. Instead, similar to the findings of the first study, the mental health benefits of ACT were fully mediated by an increase in employees' psychological flexibility. In other words, ACT was found to reduce the frequency of core dysfunctional cognitions, but these effects were of less therapeutic importance than changing how the participants related to and experienced difficult thoughts (i.e., enhancing psychological flexibility).

Finally, Study II revealed that ACT also had a significant effect on learning at work (particularly between Time 1 and Time 2). Moreover, as predicted, the beneficial impact of ACT on this learning variable was mediated by an increase in psychological flexibility. This adds to prior research that has identified links between psychological flexibility and various measures of learning (e.g., Bond & Bunce, 2000; Bond & Flaxman, in press). These findings are consistent with the theoretical proposition that people with higher levels of psychological flexibility, who are less likely to be "entangled" with difficult psychological content, will have greater attentional resources with which to observe, and hence learn from, the external (e.g., working) environment (Bond & Bunce, 2003; Bond & Flaxman, in press; Hayes, 1987; Hayes et al., 1999; Zettle & Hayes, 1987). These relations between ACT, psychological flexibility, and enhanced learning may represent a fruitful area for future research.

To summarise, the results of the two *mediation* studies in this thesis were largely consistent with hypotheses, and with the cognitive-behavioural theories underpinning the

interventions that were delivered. The clearest pattern of mediation was found for the ACT intervention, which, in both Study I and Study II, was found to operate primarily by increasing employees' psychological flexibility. In contrast, the mental health benefits of the SIT intervention were only partially mediated by a reduction in dysfunctional thinking, reflecting similar findings in the clinical literature (Hayes et al., 2006). More broadly, the results of the first two studies highlight the importance of the technical content of worksite SMT programmes, suggesting that the effects of these coping skills interventions cannot be attributed solely to "non-specific" intervention effects (e.g., group warmth). The findings also lend support to the view that worksite SMT programmes provide a useful arena for testing cognitive-behavioural theories of therapeutic change.

Study III

The aims of the final study in this thesis were twofold: 1) to investigate initial level of strain as a moderator of the impact of ACT and SIT on employees' mental health; and 2) to estimate the proportion of initially high strain ACT and SIT participants who subsequently improved to a clinically significant degree.

As hypothesised, Study III found that initial level strain significantly moderated the observed effect of both ACT and SIT on employees' mental health. Further investigation of the nature of this moderator effect revealed a much larger reduction in psychological distress amongst those employees with an elevated level of strain at Time 1, compared to those participants with an initially average (or below average) level of strain. While previous worksite SMT research has suggested that this might be the case (e.g., Gardner et al., 2005; van der Klink et al., 2001), this was the first study to rigorously test this hypothesis using the statistical procedures for establishing moderation outlined by Baron

and Kenny (1986). This finding supports the view of Bunce and his colleagues (Bunce, 1997; Bunce & Stephenson, 2000): that sample heterogeneity in worksite SMT studies can dilute the observed effects of these interventions. However, Study III also indicated that small mental health benefits were obtained by the low strain subgroup, suggesting that these interventions should continue to be offered to all employees. Moreover, the observed moderation effect related only to the mental health outcome variable; prior research has found that these interventions can have a larger effect on performance-related outcomes for participants with lower levels of baseline strain (Saunders et al., 1996). In view of these moderation findings, it is recommended that researchers take account of the influence of low strain participants when evaluating the impact of SMT programmes on mental health outcomes.

Finally, Study III found that a significant proportion (between 60% and 70%) of the high strain ACT and SIT participants who remained in the study experienced clinically meaningful improvements in general mental health. These results support the use of clinical significance criteria in evaluations of worksite stress management interventions. Although, it should be noted that the participants in this thesis were experiencing a higher level of distress than was reported in a number of previous SMT studies; and, the proportion of participants who achieve clinically significant change is likely to vary from study to study (Jacobson & Truax, 1991). Nevertheless, the clinically significant findings in Study III indicate that brief ACT and SIT interventions can provide substantial benefits to distressed employees.

5.2 Research Limitations

When interpreting the findings of the three studies in this thesis, it is important to consider a number of potential methodological limitations. First, this research relied exclusively on self-report measures of outcome variables. Worksite stress management researchers have frequently called of a greater use of more objective criteria, such as sickness absence records (e.g., Murphy, 1984; 1996; van der Hek & Plomb, 1997). However, due to data protection concerns and related logistical issues, these data were not available from the two organisations that participated in the present research. This is unfortunate, as the inclusion of these variables would be useful for estimating the cost-effectiveness of implementing ACT and SIT programmes in the workplace. A few worksite SMT studies that have employed more objective measures, such as work performance ratings or sickness absence, have reported favourable effects (e.g., Dahl et al., 2004; Murphy & Sorenson, 1988; Sarason et al., 1979). Also, a recent study of UK healthcare workers found a significant relationship between employee psychological distress (measured by the GHQ) and absenteeism (Hardy, Woods, & Wall, 2003). Thus, it is conceivable that the substantial reductions on the GHQ found in the ACT and SIT groups in this thesis would have been associated with a reduction in sickness absence. It would be useful to test this hypothesis in future worksite SMT research.

A second measurement limitation in this thesis concerns the modified version of the Dysfunctional Attitude Scale (DAS) used in Study II. The scale was amended to assess the extent to which people experienced the core dysfunctional cognitions in the DAS (frequency), and the extent to which they believed those cognitions when they did occur (believability). As described above, many participants found the DAS-believability scale confusing, and this variable was subsequently removed from the analysis. With the benefit

of hindsight, it is likely that this problem would have been identified by piloting the questionnaires with a small number of people from the target population. Nonetheless, the DAS-frequency scale did appear to be reliable, and the results associated with this variable provided a useful test of the ACT model of change.

One final measurement issue relates to the omission of measures of "non-specific" intervention effects (such as interpersonal support and relief gained from participating in the stress management groups). As discussed previously, these non-specific effects have been assessed in a small number of SMT studies that employed a session impact methodology (Bunce & West, 1996; Reynolds et al., 1993a&b). However, as the primary aim of this thesis was to investigate change in variables that reflect the cognitive-behavioural theories underlying the delivered programmes (e.g., psychological flexibility and dysfunctional cognitions), it was decided not to include session impact measures. Nevertheless, in view of the findings of the present thesis, it would now seem logical for researchers to examine the influence of both non-specific and intervention content effects within the same worksite SMT study.

It is also worth considering the potential threats to the internal and external validity of the current research programme. First, because this research employed randomised control group experimental designs (i.e., "true" experiments), most of the common threats to internal validity were controlled (e.g., Beehr & O'Hara, 1987; Cook & Campbell, 1979; Ganster et al., 1982; Murphy, 1996). However, two possible internal validity threats deserve mention. The first of these concerns the potential for "resentful demoralisation" amongst the control group participants, who were required to wait for over six months before receiving the intervention (Cook & Campbell, 1979). If such demoralisation did occur in the present thesis, one might expect psychological distress to have increased in the

control groups over the course of the studies (and indeed a higher level of attrition in the control groups). This was clearly not the case. Indeed, in Study II, psychological distress actually decreased in the control group. Also, the randomisation procedure was clearly explained to participants when they first volunteered for the training, and no objections were registered.

A second validity threat relates to the possible communication of SMT techniques across the different intervention groups (i.e., "diffusion") (Beehr & O'Hara, 1987; Ganster et al., 1982). There was certainly the potential for this to occur in the studies reported in this thesis. For example, the employees allocated to the different conditions (i.e., ACT, SIT, or control) often worked alongside colleagues who had been assigned to one of the other groups. Because of this threat, the trainer formally requested that participants resist the temptation to discuss the training with colleagues until the control group had received the intervention. Participants were also asked not to distribute the handouts or exercise audiotapes to colleagues. The trainer justified this request on the grounds that it was unhelpful for people to start using the various techniques (e.g., mindfulness exercises) before actually attending the training. This precaution against diffusion seemed particularly important in Study I, in view of the contrasting rationales and technical content of SIT and ACT. Interestingly, the participants in Study I were well aware that the SIT and ACT programmes were being conducted at the same time, although surprisingly few people sought further information about this comparison. This may be due to the fact that both ACT and SIT are highly credible interventions, reducing the likelihood that participants in either group would have perceived that they were receiving a less desirable intervention. It subsequently became apparent that most participants adhered to the confidentiality requests; when attending for their first session of training, many control group participants

commented that they had received very little information about the training from those who had already attended. As a result of these precautions, it seems unlikely that diffusion of treatments had a major influence on the results of this thesis.

Having discussed the internal validity of the current research programme, it is informative to consider the extent to which the findings are generalisable to other settings and employee populations (i.e., external validity). The participants in this thesis were predominantly female (70% in Study I, and 82% in Study II), and a significant proportion had been educated to university level (30% in Study I, and 58% in Study II). This raises the question of whether the same ACT and SIT programmes would be less effective or popular in a) more male-dominated organisations, and b) amongst occupation groups with less formal education. It is certainly not uncommon to find a higher proportion of females volunteering for worksite stress management interventions (Kelley, 1995; Murphy, 1996). The reasons for this are still not entirely clear, but may reflect a greater propensity amongst females to discuss issues related to psychological health and well-being (Quick et al., 1997). Innovative marketing strategies may need to be considered to make SMT programmes more attractive to male employees (this issue is discussed in the following section).

There was no evidence in the present thesis to suggest that participants' level of education had a significant influence on the outcomes of SIT and ACT. For example, there was no significant difference on this variable amongst those who dropped out of the studies and those who provided data at all three time points. It is worth noting that The ACT and SIT programmes were summarised for participants in fairly detailed handouts (see Appendices 3 and 4), and it is likely that these materials would not be suitable for all employees. However, it should also be noted that worksite SMT programmes have been

delivered to a wide range of occupational groups (e.g., highway maintenance workers, teachers, and police officers), and there is no research to suggest that specific groups have been unable to learn the techniques (Murphy, 1996). In short, these external validity issues can only be addressed by replication, and by assessing potential moderators of outcome change (Bunce, 1997; Beehr & O'Hara, 1987). The bulk of the existing research suggests that CBT-based SMT programmes are effective across various occupational settings.

Finally, while the inclusion of a six month follow-up was a positive methodological feature of this research, this assessment period was associated with a relatively high level of participant attrition. Approximately 64% (Study I) and 50% (Study II) of participants who completed Time 1 questionnaires failed to provide data at all three time points. Most of this attrition occurred between Time 2 and Time 3, and reflected more a failure to return questionnaires than non-attendance at the training sessions. The relatively poor questionnaire response rates may have been due to the fact that the ACT and SIT participants were sent the final (Time 3) questionnaires in the post, whereas the Time 1 and Time 2 questionnaires were completed at the beginning of the training sessions. Attrition in the control groups may have been reduced somewhat because these participants were asked to complete the Time 1 and Time 2 questionnaires in order to remain on the waiting list, and they completed the Time 3 questionnaires at the beginning of their first session of training (i.e., approximately six to seven months after Time 1). Despite the fairly high level of attrition in this research, no significant differences were found on the study variables between those participants who dropped out and those who provided data at all three time points.

Although no formal data were collected regarding participants' reasons for failing to attend all three ACT or SIT sessions, informal enquiries revealed a wide range of

factors, including work scheduling, absenteeism, turnover, programme content, annual vacations, and simply forgetting to attend. Future research may wish to investigate the reasons for dropping out of worksite stress management programmes in more detail, perhaps by conducting short informal interviews with those employees who choose not to continue. Regardless of the reasons for non-attendance, the single most important factor in managing attrition appeared to be the efforts of an in-house occupational health officer who was able to contact participants with reminders to attend the training. In Study II, it was estimated that this in-house project management reduced attrition by approximately 15%.

5.3 Worksite SMT Design and Implementation Issues

The research contained in this thesis can also be discussed in relation to some of the more practical issues involved in implementing worksite SMT programmes. These issues include the recruitment of SMT participants, the duration of the training, dealing with in-session difficulties, and establishing a role for SMT programmes alongside stressor reduction (e.g., work redesign) initiatives.

One of the first considerations in implementing a worksite SMT programme concerns the marketing of the intervention. This includes the terms used to describe the training and the information contained in the recruitment material[9]. In the first study, both interventions (i.e., ACT and SIT) were advertised as "Stress Management Training". However, following consultation with members of the organisation that participated in Study II, it was decided to change the name of the training (in this case ACT) to "Work and Life Effectiveness Training". This decision was based on the rationale that stress management has become a somewhat over-used term and that a more "catchy" title would

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[9] The recruitment flyers used in Studies I and II can be found in Appendices 1 and 5.

facilitate recruitment. Relatedly, stress management authors have recommended that SMT programmes are characterised as "mental toughness" or performance enhancement training in occupational contexts where terms such as anxiety or stress may hinder recruitment (Guzicki, Coates, & Goodwin, 1980; Meichenbaum, 1993b). Interestingly, the different titles given to the interventions in Studies I and II did not attract participants with noticeably different levels of psychological distress.

In addition to the marketing of an intervention, worksite SMT designers need to consider carefully the duration of the training. If an SMT programme is too short, it may not have the desired impact; similarly, too many training sessions can make it difficult for employees to arrange the required time away from their work, and may therefore be less attractive to organisations. The research literature indicates a great deal of variation in the length of SMT programmes. For example, Murphy (1984) found that training duration ranged from 1 to 15 sessions, with total trainer-participant contact time ranging from 1 to 16 hours. In one of the earliest and most widely cited stress management studies, Ganster et al. (1982) argued that CBT-based worksite programmes would need to involve *at least* 16 hours of training (e.g., eight 2-hour sessions) to produce reliable improvements in employees' mental health. However, the results of the present thesis, and other SMT studies, indicate that desired outcomes can be achieved with much shorter training periods.

In this thesis, a "2 + 1" method of training delivery was adopted, whereby participants received two sessions of training on consecutive weeks and a third session three months later (approximately nine hours of training in total) (Barkham, 1989). It was felt that this mode of delivery would cause less disruption to employees' work schedules than would shorter sessions spread over several weeks. Also, the three month gap between the second and third sessions provided participants with the opportunity to practice the

various stress management techniques (e.g., mindfulness or cognitive restructuring), and allowed for the discussion of any difficulties in the final session. In all three studies in this thesis, the largest intervention effects (for both ACT and SIT) were found between Time 1 and Time 2, which occurred approximately three months after the two initial sessions of training. These results mirror the findings of previous stress management and psychotherapy research that has employed a similar 2 + 1 methodology (Barkham, 1989; Barkham & Shapiro, 1990; Bond & Bunce, 2000). This inevitably raises the question of whether the same benefits could be obtained with just two sessions of ACT or SIT. This question can only be addressed by further research that compares SMT groups receiving two and three sessions respectively. It would be particularly interesting to investigate whether the Time 1 to Time 2 improvements in mental health observed in this thesis would be maintained at the six month follow-up without the final "booster" session of training.

During the course of the ACT and SIT interventions delivered for this thesis, it was rare for participants to get into serious emotional difficulties as a result of the content of the training. This represents a key difference between delivering cognitive-behavioural interventions in the workplace and facilitating groups in clinical settings, where clients are generally experiencing higher levels of distress (e.g., Walser & Pistorello, 2004). However, such difficulties do occasionally arise, and, in the worksite context, can pose a particular challenge for the stress management trainer. For instance, in one of the stress management groups in this thesis, the trainer (the present author) sensed that the level of distress being experienced by a participant was beyond the remit of the worksite training context; the trainer therefore called for a brief coffee break and discussed with the individual the pros and cons of continuing with the training at that time (in this case the participant decided to continue). Importantly, the trainer was able to provide information relating to the

organisation's employee assistance (counselling) services, and also reminded the participant that a General Practitioner can provide access to other mental health professionals. Hence, it is recommended that worksite stress management trainers always ensure that they are in possession of this type of information, which is usually available from the occupational health departments of larger organisations.

It is also important to remember that, in worksite stress management groups, participants are often closely linked, if not known directly, to other members of the group. This can raise a number of issues relating to privacy, confidentiality, and fear of evaluation by colleagues, which may influence people's decisions about engaging in the intervention. In the present thesis, this issue was addressed by ensuring that all participants adhered to confidentiality rules, which were emphasised by the trainer in each session. Additionally, participants were permitted to change groups if they had been allocated to the same group as a manager or colleague with whom they had a difficult relationship.

The management of any in-session difficulties relates to another issue that has received attention in the stress management literature: the background and experience of the trainer. In a few worksite SMT studies, the trainers delivering the interventions had no formal psychological training. For example, SIT trainers have occasionally been drawn from the participating organisation and trained by psychologists to deliver the intervention (e.g., Meichenbaum, 1993; Novaco et al., 1983; Sarason et al., 1979). Reynolds and Briner (1994) sounded a note of caution about this practice, suggesting that trainers lacking clinical experience may be unable to cope adequately with distressed employees. De Jong and Emmelkamp (2000) investigated this issue by comparing the outcomes of a SIT-based intervention delivered by clinical psychologists on the one hand, and by employees of the host organisation (mainly social workers) on the other. Their eight-week SMT programme

was found to be effective regardless of the background of the trainer, and the authors concluded that these worksite interventions do not have to be implemented by clinical psychologists. Moreover, the participants in De Jong and Emmelkamp's study were reporting an elevated baseline level of distress.

However, because worksite SMT programmes are based on CBT principles and procedures, it is perhaps not surprising that this area of study has been dominated by clinically oriented psychologists rather than occupational psychologists or other occupational health professionals (Ivancevich et al., 1990; Reynolds & Shapiro, 1991). This was noted as far back as the late 1970's, when Newman and Beehr (1979) called for greater involvement of industrial/organisational psychologists in the design and evaluation of stress management interventions. While clinical/ counselling psychologists are likely to be highly skilled in administering CBT techniques, they are less likely to be attuned to the problematic work or organisational characteristics that are often highlighted by employees in stress management sessions. The gathering of this type of information is particularly important if these programmes are to be implemented alongside organisation-focused interventions (see below) (Murphy & Hurrell, 1987). In relation to this issue, Reynolds and Shapiro (1991) have suggested that the area of stress management would be well served by applied psychologists with both clinical and occupational training; although, they also point out that opportunities for such "hybrid" training are relatively limited. Parenthetically, the present author has an occupational psychology background, and the ACT and SIT interventions described in this thesis were supervised by a psychologist with both clinical and occupational experience.

The final issue to be discussed concerns establishing a role for worksite SMT programmes alongside organisation-focused stress management interventions.

Organisation-focused interventions typically take the form of work redesign initiatives, which target the psychosocial sources of stress (or *stressors*) that reside in the work environment (e.g., Bond & Bunce, 2001; Cox et al., 2000; Karasek & Theorell, 1990; Landsbergis & Vivona-Vaughan, 1995; Murphy, 1988; Reynolds, 1997; Wall et al., 1986). The most common approach involves the formation of employee focus groups, which identity, and generate solutions to, problematic work/ organisational characteristics (such as a lack of job control, excessive workloads, poor communication from management, and/or job role ambiguity). In this way, employees from all levels within an organisation are encouraged to participate in decisions over how their work is designed and managed. This participative, organisation-focused intervention approach lies at the heart of the UK Health and Safety Executive's (HSE) recommendations for managing work-related stress (e.g., Cousins et al., 2004; Mackay et al., 2004).

The importance of implementing such stressor-reduction interventions (in addition to worksite SMT programmes) has been frequently highlighted by stress management researchers (e.g., De Frank & Cooper, 1987; Ganster et al., 1982; Giga et al., 2003; Murphy, 1988; 1996; Murphy & Hurrell, 1987). In particular, it has been argued that employing SMT programmes in isolation may create an undesirable (and unethical) situation, in which employees are taught strategies for coping with stressors (e.g., through mindfulness), only to be sent back into a "toxic" work environment that management are not trying to rectify (e.g., by increasing people's control over how they do their work) (Ganster et al., 1982; Giga et al., 2003; Murphy, 1984). One possible outcome from such a one-sided approach to stress is that participants will be less motivated to engage in the SMT programme being delivered. Indeed, during the initial ACT and SIT sessions evaluated in this thesis, some participants (quite understandably) questioned why their

organisation was trying only to "fix" them (i.e., by teaching them coping strategies), when they faced difficulties from organisational problems, such as a lack of staff, poor communication from management, and frequent organisational change. The best way to address these concerns is to ensure that SMT is one component of a more comprehensive intervention approach that also includes stressor-reduction efforts (Murphy, 1996). At the very least, it is important that stress management trainers acknowledge fully participants' concerns about work-related stressors, and find a way to feedback these concerns to senior management at the organisation. By adopting this approach, it opens up the possibility of using the work-related information discussed in SMT sessions to inform the design of concurrent, or subsequent, organisation-focused interventions (Munz, Kohler, & Greenberg, 2001; Murphy & Hurrell, 1987).

Moreover, there is evidence to suggest that the effectiveness of work redesign interventions will be enhanced by also employing coping skills training programmes. For example, Bond, Flaxman, and Bunce (2006) found that the favourable impact of a job control-enhancing intervention on mental health was moderated by employees' psychological flexibility. Specifically, those employees who had higher levels of psychological flexibility seemed better able to take advantage of the job control opportunities afforded to them, and thereby obtained greater benefit from the work redesign intervention (see also Bond & Bunce, 2003; van der Klink et al., 2001). This finding suggests that ACT worksite programmes, which are designed to increase psychological flexibility, could be profitably employed alongside work redesign interventions that seek to increase job control.

However, very few studies have attempted to compare directly the effectiveness of individual- and organisation-focused interventions for preventing and reducing stress at

work. The research that does exist indicates that individual-focused interventions (such as worksite SMT) lead to greater improvements in worker mental health than do work redesign programmes (e.g., Reynolds, 1997; van der Klink et al., 2001). This may be partly due to the fact that SMT techniques can help employees cope with various life demands, while work redesign focuses solely on modifying a limited number of work-related stressors (e.g., low job control). On the other hand, SMT programmes will only benefit those employees who volunteer for them, whereas work redesign initiatives have the potential to improve the working lives of a larger number of individuals (Munz et al., 2001). Hence, there is now a good case for: a) evaluating the extent to which SMT programmes (such as ACT or SIT) will enhance the efficacy of work redesign initiatives; and b) establishing the relative contributions of SMT and work redesign interventions in improving employee well-being.

5.4 Conclusion

A long and fruitful relationship has existed between the cognitive-behavioural therapies (CBTs) and worksite stress management training (SMT) programmes. Indeed, it is now rare to find SMT programmes that are not based on CBT principles and techniques. Despite this, researchers have generally failed to use empirical evaluations of worksite SMT programmes to test underlying cognitive-behavioural theories of psychological distress and change. As a result, stress management research has continued to lag behind the clinical CBT literature, which is more theoretically and methodologically advanced. To address this, the present thesis investigated the *mediators* of change in stress inoculation training (SIT) and acceptance and commitment therapy (ACT) interventions delivered in the workplace. This research also examined employees' initial levels of strain as a potential

moderator of change in these two CBT-based training programmes. These strategies followed Bunce's (1997) recommendations for enhancing the theoretical yield and methodological sophistication of worksite SMT research.

The results of this research support the following conclusions. First, brief ACT and SIT worksite interventions appear to be very effective in improving employees' general mental health. Indeed, it was found that a number of initially distressed employees improved to a clinically meaningful degree as a direct result of participating in one or other of these worksite interventions. Second, ACT and SIT appear to work via different mechanisms of change. The beneficial effects of ACT on employees' mental heath and learning at work were principally mediated by an increase in psychological flexibility, and not by a reduction in dysfunctional cognitions. This pattern of change is consistent with the ACT theoretical model, which promotes mental health by targeting the way people relate to, and experience, undesirable cognitions (e.g., Hayes et al., 1999). Contrary to predictions, the impact of SIT on employee mental health was only partially mediated by a reduction in dysfunctional cognitions. Hence, additional research is needed to increase our understanding of the mechanisms of change in SIT (and other cognitive restructuring) interventions. One potentially useful approach would be to examine the effects of SIT on the compensatory coping skills that are receiving increasing attention in the clinical CBT literature (e.g., Barber & DeRubeis, 2001; Free, 1999). Finally, the results of this thesis indicate that the observed benefits of worksite SMT programmes can be diluted by subgroups of employees who enter the training with normal levels of strain (cf. Bunce, 1997; Bunce & Stephenson, 2000). To address this issue, it is recommended that SMT researchers routinely conduct subgroup and moderation analyses, similar to those employed in Study III.

It would appear that CBT-based SMT programmes have an important role to play in improving the psychological well-being of the working population. Moreover, there is increasing recognition in the CBT literature that these group-based, psychoeducational interventions provide an effective and efficient method of transferring cognitive-behavioural skills to the general population. As a result, SMT programmes have recently been delivered in a range of other non-clinical settings, including schools and colleges (Keogh et al., 2006; Schiraldi & Brown, 2001), primary care (e.g., White, 2000), and community public health/ health promotion contexts (e.g., Brown et al., 2000). It is hoped that the current research programme has helped to extend this area of study by: 1) incorporating recent developments in CBT (i.e., ACT) into SMT programmes; and 2) enhancing our understanding of why, and for whom, these interventions are effective.

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APPENDICES

Appendix 1: Training advert used in Study I

City University
London

Department of Psychology

City University
Northampton Square
London EC1V 0HB

Stress Management Training Programme

The stress problem.

Stress is, without doubt, part of the modern human condition. It can be experienced in many ways: *physically* (e.g., tension, sleep loss), in our *moods* (e.g., anxiety, feeling low, depression, irritability); in our *thinking* (e.g., worry, negative thinking); and in the way we *behave* (e.g., avoiding tasks or situations).

There are many sources of stress, both at work (e.g., long hours, work overload, relationships with colleagues), and outside of work (e.g., relationship problems, financial difficulties).

It is often difficult to remove or change these sources of stress. You can, however, change the way you *react to* or *cope with* these stressful events. This is what City University's training programme will help you do.

What can you expect to gain from the training?

Psychology researchers at City University have shown that their training can *dramatically* reduce levels of stress, anxiety, and depression. These reductions, in turn, help people to perform better in both their working and personal lives.

What's involved?

The training programme being offered is a scientifically-based, "hands-on" programme that teaches you practical strategies that you can use in your everyday life to reduce stress. The training is based on the very latest developments in the psychology of mental and physical well-being.

The strategies taught are easy to learn and can be both relaxing and enlightening! Also, they do not involve disclosing any personal information.

The training will be delivered at your organisation to several small groups of about 10-12 employees. There are 3 sessions in all, and each one lasts about 3 hours. The first two occur in consecutive weeks, while the third comes three months later. All sessions will be conducted by Paul Flaxman, a psychologist from City University.

Appendix 2: Questionnaires used in Study I
[Intervention group cover sheet]

Print Name:_____

INFORMATION ABOUT THE QUESTIONNAIRES

Before completing the questionnaires, please read the points detailed below.

1. **Your responses to these questionnaires will only be seen by researchers at City University, London. No one at **** will ever know your responses.**

2. **Your participation is voluntary. If you do not want to attend the training, or fill out the questionnaires for any reason, you do not have to. No one at **** will know that you did not participate.**

3. **Before completing each questionnaire, please read the instructions carefully.**

4. **The questionnaires take about 15-20 minutes to complete. Please ensure that you complete every item on each questionnaire.**

5. **Once you have completed the questionnaires, make sure you have printed your name at the top of this sheet and hand them to the trainer, Paul Flaxman.**

THANK YOU FOR TAKING THE TIME TO PARTICIPATE

Appendix 2: Questionnaires used in Study I
[Control group cover sheet]

INFORMATION ABOUT THE QUESTIONNAIRES

Reference number

Before completing the questionnaires, please read the points detailed below.

1. Your responses to these questionnaires will only be seen by researchers at City University, London. No one at ** will ever know your responses.**

2. The reference number above has been allocated to you by Paul Flaxman, a researcher at City University. Only Paul Flaxman will keep a copy of this number and the name to which it refers.

3. Your participation is voluntary. If you do not want to attend the training, or fill out the questionnaires for any reason, you do not have to. No one at ** will know that you did not participate.**

4. Before completing each questionnaire, please read the instructions carefully.

5. The questionnaires take about 15-20 minutes to complete. Please ensure that you complete every item on each questionnaire. The questionnaires are copied on both sides of the paper.

6. It is important that you fill in the questionnaires on the day that you receive them, or the day after, and send them back as soon as possible.

7. Once you have completed the questionnaires, seal them in the envelope provided, making sure that you include this cover sheet. Send the sealed envelope to: Paul Flaxman c/o ******. The unopened envelopes will be collected in a couple of days time.**

Please write the date on which you filled in the questionnaires.

DATE _____

THANK YOU FOR TAKING THE TIME TO PARTICIPATE

Personal Details

Age_____ Gender_____

Marital Status (please tick):

o Single o Married/Partner

o Widowed o Divorced/Separated

Education (highest level completed):

o No formal qualifications o Degree

o CSE/O Level/GCSE/NVQ 1-2 o Postgraduate degree

o A Level/NVQ3 o Other (please state)

Job classification:

o Manual o Clerical/Administration

o Middle management/Technical o Senior management/Professional

o Officer

How long have you worked for ******(to the nearest year)?_____

How many hours do you work in a typical week?_____

Below you will find a list of statements. Please rate the truth of each statement as it applies to you. Use the following scale to make your choice.

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

_____ 1. I am able to take action on a problem even if I am uncertain what is the right thing to do.

_____ 2. A person who is really "together" should not struggle with things the way I do.

_____ 3. I try to suppress thoughts and feelings that I don't like by just not thinking about them.

_____ 4. I often catch myself daydreaming about things I've done and what I would do differently next time.

_____ 5. There are not many activities that I stop doing when I am feeling depressed or anxious.

_____ 6. It's OK to feel depressed or anxious.

_____ 7. It's unnecessary for me to learn to control my feelings, in order to handle my life well.

_____ 8. Despite doubts, I feel as though I can set a course in my life and then stick to it.

_____ 9. If I could magically remove all the painful experiences I've had in my life, I would do so.

_____ 10. I am in control of my life.

_____ 11. When I feel depressed or anxious, I am unable to take care of my responsibilities.

_____ 12. I rarely worry about getting my anxieties, worries, and feelings under control.

_____ 13. I'm not afraid of my feelings.

_____ 14. When I evaluate something negatively, I usually recognize that this is just a reaction, not an objective fact.

1----------2----------3----------4----------5----------6----------7

never true | very seldom true | seldom true | sometimes true | frequently true | almost always true | always true

_____ 15. When I compare myself to other people, it seems that most of them are handling their lives better than I do.

_____ 16. Anxiety is bad.

_____ 17. If I could magically remove all the painful experiences I've had in my life, I would do so.

_____ 18. In order for me to do something important, I have to have all my doubts worked out.

Please read this carefully.

We should like to know if you have had any medical complaints and how your health has been in general, over the last few weeks. Please answer ALL the questions simply by underlining the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those you had in the past.

It is important that you try to answer ALL the questions.

Thank you very much for your co-operation.

Have you recently.....

been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less than usual
felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
been able to face up to your problems?	More so Than usual	Same as usual	Less so than usual	Much less able
been feeling unhappy and depressed?	Not At all	No more than usual	Rather more than usual	Much more than usual
been losing confidence in yourself?	Not At all	No more than usual	Rather more than usual	Much more than usual
been thinking of yourself as a worthless person?	Not At all	No more than usual	Rather more than usual	Much more than usual
been feeling reasonably happy, all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual

Most people experience unpleasant, and/or unwanted thoughts (in verbal and/or picture form), which can be difficult to control. We are interested in the techniques that you generally use to control such thoughts. Below are a number of things that people do to control these thoughts. Please read each statement carefully, and indicate how often you use each technique by entering a number from the scale below. There are no right or wrong answers.

1----------2----------3----------4

Never Sometimes Often Almost always

When I experience an unpleasant/unwanted thought:

1. I try to reinterpret the thought.	
2. I punish myself for thinking the thought.	
3. I question the reasons for having the thought.	
4. I focus on the thought.	
5. I tell myself that something bad will happen if I think the thought.	
6. I shout at myself for having the thought.	
7. I challenge the thoughts validity.	
8. I slap or pinch myself to stop the thought.	
9. I tell myself not to be so stupid.	
10. I analyse the thought rationally.	
11. I get angry at myself for having the thought.	
12. I try a different way of thinking about it.	

This questionnaire is concerned with beliefs people have about their thinking. Listed below are a number of beliefs that people have expressed. Please read each item and say how much you <u>generally</u> agree with it, by entering the appropriate number from the scale below. Please respond to all the items, there are no right or wrong answers.

1----------2----------3----------4

Do not agree Agree slightly Agree moderately Agree very much

1. If I did not control a worrying thought, and then it happened, it would be my fault.	
2. I should be in control of my thoughts all of the time.	
3. I could be punished for not having certain thoughts.	
4. If I do not stop worrying thoughts, they could come true.	
5. Not being able to control my thoughts is sign of weakness.	
6. If I could not control my thoughts, I would go crazy.	
7. Some thoughts will always be controlled.	
8. I will be punished for not controlling certain thoughts.	
9. It is alright to let my thoughts roam free.	
10. It is bad to think certain thoughts.	
11. If I do not control my thoughts, I may end up embarrassing myself.	
12. If I could not control my thoughts, I would not be able to function.	
13. If a bad thing happens which I have not worried about, I feel responsible.	

ATTITUDE SCALE - Form A

_____

_____

This inventory lists different attitudes or beliefs which people sometime hold. Read each statement carefully and decide how much you agree or disagree with it. For each statement, mark your answer using the number code given below that **best describes how you <u>think</u>.** To decide whether a given attitude is typical of your views, keep in mind how you think most of the time.

1	2	3	4	5	6	7
Disagree Totally	Disagree Very Much	Disagree Slightly	Neutral	Agree Slightly	Agree Very Much	Agree Totally

1. People will probably think less of me if I make a mistake.	
2. I must be a useful, productive, creative person or life has no purpose.	
3. I can find greater enjoyment if I do things because I want to, rather than in order to please other people.	
4. By controlling the way I interpret situations, I can control my emotions.	
5. If you cannot do something well, there is little point in doing it at all.	
6. What other people think about me is very important.	
7. People should prepare for the worst or they will be disappointed.	
8. I should be able to please everybody.	
9. Even though a person may not be able to control what happens to him, he can control how he thinks.	
10. It is shameful for a person to display his weaknesses.	
11. If a person has to be alone for a long period of time, it follows that he has to be lonely.	
12. A person should try to be the best at everything he undertakes.	

1	2	3	4	5	6	7
Disagree Totally	Disagree Very Much	Disagree Slightly	Neutral	Agree Slightly	Agree Very Much	Agree Totall

13. If a person is not a success, then his life is meaningless.	
14. It is not necessary for a person to become frustrated if he finds obstacles to getting what he wants.	
15. If I make a foolish statement, it means I am a foolish person.	
16. I should always have complete control over my feelings.	
17. I can enjoy myself even when others do not like me.	
18. If I do not set the highest standards for myself, I am likely to end up a second-rate person.	
19. If I do not do well all the time, people will not respect me.	
20. One should look for a practical solution to problems rather than a perfect solution.	
21. My value as a person depends greatly on what others think of me.	
22. A person should do well at everything he undertakes.	
23. If someone disagrees with me, it probably means he does not like me.	
24. I cannot be happy unless most people I know admire me.	
25. My own opinions of myself are more important than others' opinions of me.	
26. If I do not treat people kindly, fairly, and considerately, I am a rotten person.	
27. It is awful to be disapproved of by people important to you.	
28. If you do not have other people to lean on, you are bound to be sad.	
29. People will like me even if I am not successful.	
30. If other people know what you are really like, they will think less of you.	

1	2	3	4	5	6	7
Disagree Totally	Disagree Very Much	Disagree Slightly	Neutral	Agree Slightly	Agree Very Much	Agree Totally

31. Whenever I take a chance or risk I am only looking for trouble.	
32. If a person avoids problems, the problems go away.	
33. No one can hurt me with words. I hurt myself by the way I choose to react to people's words.	
34. Others can care for me even if they know all my weaknesses.	
35. If I fail partly, it is as bad as being a complete failure.	
36. People will reject you if they know all your weaknesses.	
37. I can reach important goals without slave-driving myself.	
38. My happiness depends more on other people than it does on me.	
39. If a person I love does not love me, it means I am unlovable.	
40. I ought to be able to solve my problems quickly and without a great deal of effort.	

Appendix 3: ACT participant handouts

[Note. the ACT intervention was called "Stress Management Training" in Study I, and "Work & Life Effectiveness Training" in Study II]

ACT Session 1

The main aim of the Work & Life Effectiveness Training is to teach you how to deal with those psychological barriers that can interfere with your effectiveness.

In this first session we defined "being effective" as moving towards valued life goals; and "psychological barriers" as undesirable psychological content – such as anxiety, worry, unhappiness, indecisiveness, nervousness, negative thinking etc. Many people report that these undesirable thoughts, emotions, and sensations can interfere with effective and enjoyable living.

You were then asked to think about what happens in your mind when undesirable psychological content shows up. That is, what does your 'mind' tell you to do with unwanted thoughts and feelings?

When asked this question, people often report that they have tried to change them, justify them, rationalise with them, ignore them, deny them, drink alcohol, use "positive thinking", "analyse" the situation, think it through etc. We humans tend to try hard to avoid experiencing negative thoughts and feelings.

But, how effective are these strategies for dealing with our unwanted thoughts and feelings? Is it easy to change them, or get rid of them? In the short term? In the long term?

Consider this situation in which a participant used particular strategies in an attempt to stop worrying needlessly about work:

Trainer: "What have you tried to do to stop worrying?"
Participant: "I've tried to talk myself out of the worry by 'thinking things through', and tried to work out why I worry. I've tried relaxing, and doing something not related to work--like watch telly or clean my flat."
Trainer: "Right. Good. Let me ask you this. Your mind says, 'don't worry: relax, watch telly, think things through and then you won't worry'. Right?"
Participant: "Right."
Trainer: "OK, and how has that worked? For example, as you've done what your mind has told you to do, have you been able to stop worrying or even worry less; and, have you then been able to enjoy or be involved fully in what you need to do?"
Participant: "Sometimes, but not always, and even if I can stop worrying, it's only very temporarily."
Trainer: "Right, so, overall, would you say that you have been able to stop worrying unnecessarily."
Participant: "No, and its a continuous battle: I spend so much time trying to stop worrying that I can't focus on what I'm doing, and I become exhausted. Really, it's not unusual for me to get headaches because of all of the worrying that I do."
Trainer: "Isn't that interesting? It seems like a paradox, doesn't it? I mean, you do what

your mind says: do something to stop worrying: watch telly, think it through, clean your flat, but it doesn't work: you still worry."

Participant: "Yes, but what can I do?"

Trainer: "What does your mind tell you to do?"

Participant: "A lot: relax!, you're crazy, do less work, it's not the end of the world if things go wrong, take a break.....It just chatters on!"

Trainer: "Have you done these things?"

Participant: "Of course...I've certainly tried."

Trainer: "And how have they worked? Have they paid off in a fundamental way, so that by doing them you have transformed the situation and you are no longer bothered by worrying? Or are you, unbelievably, sinking in deeper, worrying more, feeling worse?"

Participant: "I feel like I'm sinking deeper: It's like the worry is taking over! I can't relax!"

Trainer: "Incredible, isn't it? I mean if we had an investment advisor with this track record we would have sacked him long ago, but here your mind keeps leading you into efforts that don't really, fundamentally pay off, but it keeps following you around, nattering on, and it is hard not to give it one more go. I mean what else can you do but go along with what your mind tells you to do? But maybe we are coming to a point in which the question will be 'which will you go with? Your mind or your experience?' Up to now the answer has been 'your mind', but just notice what your experience tells you about how well that has worked."

The dialogue above shows how our minds often 'tell us' to do things with undesirable psychological content. These strategies are not very helpful in relieving the effects of stress, worry, unhappiness etc.

In fact, our attempts to get rid of our unwanted thoughts and feelings can actually make them worse, so that they 'take over', and interfere with what we are doing. During Session 1, I spent some time discussing why this is the case. The following sections summarise the key aspects of that discussion.

Control and struggle: problematic strategies

In the world *outside* of our skin, we humans tend to live by a rule that goes something like this: ***If you don't like something, figure out how to change it, or get rid of it, and do it.***

This rule reflects the fact that we humans work hard to **CONTROL** the environment around us. Humans have used this control rule to great effect, to make life (at least in the Developed World) fairly comfortable: we have shelter, food, social stimulation, TV, computers, etc.

Unfortunately, the control rule does not work well *inside* our skin. The world inside our skin is very important because it's where satisfaction, contentment, and happiness lie. In the world inside the skin (i.e., in the world of thoughts, emotions, moods, and bodily sensations), the following rule applies: ***If you aren't willing to have it, you've got it!***

In the area of emotions, thoughts, memories, attitudes, bodily sensations, and so on, control strategies are not helpful. In fact, in our internal world, deliberate control can be the problem rather than the solution. This is because when we try to control unwanted thoughts and feelings, we set ourselves up for a "no-win struggle".

This struggle is a problem because:

- It can make the unwanted thoughts and feelings more frequent and more powerful
- It is very stressful and mentally draining
- It draws us away from the present moment
- It often involves us *avoiding* situations

A way out of the struggle

The alternative to struggling with our own thoughts and feelings is for us to be more willing to experience them. If we learn how to be willing to experience emotions and thoughts, without trying to change them or get rid of them, we can step out of the internal struggle.

Clean vs Dirty discomfort

One way to think about the different consequences of being *willing* to have 'undesirables' on the one hand, and struggling with them on the other, is through **CLEAN vs DIRTY DISCOMFORT.**

Clean discomfort is the *primary* discomfort that we all experience in our lives as a function of living. It might be relatively low, as when we feel irritated at someone for putting us down, or it may be high, as when we have a major argument with our partner, or we lose a job.

Dirty discomfort is the *secondary* emotional pain created by our efforts to control the normal, natural *clean* discomfort that we experience. When trying to avoid, control or get rid of clean discomfort, a whole new set of undesirable feelings, emotions and thoughts can appear. Dirty discomfort is the unnecessary addition of fear of fear (e.g., when we become anxious about being anxious), unhappiness about unhappiness, blame about unhappiness etc. We then may try to control the secondary discomfort as well, and so carry on in a vicious cycle of ever increasing struggle.

Stepping out of the struggle: 'mindfulness' exercises

There are a number of mindfulness exercises that you will learn on this course. They are designed to help you to step out of the internal struggle with your own thoughts and feelings. These exercises will teach you how to:

- Experience thoughts and feelings without engaging or struggling with them
- Notice when you have been 'sucked into' your psychological content
- Bring your mind back to the present moment

Mindfulness is a skill. It is like learning any new skill such as swimming or playing a musical instrument: it requires practice. It is unlikely that you will notice any immediate benefits – you have to keep at it anyway! At first you will need to practice the exercises

frequently; eventually the skill will become a permanent part of your life. Remember that in the world of thoughts, feelings, and moods, practise makes permanent!

Mindfulness Exercise I – Leaves on the stream exercise (exercise 1 on the tape).
The leaves exercise encourages you to observe your psychological content without struggling with it, and without trying to control it. It also teaches you to notice when your mind has drawn you away, and how to gently bring yourself back to the 'here and now'.

Homework

- Practise the leaves on the stream exercise everyday for the next week.

- Fill in the 'self monitoring homework' diary as often as possible over the next week. Make a note of any unwanted thoughts, feelings, and bodily sensations that you experience.

Self monitoring homework

In the first session we discussed how trying to control or remove unwanted psychological content (thoughts, feelings, bodily sensations, memories) can increase the intensity and frequency of this content. It is important that you begin to become aware of the strategies you use to try to get rid of this content. Use this form to record a few 'uncomfortable' moments that occur during the week. Note down any feelings, thoughts and sensations that occurred as a result of the experience. The final column on the diary is the most important. Observe and write down what you did about the uncomfortable psychological content that appeared. Try to keep a record of at least one experience each day. No one will see your record, and you do not have to discuss any of it in the next session.

	What was the experience?	**What were your feelings while it was happening?**	**What were your thoughts while it was happening?**	**What were your bodily sensations while it was happening?**	**What did you do to handle your feelings, thoughts, or bodily sensations?**
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

ACT Session 2

Summary of the last session:

- Trying to control or remove undesirable thoughts and feelings is not very helpful.
- The alternative to this "internal struggle" is to learn to be more willing to experience ALL types of thoughts and feelings.
- We can develop willingness by practising mindfulness exercises such as Leaves on the Stream.

Values and Goals Assessment

Learning to be willing to experience *all* thoughts and feelings allows you to move your life in a *valued direction*, even when undesirable thoughts and feelings show up.

When we struggle with unwanted thoughts and feelings they usually become more powerful and central to our lives. As we increase their power, they may start to dictate what we do – for example, we may avoid situations or activities because unwanted thoughts and feelings show up. This is not a very vital way to live because it means that many of our actions are based on how we feel at the time.

We can overcome these internal barriers by becoming more aware of our valued life directions. The **Values & Goals Assessment** sheet will help you do this. The exercise can provide you with a stable 'compass reading' for your life.

Chosen values provide a far more stable compass reading than do our constantly changing thoughts, emotions, and bodily states.

Values vs. goals

- Values are really a general direction
- Values are more global than concrete goals
- Values are the 'glue' that makes a set of goals more coherent
- Values can reduce the likelihood of working at cross-purposes
- Values cannot be fully satisfied or permanently achieved
- If goal achievement does not occur on schedule, values can keep us on track

The trick is to use goals only as a means to engage and maintain a valued direction

Valued directions cannot be pursued if we are concerned with removing particular emotions and thoughts. If we do focus on removing unwanted thoughts and feelings, then, as soon as they show up, we have to stop going in the direction we were going. Because negative thoughts and feelings often show up (that's what they do!), we can't maintain a valued direction for very long if not having them is so important.

Distinguishing "you" from your psychological content

This training involves you becoming more willing to accept negative psychological content. It is therefore necessary to find a place within us where this is possible. There is a place or perspective within us that is not threatened by difficult psychological content. This perspective is called the **'Observing Self'**. A cloud and sky analogy is often used to describe it:

- *Think of your emotions, thoughts, bodily sensation etc. as the clouds.*
- *Behind the clouds of psychological content lies blue sky.*
- *We don't need to blow the clouds away every moment to be reassured it is there. When we look, it is there.*
- *When the clouds of verbal chatter can be seen from the point of view of the sky, the clouds are not so threatening.*

The Chessboard

In the training session, a chessboard was used to illustrate the distinction between the observer you, and the content of your life (thoughts, feelings, bodily sensations etc.). Think of the pieces as all the different thoughts and feelings that you experience. Sometimes we engage with, and struggle with the negative pieces, trying to remove them from the board.

We can learn to view the pieces from 'board level' and so avoid being sucked into a stressful struggle with our own thoughts and feelings.

Try to develop the habit of asking yourself: "Am I at piece level or at board level right now?" (Remember that the goal is not to be at board level all of the time, but to know that perspective is there. It can help you to avoid needless struggles with negative psychological content).

When you are at board level you are looking **AT** your thoughts, emotions etc. When you are at piece level you are looking **FROM or THROUGH** thoughts emotions etc.

The Observer Exercise (exercise 2 on the last week's tape)

The purpose of this exercise is to get you in touch with the observer perspective: the part of "you" you call "I". The negative thoughts, feelings etc. that we often struggle with are not really "you" - they are the content of your life. You are the 'vessel' that carries this stuff around. If this stuff is not "you", why struggle with it?

Passengers on the bus

The 'passengers on the bus' idea also illustrates how the 'internal struggle' impacts upon our actions, and our life directions. It shows how a valued direction can be lost if we struggle to remove the scary-looking passengers (thoughts, feelings, memories, bodily sensations etc.).

These passengers 'threaten' us by saying, for example, "turn left or else". We make deals with them, we do what they say, so that they stay at the back of the bus and keep quiet. Sometimes we get fed up of doing what they say and go to the back of the bus to try to make them get off. We struggle with them for a bit but it doesn't turn out very successfully. It's as if the scary passengers like the struggle. It lets them prove their strength. Also, we have to stop the bus to struggle with the passengers. All the scary passengers can ever do is come up to the front of the bus and make you look at them. That's all they can do.

The bizarre thing is that we give up control where it actually works (moving our lives in a particular direction) by trying to use control where it doesn't work (inside the skin).

Using language to stay out of the struggle

Some aspects of language draw us into a struggle with our own thoughts and feelings. The word 'but' is an example of this:

"I wanted to go to see my friends but I was too depressed"

"I love my partner but he/she makes me so angry"

"I'd like to speak at my friend's wedding but I'm too anxious"

Notice how the second half of these examples sort of cancels out the first. It's like saying you would have to get rid of depression, anger, anxiety etc. to make the first part of each of these scenarios possible. If we believe that, then we often start struggling with the emotions, thoughts etc. so that we can do the things we want. Replacing these buts with and would be a better representation of what is really going on. So, the person in the first example wanted to go and was feeling depressed.

Another aspect of language that draws us into a struggle is when we identify with our own thoughts and emotions. For example saying to yourself "I'm anxious" or "I'm depressed" can make the depression or anxiety seem very threatening. If we get into the habit of actually saying what is really happening, we can again prevent ourselves struggling with negative thoughts and feelings.

For example, instead of "I'm anxious" you could say to yourself "I'm a person and I'm experiencing some worrisome thoughts and some anxious feelings at the moment".

Although this may seem a bit strange at first, you can very quickly get the hang of it. Here are some more examples:

Say someone is anxious about giving a public talk. Instead of saying or thinking, "I will mess it up", they could say, "I'm having the thought that I may make a mess of it. Along with this thought I am experiencing some anxious feelings".

You could replace "I'm angry" with "I'm having a feeling of anger".

This is not offered as a 'proper' or 'correct' way of speaking and thinking. It's just a handy way to use language should we find ourselves tangled up in a struggle with our own thoughts, feelings, bodily sensations etc.

Summary

The ingredients needed for living a valued, vital, satisfying life:

- Give up the no-win struggle with negative thoughts feelings etc.
- Develop *willingness* through mindfulness exercises; remember, it's a skill!
- Identify valued directions

Homework

The important thing is that you keep practising the exercises. Over the next week, try to practise one of the mindfulness exercises *2 or 3 times*. Then, try to practise an exercise *once a week*, until we meet again for session 3 (in about three months). As you develop this "mindfulness" skill, you can practise untangling yourself from your thoughts and feelings at regular intervals during the day.

Also, it is important that you take some time out to finish the Values & Goals Assessment.

Values and goals assessment homework

The following are areas of life that are valued by some people. Not everyone has the same values, and this work sheet is not a test to see whether you have the "correct" values. Describe your values as if no one will ever read this work sheet. As you work, think about each area in terms of the concrete goals you may have and in terms of more general life directions. For instance, you may value getting married as a concrete goal and being a loving spouse as a valued direction. The first example, getting married, is something that could be completed. The second example, being a loving spouse, does not have an end. You could always be more loving, no matter how loving you already were. Work through each of the life domains. Some of the domains overlap. You may have trouble keeping family separate from marriage/intimate relations. Do your best to keep them separate. You may not have any valued goals in certain areas; you may skip those areas or discuss them with the trainer. It is important that you write down what you would value if there were nothing in your way. We are not asking what you think you could realistically get, or what you or others think you deserve. What is it you care about? What do you want to work toward in the best of all situations? While doing the worksheet, pretend that magic happened and that anything is possible.

1. *Marriage/couples/intimate relations.* In this section, write down a description of the person you would like to be in an intimate relationship. Write down the type of relationship you would want to have. Try to focus on your role in that relationship.

2. *Family relations.* In this section, describe the type of brother/sister, son/daughter, father/mother you want to be. Describe the qualities you would want to have in those relationships. Describe how you would treat the other people if you were the ideal you in these various relationships.

3. *Friendship/social relations.* In this section, write down what it means to you to be a good friend. If you were able to be the best friend possible, how would you behave toward your friends? Try to describe an ideal friendship.

4. *Career/employment.* In this section. Describe what type of work you would like to do. This can be very specific or very general. (Remember this is an ideal world). After writing about the type of work you would like to do, write about why it appeals to you. Next, discuss what kind of worker you would like to be with respect to your employer and colleagues. What would you want your work relations to be like?

5. *Education/personal growth and development.* If you would like to pursue an education, formally or informally, or to pursue some specialised training, write about that. Write about why this sort of training or education appeals to you.

6. *Recreation/leisure.* Discuss the type of recreational life you would like to have, including hobbies, sports, and leisure activities.

7. *Spirituality.* This does not necessarily refer to organised religion. What is meant by spirituality is whatever that means to you. This may be as simple as communing with nature, or as formal participation in an organised religious group. Whatever spirituality means to you is fine. If this is an important area of life, write about what you would want it to be. As with all of the other areas, if this is not an important part of your values, skip to the next section.

8. *Citizenship.* For some people, participating in community affairs is an important part of life. For instance, some people think that it is important to volunteer with homeless or elderly people, lobby governmental policymakers at parliament, or local level, participate as a member of a group committed to conserving wildlife, or participate in the service structure of a self-help group, such as Alcoholics Anonymous. If community-oriented activities of this type are important to you, write about the direction you would like to take in these areas.

9. *Health/physical well-being.* In this section, include your values related to maintaining your physical well-being. Write about health-related issues such as sleep, diet, exercise, smoking, and so forth.

ACT Session 3

OVERVIEW

- Review of Sessions 1 and 2
- Progress made so far

Untangling yourself from your psychological content

- Mindfulness exercise – *leaves on the stream*

- I'm having the thought that……&….Thanking your mind for that thought!
- Taking your mind for a walk

Moving in valued directions

- Values, goals, and barriers to action – "willingness"
- The soap bubble metaphor
- Passengers on the bus
- Making a public commitment

- Review and summary

Mindfulness exercise – *leaves on the stream*

The *leaves on the stream* exercise serves the same purpose as the *conveyor belt* exercise, which is on the homework tapes. These exercises are useful because they teach you the following:

- That you can "just notice" your thoughts (and feelings)
- What its like when you get drawn into them
- To give up any unhelpful struggles with undesirable thoughts and feelings

I'm having the thought that…&…. Thanking your mind for that thought!

Some aspects of language draw us into an unhelpful struggle with our own thoughts and feelings.

For example, when we say to ourselves, "I'm anxious" or "I'm depressed" it can make the depression or anxiety seem very threatening, when in reality we are just experiencing particular thoughts and feelings. If we get into the habit of saying what is really happening, we can stay out of needless struggles, and untangle ourselves from our psychological world.

For example, instead of "I'm anxious" you could say to yourself "I'm a person and I'm having some worrisome thoughts and some anxious feelings at the moment".

Although this may seem a bit strange at first, you can very quickly get the hang of it.

Here are some more examples:

If someone is anxious about giving a public talk, instead of saying or thinking, "I will mess it up", they could say, "My mind is providing me with the thought that I may make a mess of it – thank you mind!"

You could replace "I'm angry" with "I'm having a feeling of anger", or "My mind is giving me some angry thoughts about this situation – thank you mind!" This reminds us who is in charge, and can ensure that our "angry" thoughts and feelings do not necessarily lead to angry actions. Anger the action may sometimes be helpful, but often it is not!

This is not offered as a "proper" or "correct" way of speaking and thinking. They are just useful ways to help us untangle ourselves from undesirable thoughts and feelings.

Taking your mind for a walk
We will try this exercise in the session. It is an enlightening exercise! It shows you that:

- Our minds have a tendency to chatter on, sometimes in unhelpful ways
- You can choose where you want to go, even when your mind is 'chattering on'
- You can think of the chatter as having a radio on in the background – you can still focus on what you are doing, and where you are going.

Get into pairs. One of you will be a Person, the other will be that person's Mind. You are going to go outside for a walk, using a special set of rules: The Person may go anywhere he or she chooses; the Mind must follow. The Mind must communicate nearly constantly about anything and everything – describe, analyse, encourage, evaluate, compare, predict, summarise, warn, criticise, and so on. The Person cannot communicate with the Mind. If the Person tries to communicate with the Mind, the Mind must say "Never mind your Mind!". After 5 minutes, and the Mind will monitor the time, you should switch roles. The Person becomes the mind, and the Mind becomes the Person. The same rules will apply for another 5 minutes. Then split up and walk individually for another 5 minutes, noticing that you are still taking a mind for a walk – it is just the familiar mind that is inside your head. When on your own, follow the same rules as before: dispassionately let the Mind describe, analyse, encourage, evaluate, compare, predict, summarise, warn, point out, and so on, without minding back, and go where you want to go.

Values, goals, and actions
In the last session you received the values and goals assessment sheet. It is very important that you take the time to sit down and work through this sheet. When completing the exercise, ask yourself: "What do I want my life to stand for?"

Take a look at the "Values, goals, actions, and barriers form". This summary values form is designed to help you to develop goals, and specify actions, that will move you in a valued direction.

Use your valued directions to generate specific goals and actions. A goal is a specific achievement, accomplished in the service of a particular value. Here is an example:

e.g., **Value** = *contributing to society*
Goal = *to get involved with a homeless charity*
Actions = *volunteer to help out with a soup kitchen for the homeless*

It is important that there is a close connection between the action, its associated goal, and the associated value. Will the action, if taken, actually produce the goal or lead to it?

Some actions may produce immediate results such as resigning from an unsatisfying job, whereas others may move you towards a longer-term goal, for example enrolling at University to obtain a degree.

The best thing is to accumulate small positives – ***little steps taken consistently are better then greater steps taken inconsistently.*** The key thing is that you engage in actions that feel like "steps in the right direction"

Barriers to values, goals, and actions

- Taking action to move towards our goals nearly always stimulates negative thoughts, feelings, and doubts. These may appear to be *barriers* to action.
- They are only barriers to action if we stop taking action, and stop moving towards our goals, when they show up.
- If we do avoid taking actions because negative psychological content shows up, then we can't move in a valued direction for very long, because this stuff will often show up.

If you have made progress with giving up the struggle, and are beginning to adopt a new perspective to your thoughts and feelings, then you can recognise that negative thoughts and feelings don't *have* to be barriers at all.

> They are just your thoughts and feelings – your mind stuff (thank you mind!). They are not necessarily true; they often don't reflect reality. They are just the pieces on your chessboard, or the "passengers" on your bus. You are bigger than they are; you are the 'vessel' that contains them. You don't have to be pushed around by them; you can choose where you want to go, and take them with you.

I used the word "willingness" during the training to refer to our willingness to have undesirable psychological stuff come up (negative thoughts, feelings, doubts etc.) ***and still take action.*** The soap bubble metaphor illustrates this:

Soap bubble metaphor

Have you noticed how a big soap bubble can touch smaller ones that are then absorbed into the bigger one? Well imagine that you are a soap bubble moving along a path you have chosen. Suddenly another bubble appears in front of you and says "Stop!" You float there for a few moments. When you move to get around, over, or under that bubble, it moves just as quickly to block your path. Now you have only two choices. You can stop moving in your valued direction, or you can touch the other soap bubble and continue with it inside you. Touching the other bubble and continuing with it is what we mean by "willingness".

Your barriers are mostly thoughts, feelings, memories, doubts etc. They are really inside you, but they sometimes seem to be bigger than they really are. Willingness is an *action* that answers the question that the barrier asks: "Will you have me inside you by choice or will you not?" In order to move in a valued direction, you must answer yes. If you answer no, you have to stop and struggle with it, and we've seen where that struggle leads – nowhere.

Summary

The ingredients for successful, vital living:

- Give up the no-win struggle with your own thoughts and feelings. When we try to control undesirable psychological content, we increase the power of that content. It often starts to dictate what we do!

- Distinguish the "observer you" from your constantly changing thoughts and feelings (the observer exercise will help you do this).

- Develop mindfulness, so that you are able to observe your chattering mind, and to notice when you have become caught up in the content of that chatter (conveyor belt, leaves on the stream, and TCM exercises).

- Identify your valued life directions, goals and actions - what do you want your life to stand for? (Values assessment exercises).

Appendix 4: SIT participant handouts

SIT SESSION 1

Overview of the first session:

Section A – Introduction and education about stress

Section B – Relaxation rationale & training

Section C – Thinking styles and stress

Section A – Introduction and Education about Stress

Origins of the stress response – 'Fight or Flight'

Although we often talk about 'stress' in negative ways, the stress response evolved because of its crucial survival value. It is in fact extremely helpful when we are faced with immediate, physical threats.

As soon as we are aware of a threat, certain things happen to our bodies, to our minds, and to the way we behave (the action we take). We will look at each of these 'human response systems' in turn.

Bodily response (or physiology)

A soon as humans perceive danger, neural impulses pass from the brain, down the spinal cord, activating the adrenal glands on top of the kidneys. One of the outcomes of this process is the release of adrenaline and noradrenaline. This has several effects upon the other systems of the body:

- Heart beats faster and stronger; blood flow speeds up
- Blood pressure increases
- Body becomes tense
- Blood redirected to major muscle groups
- Increased breathing rate
- Increase in perspiration
- Decrease in digestive system activity

All of these changes are ideal preparation for action – fight or flight.

Thinking response

Mind becomes focused on the source of the threat. Allows us to take in all the required information necessary to make an appropriate response.

Action response (Behaviour)

In the form of fight or flight (e.g., an aggressive urge to stand and fight, or to escape from the situation). Again, ideal actions when we are faced with immediate physical threats.

Thus, all of the above reactions are extremely helpful for physical threats. That is why the responses have evolved in this way.

When stress becomes a problem

HOWEVER, the majority of the threats we face in the 'modern' world are far more discrete, prolonged, and less (if at all) threatening to our existence (e.g., financial problems, work issues, relationship problems).

If we *perceive* these things as threatening then our bodily, thought, and action responses are the same as when we are faced with an immediate physical threat.

Not surprisingly, the stress response, which was designed to help us deal with physical threats, can become unhelpful and problematic. For example, the stress response may keep going for a long time or may be too extreme for the situation. When this happens we may experience symptoms or signs of stress such as those you mentioned at the start. Let's look at some unhelpful manifestations of stress:

Unhelpful bodily response

Excessive bodily tension stiff neck; trembling; tension headaches; feelings of nausea; digestive problems; change in breathing pattern; light-headedness; blurred vision; ringing in the ears

Unhelpful thinking response

Our minds may become overly focused on perceived source of threat or danger. Can lead to excessive worry. Thoughts may become biased towards a negative interpretation of events (distorted thinking).

Unhelpful action response

One of the most common behavioural reactions to stress is to try to escape from or AVOID the source of the stress. If the source is a physical threat, avoidance can be the most

appropriate response. When the threat is a relationship problem, or work demands, avoidance can be *extremely* unhelpful.

The interacting systems

Although the response systems (bodily, thinking, actions) have been discussed separately, they do interact in important ways. The interaction of the unhelpful responses produces the feelings that are often associated with the term 'stress' (e.g., irritability, anxiety, depression etc.).

Vicious cycles of stress

The interaction between the systems can result in cycles of stress, maintaining unhelpful stress levels even in the absence of an actual threat (e.g., feelings of 'panic' result from overly focusing on the bodily reaction; if there is a threat in our minds, the bodily response can kick in and the threat can seem all the more real; when we experience negative emotions, our thoughts can become excessively negative and vice versa).

Breaking cycles of stress

Because the response systems constantly interact in these ways, when we reduce unhelpful responses in one system (thoughts, actions, or body) it can have a positive effect on the other systems. This breaks the vicious cycle and leads to a more positive cycle of living.

This brings us to the rationale for this training. You will learn a number of techniques that impact upon unhelpful responding in all response systems, thus avoiding the all-too-common stress cycles.

Section B – Relaxation Training

Learning how to relax is particularly effective for reducing unhelpful bodily stress reactions; however, it also has a positive impact on the other systems, calming the mind and reducing excessive negative emotion.

Why does relaxation help?

Relaxation techniques relax the skeletal muscles. This is important in the fight against stress for the following reasons:

- When we perceive a threat the entire skeletal musculature reacts immediately (fight or flight response). This 'startle reflex' is accompanied by the other bodily changes (heart rate, adrenaline release etc.).
- If muscle tightening is prolonged, the central nervous system remains continually activated.
- When the muscles tense signals are sent to and from the brain. Relaxation of the muscles reduces activity in 'neuromuscular circuits' reducing activation in other functions (including the brain).

- Thoughts are accompanied by activity in particular muscles (for verbal thought there is activity in the tongue, lips, jaw, throat and cheeks; for mental imagery there is activity in the eye muscles).
- The muscle system influences emotion because when they are tense they activate the central nervous system and autonomic systems.

Relaxation training

The exercises you will learn involve tensing and relaxing various muscle groups throughout the body. An essential part involves playing close attention to feelings of tension and relaxation.

Learning to relax is a just like learning any other skill such as swimming, or playing a musical instrument – the more you practice, the better you will be. It is particularly important to practice the full exercise for a couple of weeks before moving on to the shorter exercises. The ultimate goal is to develop "automaticity", where you automatically, effortlessly identify and relax unhelpful tension.

Exercises

Diaphragmatic breathing instruction.
Full progressive muscular relaxation (exercise 1 on the tape).

Section C – Thinking Styles and Stress

The section on thinking is probably the most important in this stress management training. Changing stress-related thinking styles can be a powerful way of reducing unhelpful negative emotions, such as anxiety, depression and irritability.

<u>Why is thinking so important in stress management?</u>

There is always some thought, belief, or interpretation that comes between an event and the emotions or moods that we experience.

Events in our lives do not directly cause stress; rather, it is the way we think about them the dictates how we feel and behave.

This is not a new idea: "Men are not moved by things but by the views which they take of them" (Epictetus, 1st Century Philosopher).

<u>The nature of stress-related thinking</u>

When people are stressed (e.g., angry, depressed, anxious, worried etc.) their thinking is often 'distorted'. It becomes 'absolutistic', extreme, and often excessively negative.

- Stress-related thinking loses 'objectivity'
- Extreme negative interpretations of events rarely reflect reality

- Humans dwell on information that is consistent with their beliefs and interpretations

Psychologists have discovered that stressed, anxious and depressed people exhibit about 10 types of distorted thinking. You will hear about these in the next session.

The A-B-C Model

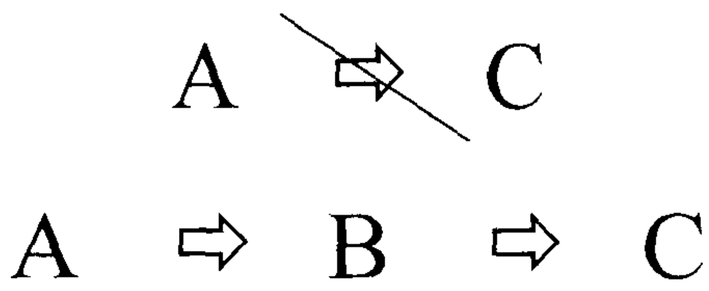
The A-B-C model of emotion is a useful way to demonstrate how thoughts and beliefs come between events and emotions or 'moods'.

A **A**ctivating event

B **B**elief, thought, or interpretation

C Emotional/behavioural **C**onsequence

In the world of emotions and moods:



There is an enormous number of activating events (A). It could be seeing a snake, a row with a colleague; they can be a group of things (e.g., 'My boss never gives me any praise'); even thoughts can be activating events (thinking about the situation with the boss could lead to other thoughts and emotions). A's can also be internal bodily events – for the overly anxious person it could be noticing their heart beating rapidly or feeling light-headed.

There are also different kinds of B's . They can be:

Beliefs or attitudes	"I must perform well at everything I do"; "I must be liked by everyone"
Visual images	Imagining making a fool of yourself in a social situation
General statements	"I'm useless"
Brief 'Automatic Thoughts'	"I'll be no good at this"; "I'll make a fool of myself" (They are called automatic thoughts because they just seem to pop into our heads automatically when we are facing particular challenges or situations).

The C's can be all the different, negative emotions, such as depression, anxiety, guilt, shame, anger, tension etc. There are also behavioural consequences that stem from our thoughts, moods and emotions; for example, avoiding a situation you are afraid of, working an excessive number of hours to achieve perfection, or avoiding going out because you feel 'low'.

Exercise - A-B-C (separate handout)
The goal of this exercise is to emphasize the importance of thoughts and beliefs in all types of human emotion and behaviour.

Automatic Thoughts

Usually, stress is linked to 'automatic' thoughts that occur at B in the A-B-C sequence. To overcome stress, anxiety and depression, we need to become aware of our automatic thoughts.

An unhelpful stress response involves a number of habitual negative automatic thoughts. They can pop up in particular situations such as when you are unsuccessful at completing a task. They are often directly linked to strong negative moods.

One of the homework assignments (becoming aware of our own thoughts, beliefs and interpretations) is designed to help you become aware of, catch, and write down the ATs that are linked to stress-related moods and emotions.

Homework

Practice the full progressive muscular relaxation (exercise 1 on the tape) every day for the next week. Record your progress on the 'Relaxation Diary' sheet.

Fill in 'becoming aware of our own thoughts, beliefs and interpretations' sheet at least once each day for the next week. The goal is for you to become aware of, and write down the negative automatic thoughts that are linked to problematic moods.

Homework: Becoming aware of our own thoughts, beliefs and interpretations

Make a note of the situations during the week that result in strong negative moods and emotions. Note the time of day, what happened, who was present etc. Keep your eye out for any themes. In the second column describe the mood in one word (e.g., anxious, stressed, nervous, depressed, angry etc.). Next to the mood rate the intensity of it on a scale from 0-100.

Then, make a list of the 'automatic' thoughts (ATs) that were running through your head just before you started to feel this way. Write them down in a sentence as soon as you get the chance. It is easier to 'catch' them when you are still in 'stress-mode'. Circle the ATs that are most closely linked to the negative mood. This information will be very important to you when it comes to next week's session. You will not have to reveal anything you record in the session. Try to record something every day for the next week.

1. Event/situation	2. Emotion/mood	Intensity 0-100	3. Automatic thoughts

SIT SESSION 2

Relaxation training continued

It is important that you continue practising the full relaxation exercise in order to develop "muscle sense", so that relaxation becomes a habit in your life. As you begin to develop this skill, there are exercises that take less time to complete. After about 2 weeks of training with the full method, you can reduce the time it takes by tensing and relaxing four muscle groups (see separate handout).

Once you have practise the four muscle group exercise for another 2 weeks, you can move on to a 'relax-only' exercise using the four muscle groups. In this exercise the tension phase is omitted - you just concentrate on relaxing any tension that has appeared in the muscle groups. Mastery of this step is essential to the ultimate goal of relaxation training, which is to enable you to control excess tension as it occurs in "real life". The second exercise on the relaxation tape should be of benefit at this stage of the training because it involves removing tension without first tensing the muscles.

Finally, get into the habit of counting to yourself from 1 to 10 at the end of the above relaxation exercise. Focus on deepening the feeling of relaxation as you move through the numbers.

Progression through the above stages of the training, along with your daily reminder (sticker) to relax, should lead you toward a life less disrupted by tension and the other aspects of the stress reaction.

Catching negative automatic thoughts (ATs) (Thought record columns 1, 2 & 3)

In the last session you were introduced to the idea that some type of thought or interpretation comes between events and our stress reactions. An excessively negative interpretation or belief leads to stress, anxiety, depression, irritability, reduced self-confidence etc.

For homework you were encouraged to become aware of this in your own lives. You were asked to identify and write down 'automatic thoughts' that go through your mind when you experience high levels of 'uncomfortable' moods. In doing so, you completed the first 3 columns of what is called a **Thought Record**. Remember that the characteristics of automatic thoughts are listed on last week's handout. Here are some questions to ask yourself to help you identify your ATs:

What was going through my mind just before I started to feel this way?
What does this say about me?
What does this mean about me, my life, my future?
What am I afraid might happen?
What is the worst thing that could happen if this is true?
What does this mean about how the other person(s) feel(s)/think(s) about me?

Distorted thinking

Last week, you also heard about the nature of stress-related thinking. In all forms of stress (depression, anxiety, irritability, worry etc.), our thinking can become biased toward a negative interpretation of events. Negative automatic thoughts are often distorted in this way. Take a look at these 10 thinking distortions:

All-or-nothing thinking

Seeing things as 'black-or-white'. E.g., you make a small mistake at work and see it as a total failure.

Overgeneralization

When a single negative event, such as a relationship break-up or a problem at work, is seen as a never-ending pattern of failure. Thoughts in this category usually involve words such as "always" and "never". E.g., someone's relationship finishes and they think, "This *always* happens to me, I'll *never* find anybody else".

Mental filter

Remember that in the last session I said that people who are stressed, anxious, depressed, etc. dwell on information that is consistent with their beliefs. Mental filtering involves picking on a single negative detail and dwelling on it so that your view on everything else becomes negative as well. E.g., you give a presentation at work and you receive many positive comments from your colleagues, but one of them says something mildly critical. You then obsess about this critical comment and ignore all the positive feedback.

Discounting the positive

Linked to mental filtering, this distortion involves believing that positive experiences "don't count". E.g., you do a good job but you tell yourself it wasn't good enough or that anyone could have done the same.

Jumping to conclusions

This involves automatically interpreting things negatively when there are no facts to support your conclusion. There are typically two ways we do this:

Mind reading: You conclude that someone is reacting negatively to you, you totally believe that conclusion, but you may not have checked it out.

Fortune telling: Predicting that things will *definitely* turn out negatively.

Magnification

This involves exaggerating the importance of problems while minimising your positive qualities.

Emotional reasoning

You assume your negative emotions actually reflect the way things are. E.g., "I feel angry: this *proves* I'm being treated unfairly", or "I feel inferior to others so it must be true that I am inferior".

"Shoulds", "musts", "oughts" and "have to's"

When you think things *should* be the way you hoped or expected them to be. E.g., you do something difficult at work, such as give a presentation, and afterwards you think, "I *shouldn't* have made those mistakes"; or "I *shouldn't* have been so nervous".

Should statements can lead to guilt and frustration, or to anger and frustration if they are directed towards others e.g., "He *shouldn't* have done that".

Labelling yourself

Instead of thinking, "I made a mistake", you think "I'm useless" or "a failure".

You may also label others ("he's a so-and-so"), so that you think the problem is with a person's character rather than with their thinking or behaviour. You may see them as totally bad but this just makes you feel hostile and hopeless about improving things.

Personalisation and blame

Personalisation may occur if you hold yourself totally responsible for something that may not be entirely under your control. E.g., a parent hears that their child is having problems at school and thinks, "This shows what a bad parent I am".

The opposite of this occurs when someone blames other people for any problems, and overlooks ways in which they might be contributing to problems. E.g., "I have relationship problems because my partner is totally unreasonable".

Homework exercise

Take a look at the negative automatic thoughts you identified in last week's homework and see if any of them involve any of these thinking distortions. There are lots of overlaps between the distortions, so one thought could involve a number of them. If a negative AT is linked to a strong negative mood, it is likely that it is distorted in one of the ways outlined above.

Challenging negative thinking patterns

Part I – Where's the evidence? (Thought record columns 4 & 5)

One of the characteristics of negative ATs that are linked to negative moods is that they seem reasonable *at the time*. The problem is that when we are stressed, depressed, anxious, or angry our thoughts become distorted and may not offer an accurate interpretation of a situation. Evidence showing that our beliefs may not be completely true can be hard to uncover when we are experiencing a strong mood. *Looking at the evidence both for and against our beliefs or interpretations is the secret to reducing the intensity of negative moods.*

By carefully documenting the evidence for and against our interpretations, we are more likely to examine all of the available information. This can open us up to new perspectives on a situation.

The 5th column on the thought record forces us to actively search our memories and the environment for any information that may contradict our initial automatic conclusions. It is useful to think about your initial negative ATs as 'guesses' rather than take them as definitely accurate interpretations of the situation. We do not usually do this when we are in 'stress-mode', but it is a habit we can develop.

Often, as soon as we consider contradictory evidence we can experience a shift in our mood. Here are some questions to help you find that contradictory evidence:

Have I had any experiences that show that this thought is not completely true all the time?
When I am feeling this way, do I think about situations any differently?
Have I been in this type of situation before? What happened? What have I learned from prior experiences that could help me now?
Are there any small things that contradict my thoughts that I might be discounting as not important?
Are there any strengths or positives in me or the situation that I am ignoring?
Am I jumping to conclusions that are not completely justified by the evidence?
Am I blaming myself for something over which I do not have complete control?

Use 'Bob's' completed example (on separate handout) to help you find contradictory evidence for your own negative ATs.

Columns 4 & 5 should contain facts rather than your interpretations of the situation.

Part II - Coming up with a more balanced perspective (Thought record column 6)

Using all of the available evidence to construct a more balanced thinking style can free you from automatic negative thinking patterns. The 6th column in the thought record involves writing down a more balanced interpretation of an event or situation. Here are some points about this part of the exercise:

Sometimes a little bit of extra information is enough to shift our interpretation.

When the evidence no longer fully supports your original AT, write the alternative in column 6. Rate your believability in the new interpretation on a 0-100 scale.
The alternative view in column 6 should include *all* of the available info.
It can be useful to link columns 4 and 5 with 'and' to help you come up with the balanced perspective.
If you have constructed a balanced thought that is believable to you, you'll probably notice a reduction in the intensity of any uncomfortable feelings.
The amount of change in your mood will be related to how much you believe in your balanced perspective. Even having a slight belief in the alternative can help to change your mood.
If you conclude that your original negative AT *is* accurate, you may need to employ a step-by-step **problem solving** strategy.

Once you have come up with, and written down your balanced thought, re-rate the intensity of the negative emotion in column 7 of the thought record. The process of searching for information usually results in a reduction in negative moods because it gives us different ways of looking at a situation. This can combat negative automatic thinking patterns that tend to be linked to strong negative moods.

Although at first this may seem like a lot of work, once we have completed a number of these thought records (20-50), the process can become a permanent habit in our lives.

Other methods for dealing with stressful thinking

<u>The double-standard method</u>

When you have a self-critical thought, ask yourself, "Would I say this to a close friend who had a similar problem?"

When we are stressed, anxious or depressed, we are often much harder on ourselves than we would ever be on others. It is much better to get into the habit of giving yourself the same encouraging messages to yourself as you would to a friend who you wanted to do well. For example, imagine that you have to give a presentation and you feel very anxious about it. Your automatic thoughts may involve telling yourself "I'll mess this up", "I'll blank out", "everyone will think I'm an idiot" etc. Can you imagine leaning over the shoulder of a friend who was in the same situation and saying, "You'll mess it up", "You'll blank out", "everyone will think you're an idiot"?

Ask yourself what you would say to a friend who came to you saying they were nervous about giving a presentation and start to say those things to yourself.

To help you do this, get into the habit of asking yourself questions like these:

If my best friend or someone I loved had this thought, what would I tell them?

If my best friend or someone who loves me knew I was thinking this thought, what would they say to me? What evidence would they point out to me that would suggest that my thoughts were not 100% true?

Thinking in shades of grey

To help you overcome "all-or-nothing thinking" (one of the most common distortions), you should remind yourself that things are usually between 0 and 100 percent, instead of insisting that they're all one way or the other. If, for example, something doesn't turn out as well as you hoped, don't think of it as a complete 100% disaster; rather, get it into perspective in relation to other things and it may turn out to be a relatively minor set-back.

Cost-benefit analysis

Ask yourself what are the advantages and disadvantages of holding a particular negative automatic thought. Make a list in 2 columns. If you find lots of disadvantages to having certain beliefs, it can motivate you to challenge that way of thinking, by assessing the evidence etc.

Thought Record

1. Event/situation	2. Emotion/mood	Intensity 0-100	3. Automatic thoughts	4. Evidence for	5. Evidence against	6. Alternative/Balanced thought	7. Re-rate intensity of mood

SIT SESSION 3

Aim: to ensure that the techniques become a habit in your daily life.

Overview:

Section A: Assessing the progress you've made so far
Review: breathing to reduce stress; relaxation
Section B: Review: challenging negative thinking
Section C: Preparing for and coping with stressful events

Section A

Don't forget that learning to reduce stress, anxiety, depression and irritability is a skill: IT TAKES PRACTISE. It is not enough just to hear about the techniques, you have to try them again and again.

There are a number of **review sheets** separate to this handout that I will go through in the session. They summarise the main components of the exercises.

To start with we will review **breathing and relaxation**. The most important thing is that you continue practising – even when you don't feel like you are making much progress. If you keep at it, you will eventually see the benefits.

The more times you check and change your breathing pattern, the more likely it will become a habit. You will start to notice when your breathing has become shallow or tense – one of the first signs of stress.

Likewise, if you spend time practising the full **tense-relax exercise**, then you will be able to move on to the 'relax-only' exercise, which is important for everyday relaxation.

Section B: Challenging negative thinking

The techniques for challenging negative thinking are *extremely* useful for reducing stress, irritability, anxiety and depression. Negative 'automatic' thoughts, worries, thoughts about low self-confidence, etc. are always involved in unpleasant negative emotions and moods.

I will therefore spend some time in this session making sure you understand how to use these techniques. Just like with relaxation and breathing, *you must practise*. There are some blank **thought records** in your pack for you to use; you may want to photocopy them. There is also an example of a completed thought record from someone who was anxious about going for a job interview. When you start out, you will need to fill in a number of these thought records to challenge your negative thoughts. Once you have done a few of these, you will start to challenge your thoughts automatically, without having to write them down.

The key thing is ***searching for evidence that contradicts your negative thinking***.

Remember that patterns of thinking in stress, anxiety, depression and irritability become biased towards the negative. When our thinking becomes biased in this way, it no longer offers an accurate representation of reality.

Section C: Preparing for and coping with stressful events

Constructive self-statements

When you experience negative automatic thoughts, you will also experience negative moods like anxiety and depression or anger. This type of thinking not only makes us feel bad, but it is also very unhelpful when we need to face challenging or stressful situations.

It is therefore very important that you learn to replace your **negative self-talk** with more constructive ways of thinking. One way to do this is by getting into the habit of using ***constructive self-statements*** to replace the unhelpful negative thoughts.

Constructive self-statements can be used at different stages of a stressful episode :– when we are preparing for a stressful or challenging situation (BEFORE); during the stressful episode (DURING); and evaluating what happened, after the stressful situation (AFTER). They can be used to ensure that you go into situations fully prepared, to ensure that the situation turns out successfully, and to reflect *in a constructive way* after the event has occurred.

The table below lists some stressful situations, the automatic negative self-talk that a person may have when facing those situations, and some constructive self-talk alternatives that can be used to replace the unhelpful thoughts.

Situation	**Negative self-talk**	**Constructive self-statement**
Anticipation of arriving late for an important meeting	This is going to look so awful I'll never get that promotion I'm going to appear so nervous	I may be late but it's not the end of the world It's unlikely I'll be judged by one event I can take this opportunity to check my breathing and use my relaxation exercise
Fear of giving a wedding speech	Will they laugh at my jokes & stories? My mouth always goes dry when I speak publicly I might forget what I want to say	They'll probably laugh at some of them. I'll make sure there's water on the table before I speak I'll make sure I have the key points written down in front of me
Returning an item to a shop	This is going to be so embarrassing What if they don't believe it's faulty?	I'll choose a quiet moment. If it becomes busy, I'll try to ignore the others behind me

	What if they refuse to take it back?	I'll ask them to try it out in the shop I can always contact their head office, or the manufacturer
Going to a job interview	I really *must* get this job What if I foul up? I know I'm just wasting their and my time	If I carry on thinking this way I'm going to become more nervous, and I'll be less likely to get it I guess there's a chance that I'll make a couple of mistakes, but it's unlikely that I'll completely foul up I may be the person they're looking for. Even if I'm not, this will be great practice. My performance will improve each time

Here are some tips for using self-statements:

- You need to have your own self-statements in your own words. They need to be personal and meaningful to you
- Make them as specific as possible
- Self-statements relating to you being competent and being in control work best
- They are not meant to be repeated mindlessly (different to 'positive thinking')
- Use them as an *active problem solving* technique for dealing with situations
- Think about when such self-statements could be of use to you
- Use your negative self-talk as a reminder to use constructive self-statements
- Before a situation you can use self-statements to "psych" yourself up so that you go into it fully prepared.

During a stressful situation you can use them to reduce any unpleasant emotions that are getting in the way of you performing well. They can help you to constructively use your stress when it does appear.

Here is a list of some general self-statements to give you the idea of the form they can take. Remember you need to 'personalise' them – put them into your own words and make them specific and meaningful to you:

Preparing for a stressful event (BEFORE):

I can develop a plan to deal with it.
Just think about what I can do about it.
I can work out a plan to handle this.
Remember, stick to the issue and don't take it personally.
Stop worrying. Worrying won't help anything.
What are some of the helpful things I can do instead?
I'm feeling uptight – that's natural.

Just psych yourself up – I can meet this challenge
Don't think about my stress, just about what I have to do.

During a stressful event (DURING)

The stress is a reminder to use my breathing technique and relaxation.
Relax, I'm in control. Take a slow deep breath. Ah, good.
Look for positives, don't jump to conclusions.
Things are not as serious as I make them out to be.
I have a lot of different techniques I can call upon.
Keep my focus on the present; what is it I need to do?
Relax and slow things down.
Time to take a slow deep breath.
Don't try to eliminate stress totally; just keep it manageable.

Evaluating the stressful event (AFTER)

It wasn't as bad as I expected.
I made more out of stress than it was worth.
What can I learn from my attempt?
I can be pleased with the progress I'm making.
I handled it pretty well.
Good, I did it. Next time I'll do even better.

Try using constructive self-statements the next time you face a challenging situation. As soon as negative thoughts show up, use them as a reminder to use more constructive self-talk.

SUMMARY

Over the three sessions you have been introduced to techniques to deal with the different ways we are affected by stress:

BODY – breathing, relaxation

THOUGHTS - challenging negative thinking, short cuts, coping self-statements

ACTIONS – problem solving

All three of these areas affect every other one. They all interact to produce negative emotions and moods. If we reduce an unhelpful reaction in one 'system', it helps with the other systems. For example, relaxing the body leads to a calming of the mind; reducing negative thinking reduces unpleasant feelings; and successful problem solving increases our confidence and makes us less stressed when we face a similar problem in the future.

There is only one thing left to say: **PRACTISE!!**

SIT Problem Solving Training handout

Outline of Problem Solving

Defining the problem
Brainstorming solutions
Weighing up the pros & cons
Choosing a solution and planning for action
Doing it!
Reviewing the outcome

Defining the problem

Defining the problem is not always easy. Worry, negative thoughts and feelings etc. will tell you where there is a problem but it won't necessarily tell you the exact nature of the problem. The problems that we face are often quite complex e.g., family or relationship difficulties, conflicts at work etc.

It is always worth thinking carefully about what is bothering you. It is helpful to distinguish different aspects of the problem and separate it into a collection of more manageable tasks. The act of writing down the problem as a set of tasks like this can itself be helpful.

It is not a good idea to attempt solving all the different problems at once. The best thing to do is take them one at a time. Having to put some problems on hold while you deal with others may mean you continue feeling stressed. However, if we successfully deal with one of our problems, we will be much less stressed when we come to deal with the others.

When first trying out problem solving methods, it is worth starting with the easiest problems i.e., one you are sure you can do something about.

Brainstorming solutions

Once the problem has been clearly defined, we can come up with a number of possible solutions. In other words, asking yourself, 'What can I do about it?'

This process involves 'Brainstorming' – thinking up as many examples as you can. It is important at this stage not to judge the solutions you come up with. Write down any you can think of, no matter how positive or negative they seem. We can sort out the good ideas from the bad ones later. So, if you think that robbing a bank is a solution to a financial problem, write it down! The idea is that the more choice you have, then there is a higher chance that you will select a solution which is right for you. Also, some solutions can look good 'on paper', but may not work when you try to implement them; if we have several solutions, we can try another one.

When coming up with possible solutions, it is sometimes helpful to put yourself in someone else's position and consider how that person would respond if asked to deal with

your problem. Brainstorming like this can help you to get out of the habit of saying 'yes…..but' in response to any possible solutions.

Weighing up the pros & cons

The next stage in problem solving is to list the pros and cons associated with each possible solution.

Pros are the good things associated with a particular decision, and cons are the bad things or drawbacks. By doing this, you can decide which of your solutions can be kept and which can be rejected. It is now that we judge the different solutions.

It may be that there are more pros associated with one solution than another. However, just counting the pros & cons is not a good way to decide. Some of the pros or cons may be far more important to you than others in the same group.

A way of getting around this is by placing a rating next to each pro & con. The rating can then represent how important each statement is. So, for example you could use a range from 1 to 10, with 1 representing not very important, and 10 representing the most important. When this has been done for both the pros & cons groups, you can add up the ratings to get a total for each.

Choosing a solution and planning for action

This is the all important 'decision-making' stage.

It is necessary to make a fairly quick decision about which solution(s) will be chosen. People who are stressed often have difficulty making decisions.

One way to get used to making quick decisions is by taking 'sensible risks' i.e., making quick decisions about things where the consequences are not too serious either way. For example, you might be in a shop and notice two items you really like. You could do a quick pros & cons analysis of each in your head, then just go ahead and buy one. Don't stand there for ages trying to decide which to buy. It is impossible for you to know which one you will enjoy the most. Don't worry about making the 'wrong' decision. Does it really matter that much if it is wrong?

After you have practised making quick decisions in situations such as this, have a go at some harder, more important ones. It is good to set yourself a deadline by which time you will make the decision. If you are used to being very cautious, making quick decisions can feel unpleasant at first. However, by learning to make quick decisions about problems means you will have less to get stressed about. As you learn that faster decision-making isn't always followed by a major catastrophe, you will find it easier and easier to do.

You can now take your first choice solution and start to plan how to put it into action. Planning for action can be assisted by asking yourselves the following questions:

What will be done?

How will it be done?
When will it be done?
Who is involved?
Where will it take place?
What is my back-up plan?

When answering these questions, it is important to be as specific and concrete as possible. Write out the answers and your plan of action. It is extremely helpful to be able to 'rehearse' your plan of action in your imagination.

It is important to turn your decision into action as soon as possible. The whole point of using problem solving is to work out a successful way of dealing with whatever it is that is causing you stress.

Do It!

Try out your solution. Make sure you have a back-up plan in place. Ensure you are prepared, physically and mentally.

Review the outcome

In this last stage it is important to evaluate your problem solving attempt to see if it was successful.

If turning your chosen solution into action worked, and the problem is solved, congratulate yourself! It is a very good idea to reward yourself if your strategy is successful. Treat yourself, as rewards work by reinforcing behaviours. If your successes are rewarded then you will be more likely to repeat whatever you did to achieve those successes. So, if you reward your successful problem solving, you will be more likely to engage in successful problem solving the next time you have a problem.

If your solution does not work, try to understand why it didn't. It is important to remember that *you did not fai*l. You can expect disappointments, particularly when you first start using problem solving techniques. You should congratulate yourself for having tried. Learn as much as you can from the experience and go back to you solution list and try another one. Or you could go back and redefine the problem, so that you are sure you know exactly what it is.

Problem solving is a skill much like all the other techniques you have learnt. Just knowing about it isn't enough. You must practice. Don't fall into the trap of thinking that one setback means you will always fail.

Summary

A useful way to summarise the problem solving process is to see it as involving the following questions:

What am I worried about?

What do I want to happen?
What can I do to make it happen?
What is actually likely to happen?
What is my decision?
Did it work?

Appendix 5: Training advert used in Study II

WORK & LIFE EFFECTIVENESS TRAINING

Goldsmiths
UNIVERSITY
OF LONDON

Do you feel that you are being fully effective in your work and personal life?

Do any of the following interfere with your effectiveness: *stress, anxiety, worry, negative thinking, irritability, anger, indecisiveness, or poor concentration*?

Then sign up for Work & Life Effectiveness Training, which is being conducted by Psychologists from Goldsmiths College, University of London.

What does the training involve?

During the training you will learn, and practise, psychological skills that have been shown to reduce stress, anxiety, and depression, and to improve performance and well-being. You will also be supplied with tapes and handouts to help you practise the skills at home.

The training will be delivered to small groups (of about 10 people) here at ****. There are three sessions of training, with each session lasting about 3 hours (9 hours in total). The first two training sessions occur in consecutive weeks, and the third session occurs a couple of months later.

Where do I sign up?

To volunteer for the training, send an email to ******* in the Occupational Health department (***email address***), stating your name and department, or call *********.

Appendix 6: Questionnaires used in Study II
[Intervention group cover sheet]

Print Name:_____

INFORMATION ABOUT THE QUESTIONNAIRES

Before completing the questionnaires, please read the points detailed below.

1. **Your responses to these questionnaires will only be seen by Paul Flaxman. No one at **** will ever know how you personally responded.**

2. **Your participation is voluntary. If you do not want to attend the training, or fill out the questionnaires for any reason, you do not have to.**

3. **Before completing each questionnaire, please read the instructions carefully.**

4. **The questionnaires take about 15-20 minutes to complete. Please ensure that you complete every item on each questionnaire.**

5. **Once you have completed the questionnaires, make sure you have printed your name at the top of this sheet and hand them to the trainer, Paul Flaxman.**

THANK YOU FOR TAKING THE TIME TO PARTICIPATE

Appendix 6: Questionnaires used in Study II
[Control group cover sheet]

INFORMATION ABOUT THE QUESTIONNAIRES

Reference number

Before completing the questionnaires, please read the points detailed below.

1. **Your responses to these questionnaires will only be seen by researchers at Goldsmiths College, University of London. No one at LB Ealing will ever know how you personally responded.**

2. **The reference number above has been allocated to you by Paul Flaxman, a researcher at Goldsmiths College. Only Paul Flaxman will keep a copy of this number and the name to which it refers.**

3. **Your participation is voluntary. If you do not want to attend the training, or fill out the questionnaires for any reason, you do not have to. No one at LB Ealing will know that you did not participate.**

4. **Before completing each questionnaire, please read the instructions carefully.**

5. **The questionnaires take about 15-20 minutes to complete. Please ensure that you complete every item on each questionnaire. The questionnaires are copied on both sides of the paper.**

6. **Do not spend too much time thinking about the items.**

7. **It is important that you fill in the questionnaires on the day that you receive them, or the day after, and send them back as soon as possible.**

8. **Once you have completed the questionnaires, seal them in the envelope provided, making sure that you include this cover sheet. Send them back to Paul Flaxman in the internal post. The unopened envelopes will be collected in a few days time.**

THANK YOU FOR TAKING THE TIME TO PARTICIPATE

Personal Details

Age_____ Gender_____

Marital Status (please tick):

o Single o Married/Partner

o Widowed o Divorced/Separated

Ethnic group (please tick):

o White o Black/Black British o Other(please specify)

o Asian/Asian British o Mixed

Education (highest level completed):

o No formal qualifications o Degree

o CSE/O Level/GCSE/NVQ 1-2 o Postgraduate degree

o A Level/NVQ3 o Other (please state)

Job classification:

o Manual o Clerical/Administration

o Middle management/Technical o Senior management/Professional

o Officer

Work arrangement:

o Full-time o Part-time o Contract

How long have you worked for **** (to the nearest year)?_____

How long have you held your current position (to the nearest year)?_____

How many hours do you work in a typical week?_____

Below you will find a list of statements. Please rate how true each statement is for you by circling a number next to it. Use the scale below to make your choice.

1	2	3	4	5	6	7
never true	**very seldom true**	**seldom true**	**sometimes true**	**frequently true**	**almost always true**	**always true**

1.	My thoughts can be dangerous.	1	2	3	4	5	6	7
2.	It is normal to have unhappy, or fearful, thoughts.	1	2	3	4	5	6	7
3.	I can do things that are important to me even when I'm feeling unhappy.	1	2	3	4	5	6	7
4.	I can move towards important goals, even if I don't feel good about myself.	1	2	3	4	5	6	7
5.	My thoughts and feelings get in the way of my success.	1	2	3	4	5	6	7
6.	If I have mean or nasty thoughts, then I am a mean or nasty person.	1	2	3	4	5	6	7
7.	I try to achieve my goals, even if I am uncertain that I can.	1	2	3	4	5	6	7
8.	If I feel fearful, then there is really something to be fearful about.	1	2	3	4	5	6	7
9.	When I feel unhappy, I try to find a reason for my unhappiness.	1	2	3	4	5	6	7
10.	If I value something, I'll work for it, no matter how uncomfortable or uncertain I become.	1	2	3	4	5	6	7
11.	I choose to get on with my life, rather than struggle with my worries or unhappiness.	1	2	3	4	5	6	7
12.	The greater my worries or anxieties become, the more concerned I get for myself.	1	2	3	4	5	6	7
13.	I take action on a problem, even when I fear I may get it wrong.	1	2	3	4	5	6	7
14.	I act according to my feelings [at the time].	1	2	3	4	5	6	7
15.	Its OK for me to have thoughts and feelings that I don't like.	1	2	3	4	5	6	7
16.	It's OK to feel depressed or anxious.	1	2	3	4	5	6	7
17.	I can set a course in my life and stick to it, even if I have doubts.	1	2	3	4	5	6	7

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

18.	My painful experiences and memories make it difficult for me to live a life that I would value.	1	2	3	4	5	6	7
19.	I worry about not being able to control my worries and feelings.	1	2	3	4	5	6	7
20.	Anxiety is bad.	1	2	3	4	5	6	7
21.	I'm afraid of my feelings.	1	2	3	4	5	6	7
22.	I am in control of my life.	1	2	3	4	5	6	7
23.	If I get bored of a task, I can still complete it.	1	2	3	4	5	6	7
24.	Worries get in the way of my success.	1	2	3	4	5	6	7
25.	If I feel uncertain, I can still make a choice and take action.	1	2	3	4	5	6	7
26.	If I promised to do something, I'll do it, even if I later don't feel like it.	1	2	3	4	5	6	7
27.	I stop taking care of my responsibilities when I feel anxious or uncomfortable.	1	2	3	4	5	6	7
28.	I try hard to avoid feeling anxious or jittery.	1	2	3	4	5	6	7
29.	I often catch myself daydreaming about things I've done and what I would do differently next time.	1	2	3	4	5	6	7
30.	Having some worries will not prevent me from living a fulfilling life.	1	2	3	4	5	6	7
31.	I realize that my reactions and judgments are not always objective facts.	1	2	3	4	5	6	7
32.	It seems like most people are handling their lives better than I am.	1	2	3	4	5	6	7
33.	I need to control my feelings in order to handle my life well.	1	2	3	4	5	6	7
34.	In order for me to do something important, I have to have all my doubts worked out.	1	2	3	4	5	6	7
35.	My thoughts and feelings do not get in my way.	1	2	3	4	5	6	7

1	2	3	4	5	6	7
never true	very seldom true	seldom true	sometimes true	frequently true	almost always true	always true

36. I can't stand feeling depressed or guilty.	1	2	3	4	5	6	7
37. Its OK if I remember an unpleasant memory.	1	2	3	4	5	6	7
38. If an unpleasant memory comes into my head, I try to get rid of it.	1	2	3	4	5	6	7
39. I try to avoid thoughts and emotions that cause difficulty in my daily life.	1	2	3	4	5	6	7
40. I do not have to control my thoughts and feelings to be successful.	1	2	3	4	5	6	7
41. I would rather achieve my goals than avoid unpleasant thoughts and feelings.	1	2	3	4	5	6	7
42. Emotions cause problems in my life.	1	2	3	4	5	6	7
43. I do not avoid people or places that may upset me.	1	2	3	4	5	6	7
44. I have memories that I wish I could erase from my mind.	1	2	3	4	5	6	7
45. When I feel uneasy, I do whatever I can to get rid of those feelings.	1	2	3	4	5	6	7
46. My body reacts strongly to upsetting thoughts and feelings.	1	2	3	4	5	6	7
47. I don't avoid situations that make me feel jittery.	1	2	3	4	5	6	7
48. I don't have to get rid of scary or unhappy images that come to my mind.	1	2	3	4	5	6	7
49. If I notice myself breathing quickly, then something is wrong.	1	2	3	4	5	6	7

Please read this carefully.

We should like to know if you have had any medical complaints and how your health has been in general, over the last few weeks. Please answer ALL the questions simply by underlining the answer which you think most nearly applies to you. Remember that we want to know about present and recent complaints, not those you had in the past.

It is important that you try to answer ALL the questions.

Thank you very much for your co-operation.

Have you recently…….

been able to concentrate on whatever you're doing?	Better than usual	Same as usual	Less than usual	Much less than usual
lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less than usual
felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
felt you couldn't overcome your difficulties?	Not at all	No more than usual	Rather more than usual	Much more than usual
been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
been able to face up to your problems?	More so Than usual	Same as usual	Less so than usual	Much less able
been feeling unhappy and depressed?	Not At all	No more than usual	Rather more than usual	Much more than usual
been losing confidence in yourself?	Not At all	No more than usual	Rather more than usual	Much more than usual
been thinking of yourself as a worthless person?	Not At all	No more than usual	Rather more than usual	Much more than usual
been feeling reasonably happy, all things considered?	More so than usual	About same as usual	Less so than usual	Much less than usual

This inventory lists different beliefs or thoughts which people sometimes hold. Please rate **HOW FREQUENTLY THESE THOUGHTS HAVE OCCURRED TO YOU <u>OVER THE LAST MONTH.</u>** Please place your rating to the right of each item.

1----------2----------3----------4----------5

Not at all Sometimes Moderately frequently Frequently All the time

1. If I do not do well all the time, people will not respect me.	
2. If you cannot do something well, there is little point in doing it at all.	
3. What other people think of me is very important.	
4. If someone disagrees with me, it probably means he/she does not like me.	
5. I must be a useful, productive, creative person or life has no purpose.	
6. I can enjoy myself even when others do not like me.	
7. My value as a person depends greatly on what others think of me.	
8. My happiness depends more on other people than it does on me.	
9. A person should do well at everything he/she undertakes.	
10. If a person I love does not love me, it means I am unlovable.	
11. A person should try to be the best at everything he/she undertakes.	
12. People will reject you if they know all your weaknesses.	

Now, please indicate how strongly, if at all, you have **BELIEVED** these thoughts, when they have occurred, over the last month. That is, the extent to which you have *believed them to be true*.

1----------2----------3----------4----------5

Not at all Somewhat Moderately Very much Totally

1. If I do not do well all the time, people will not respect me.	
2. If you cannot do something well, there is little point in doing it at all.	
3. What other people think of me is very important.	
4. If someone disagrees with me, it probably means he/she does not like me.	
5. I must be a useful, productive, creative person or life has no purpose.	
6. I can enjoy myself even when others do not like me.	
7. My value as a person depends greatly on what others think of me.	
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9. A person should do well at everything he/she undertakes.	
10. If a person I love does not love me, it means I am unlovable.	
11. A person should try to be the best at everything he/she undertakes.	
12. People will reject you if they know all your weaknesses.	

The following statements concern what you have, and have not, learnt from your work. Please indicate your level of agreement to the right of each statement, using a number from the scale below. Do not spend too much time on any one statement, but please ensure that you respond to each one.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

1. When faced with demanding tasks at work, I am able to find successful ways to accomplish them.	
2. I have been unable to discover better ways of getting things done at work.	
3. I am now better able to do my job, than when I first began it.	
4. My work experience has not helped me to develop skills to work more effectively with people.	
5. Over time, it has taken less effort for me to do my job.	
6. I do not find it any easier to do my job now, than when I first began it.	
7. In doing my job, I have learnt better ways to handle difficult problems.	
8. I now perform better in my job, than I did just a short time ago.	
9. My experience in this job has not helped me to find better ways of dealing with challenges at work.	