

Cognitive-Behavioural Therapy (CBT)-Based Stress Management Interventions (SMIs): Investigating the Mechanisms of Change

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Introduction

Individual-focused worksite stress management interventions (SMIs) are designed to help employees cope with work-related strain, and usually take the form of psychoeducational training programmes. The most common SMIs are comprised of a combination of cognitive-behavioural therapy (CBT) techniques, such as cognitive restructuring, relaxation training, and problem solving. Based on the traditional CBT models (e.g., Beck, 1976; Ellis, 1962; Meichenbaum, 1977), these interventions typically provide instruction on how to change the content of “dysfunctional” (or stress-related) cognitions, and how to reduce unpleasant emotional arousal. Major reviews of SMI outcome research have concluded that such interventions are generally effective for reducing mental ill-health in the workplace (e.g., Murphy, 1984; 1996; Saunders et al., 1996; Van der Klink et al., 2001).

In contrast to the traditional change-oriented cognitive-behavioural models, recent developments in CBT have placed greater emphasis on “acceptance” and “mindfulness” approaches. One approach that is at the forefront of this new wave of CBTs is Acceptance and Commitment Therapy (ACT; Hayes et al., 1999), an intervention protocol that promotes acceptance, rather than change, of difficult psychological content. The general aim of ACT is to enhance *psychological acceptance*, an individual characteristic that has two related components: (1) a willingness to experience all internal events (thoughts and feelings etc.), including those that are undesirable, without trying to control, change, or remove them; and, (2) a commitment to engage in valued (goal-directed) action, even in the face of difficult psychological content (Bond & Bunce, 2003). There is now a growing body of clinical research that has shown ACT to be an effective treatment package for a range of psychological problems, including anxiety, eating disorders, and depression (see Hayes et al., 1999, for a review).

In view of the historic relationship between CBTs and SMIs, these developments in CBT would seem to have important implications for the design of worksite interventions. Our recent research findings support this proposition. For example, in research conducted at call centres in the U.K., we found that psychological acceptance was a powerful longitudinal predictor of mental health, work performance, and absenteeism (Bond & Bunce, 2003; Bond, Flaxman, & Bunce, 2004). Moreover, our intervention research has shown that acceptance-based SMIs are as effective as traditional CBT interventions for improving employees’ mental health. Our analyses also revealed that psychological acceptance was a principle mechanism (or mediator) of change in both traditional and ACT interventions (Bond & Bunce, 2000; Flaxman & Bond, 2003).

The study reported below extends this line of research in two ways: (1) we assess the extent to which an ACT SMI (and increases in psychological acceptance) would impact upon stress-related (or “dysfunctional”) cognitions; and (2) we test the impact of ACT on a learning at work variable. Our hypotheses stem from the theory of acceptance (Hayes et al., 1999), and from the related clinical and occupational research. First, following on from our previous research (Bond & Bunce, 2000; Flaxman & Bond, 2003), we hypothesised that an ACT worksite intervention would improve employees’ mental health by increasing psychological acceptance. Our second hypothesis predicted that an ACT SMI would reduce employees’ ratings of the *believability* of dysfunctional cognitions, but would not necessarily reduce the *frequency* of these cognitions. This prediction was informed by clinical research that has found that ACT reduces the believability of negative thoughts associated with depression (e.g., Zettle & Hayes, 1986). Our final hypothesis was that an ACT intervention would result in improvements in work-related learning. This prediction is consistent with a key ACT theoretical proposition: that a person with higher levels of acceptance, who is less likely to be concerned with controlling his/her internal states, will have greater cognitive resources to examine, and learn from, his or her (working) environment (e.g., Bond et al., 2004).

Method

Design and Participants

This randomised controlled group study compared two conditions: (1) an Acceptance and Commitment Therapy (ACT)-based stress management training programme [ACT] and (2) 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). Time 3 occurred six months after Time 1.

Participants were employees from a public sector organisation in London who volunteered for “Work & Life Effectiveness Training”. These volunteers were drawn mainly from the housing and social services divisions within the organisation, and were responsible for the administration of housing and welfare benefits, and the provision of leisure services (e.g., libraries) for the local community.

The analyses reported below are based on eighty seven participants (77% female) who completed measures at pre- (Time 1) and post-test (Time 2 or Time 3)¹, and who scored >9 on the GHQ-12 at Time 1 (Likert scoring method). Of these 87 participants, 52 were randomly assigned to the ACT group and 35 to the control group. The mean age of these participants was 43 (range=25-63). The majority (76%) worked between 35 and 40 hours per week, with 14% working in excess of 40 hours per week. Forty six percent classified their job role as clerical or administration, 21% as middle management/technical, and 33% as senior management/professional.

Measures

Mental health – General Health Questionnaire (GHQ-12; Goldberg, 1978). Typical item: “Have you recently.....lost much sleep over worry”. The Likert method of scoring was used (see Banks et al., 1980), whereby each item was scored on a 4-point scale ranging from 0 (*not at all*) to 3 (*much more than usual*).

Psychological acceptance – Acceptance and Action Questionnaire (AAQ; Hayes et al., 2002). Respondents were asked to rate 48 statements on a scale ranging from *never true* (1) to *always true* (7) (e.g., “I can move towards important goals even if I don’t feel good about myself”).

Dysfunctional cognitions – The Dysfunctional Attitude Scale (DAS; Weissman, 1979). For the present study the scale was reduced to 12 items (e.g., “If I do not do well all the time, people will not respect me”), which were rated on a 5-point scale for frequency (*not at all* (1) to *all the time* (5)), and believability (*not at all* (1) to *totally* (5)).

Learning at work – this 9-item scale was developed by the second author (FB). Each item was rated on a six point scale (*strongly disagree* (1) to *strongly agree* (6))(e.g., “In doing my job, I have learnt better ways to handle difficult problems”).

Intervention

The ACT SMI was delivered during working hours to small groups of employees at the organisation. The “2 + 1” method of delivery was used (see Barkham, 1989; Bond & Bunce, 2000), whereby participants received three sessions of training - two on consecutive weeks, and a third three months later. Each training session lasted for approximately three hours. The training involved a mixture of group discussion, didactic teaching, and practice of ACT techniques. Participants were also encouraged to complete homework assignments between sessions.

The content of the intervention closely followed a comprehensive Acceptance and Commitment Therapy (ACT) protocol (Hayes et al., 1999), and two subsequent ACT manuals that were specifically developed for group worksite interventions (Bond & Hayes, 2002; in prep). Over the three sessions, participants were introduced to various ACT metaphors, experiential (mindfulness) techniques, and a

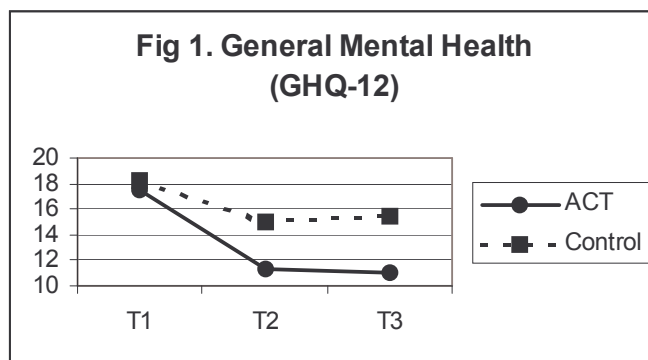
¹ Attrition: 19 participants in the ACT group and 13 controls only completed measures at two time points. However, there were no significant differences on any of the study variables between these participants and those who completed measures at all three time points.

values (and goals) assessment exercise. These techniques were designed to: (1) undermine experiential avoidance strategies; (2) increase participants' willingness to experience difficult psychological content; and (3) strengthen commitment to valued action (see Hayes et al., 1999 for a detailed discussion of ACT interventions).

Results

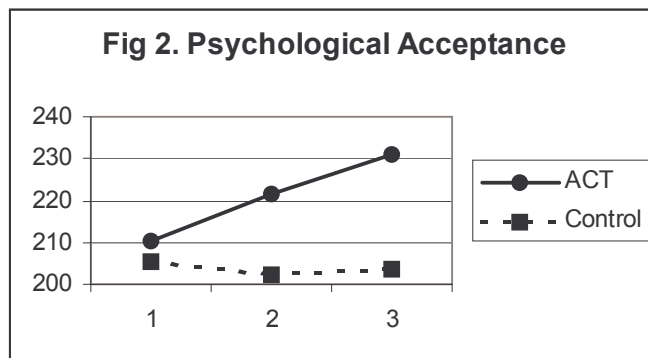
Mental health

Figure 1 shows the impact of the ACT SMI on GHQ scores across the three time points, relative to the control group. The intervention group reported significant, large effect reductions in mental ill-health between Time 1 and Time 2 ($F_{(1, 48)} = 17.09, p < .001, \eta^2 = .26$)², and between Time 1 and Time 3 ($F_{(1, 32)} = 24.33, p < .001, \eta^2 = .43$). GHQ scores also reduced in the control group, but these changes were less pronounced (Time 1 to Time 3: $\eta^2 = .15$). At Time 2 and Time 3, the ACT group reported significantly lower GHQ scores (i.e., better mental health) than the control group ($\eta^2 = .07$ at both time points).



Psychological acceptance

The ACT group reported significant increases in acceptance across all three time points (see Fig. 2) (Time 1 to Time 2: $F_{(1,41)} = 11.58, p < .001, \eta^2 = .22$; Time 1 to Time 3: $F_{(1,27)} = 10.26, p < .01, \eta^2 = .28$). No significant changes were reported by the control group. At Times 2 and 3, the intervention group reported significantly higher levels of acceptance than the controls ($\eta^2 = .13$ & $.17$ respectively).

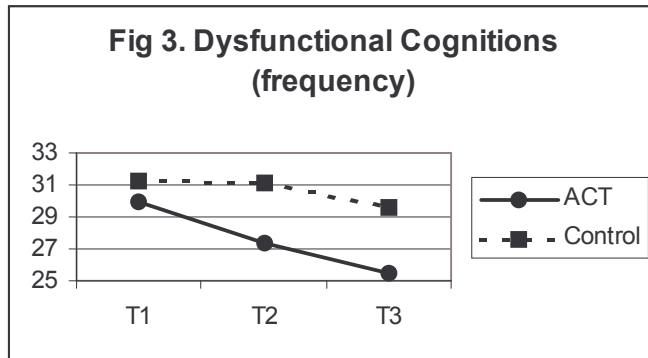


Dysfunctional cognitions

As can be seen in Fig. 3, the ACT intervention resulted in significant reductions in the *frequency* of dysfunctional thinking (T1 to T2: $F_{(1, 49)} = 5.49, p < .05, \eta^2 = .10$; T1 to T3: $F_{(1, 32)} = 11.98, p < .01, \eta^2 = .27$). There was also a marginally significant reduction in dysfunctional cognitions in the control group

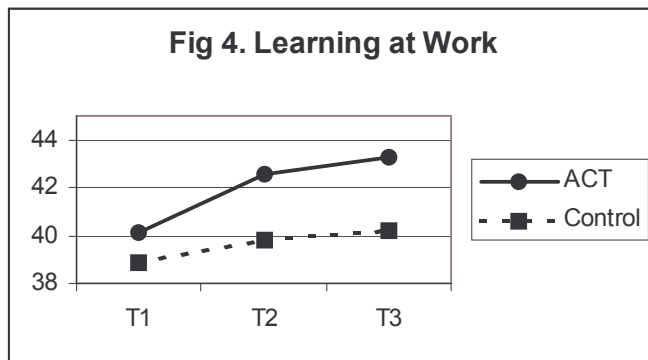
² Eta-squared (η^2) effect sizes are small at .01, medium at .09, and large at .25 (Cohen, 1977).

between Time 1 and Time 3 ($\eta^2 = .14$). At time 3, the ACT group had lower DAS frequency scores than the controls, but this effect was not statistically significant. Contrary to hypothesis 2, no significant effects were found for the DAS *believability* scale.



Learning at work

Both groups reported increases in learning at work across the six month assessment period (see Fig. 4). These within group changes were statistically significant in the ACT group (Time 1 to Time T2: $\eta^2 = .21$; Time 1 to Time 3: $\eta^2 = .32$), but not in the control group. The difference between the two groups was marginally significant at Time 2 ($\eta^2 = .04$), but not at Time 3.



Mediation Analyses

To test the mediation hypotheses, we conducted multiple regression analyses to reflect the “four tests for mediation” outlined by Baron and Kenny (1986). We found support for our first hypothesis, in that increases in psychological acceptance fully mediated the improvements in mental health that resulted from the ACT SMI. This mediation effect was evident across all three time points. Interestingly, the mental health improvements observed in the ACT group were *not* mediated by changes in the frequency of dysfunctional cognitions. We also found some support for hypothesis 3 – the impact of the SMI on learning was partially mediated by increases in acceptance, but this mediation effect was only evident at the first two time points.

Discussion

The results of this study, along with our previous research in this area (e.g., Bond & Bunce, 2000; Flaxman & Bond, 2003), demonstrate that ACT-based worksite SMIs can lead to significant improvements in both mental health and work-related outcomes. These findings suggest that ACT represents a viable alternative to the more traditional CBT programmes. Indeed, as we have previously noted, ACT may be particularly suitable for worksite interventions because of its emphasis on goals and

action, and because it promotes healthy acceptance of internal states that may arise from unavoidable work demands (e.g., time pressure, customer contact etc.) (Bond & Bunce, 2000).

In the present study, the impact of the ACT intervention on dysfunctional cognitions was particularly noteworthy. Contrary to our hypothesis, ACT resulted in significant decreases in the *frequency* of stress-related thinking, but did not impact on *believability* ratings. The changes observed in the ACT group suggest that the frequency of dysfunctional cognitions continued to decrease over time, as psychological acceptance increased. This dual pattern of change is consistent with thought suppression research, which shows that suppression attempts (i.e., low psychological acceptance) are often counterproductive, and can lead to increases in the frequency of the suppressed content (e.g., Wegner, 1994; Zettle, 2003).

However, it should be noted that although the ACT intervention resulted in reductions in stress-related thinking, these reductions were not the mechanism by which the intervention improved participants' mental health. Rather, the reductions in GHQ scores observed in the ACT group were fully mediated by increases in psychological acceptance. This pattern of mediation provides support for the ACT theory of psychopathology, which suggests that "2nd order" change (e.g., changing the *context* within which negative cognitions function) has greater therapeutic utility than "1st order" change (e.g., changing the *content* of negative cognitions) (e.g., Hayes, et al., 1999; Zettle, 2003).

This study also found evidence that ACT interventions have the potential to enhance work-related learning. Of particular interest was the finding that acceptance was a partial mediator of these learning effects. This result adds to previous research that has found an association between acceptance and performance-related variables (e.g., Bond & Bunce, 2000; 2003). Although further research is needed in this area, these findings are consistent with the idea that psychological acceptance provides a person with greater attentional resources that can be focused on the immediate working environment (e.g., the task at hand) (e.g., Bond & Bunce, 2003; Hayes et al., 1999).

Although there is now substantial evidence that demonstrates the effectiveness of ACT and other CBT-based SMIs, we do not recommend that these individual-focused interventions are used in isolation. There is a danger that these "coping skills" interventions are perceived as an attempt to "fix" employees, in the absence of any attempt to reduce workplace stressors at their source. We therefore encourage occupational health psychologists to consider implementing ACT-based programmes alongside organisation-focused initiatives (e.g., work redesign). Indeed, in our recent research, acceptance was found to moderate the relationship between job control and stress-related outcomes, such that the benefits of increased job control were enhanced in those employees who had higher levels of acceptance (e.g., Bond & Bunce, 2003; Bond et al., 2004). Also, we have found that employees who participate in our ACT workshops often provide useful, and specific, information on the work-related risk factors (e.g., low control, lack of support etc.) in their organisation; this information can be used to inform the design of subsequent work reorganisation interventions, thus providing a valuable link between individual- and organisation-focused programmes.

In conclusion, the present study provides further support for the incorporation of ACT into individual-focused worksite SMIs. Moreover, we have obtained strong evidence that the benefits reported by employees who participate in ACT SMIs are mediated by increases in psychological acceptance. Future research may wish to examine other process variables, such as moderators of change, to identify the circumstances in which, and for whom, SMIs are effective (see Bunce, 1997). This focus on the mediators and moderators of change should enhance our scientific understanding of the efficacy of SMIs, and, ultimately, lead to more effective interventions.

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