

Mediators of Change in Emotion-Focused and Problem-Focused Worksite Stress Management Interventions

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Ninety volunteers in a media organization were randomly allocated to an Acceptance and Commitment Therapy (ACT, $n = 30$) group that sought to enhance people's ability to cope with work-related strain, an Innovation Promotion Program (IPP, $n = 30$) that helped individuals to identify and then innovatively change causes of occupational strain, or a waitlist control group ($n = 30$). Both interventions lasted 9 hr, spread over 3 months. Improvements in mental health and work-related variables were found following both interventions. As hypothesized, changes in outcome variables in the ACT condition were mediated only by the acceptance of undesirable thoughts and feelings. In the IPP condition, outcome change was mediated only by attempts to modify stressors. Discussion focused on the importance of understanding the mechanisms underpinning change in occupational stress management interventions.

Worksite stress management interventions (SMIs) provide the point at which theory and practice in clinical, health, and organizational psychology meet. Several reviews have appeared in the last two decades summarizing empirical findings and methodological considerations in the area (e.g., Murphy, 1988, 1996; Newman & Beehr, 1979). They have revealed two important lacunae in the empirical examination of SMIs. First, research to date has sought to enhance the individual's ability to cope with work-related strain, and very little has systematically targeted the workplace stressors that give rise to the strain. Second, it appears that no study has directly examined the psychological mechanisms by which an SMI works.

We have two primary objectives for this experiment, which attempt to address these two gaps in the literature. First, we examined intervention process factors that contribute to outcome variance in a range of psychological and work-related variables. Specifically, we assessed the influence on outcome of variables hypothesized as mediating psychological change (e.g., attitudes and beliefs). We did this within

the context of our second objective, which was to compare the utility of an emotion-focused SMI that increases the individual's ability to cope with workplace strain (Acceptance and Commitment Therapy; Hayes, 1987) with a problem-focused intervention that trains workers to innovatively identify and alleviate the workplace stressors that give rise to strain (Innovation Promotion Program; Bunce & West, 1996).

Stress Management in the Workplace

In the work context, Lazarus and Folkman's (1984) stress and coping framework indicates that strain can be prevented and reduced through either (a) emotion-focused SMIs, which target undesirable thoughts and emotions aroused by work stressors, or (b) problem-focused SMIs, which seek to identify and alleviate the stressors giving rise to strain. Following this framework, we contrasted the effects of an emotion-focused and a problem-focused intervention. For the former type, we used an SMI that stems from cognitive-behavioral therapy (CBT). This intervention primarily encourages the psychological acceptance of unpleasant thoughts and emotions, a therapeutic goal recently receiving considerable attention in the CBT literatures (e.g., Ellis & Robb, 1994; Hayes, Jacobson, Follette, & Dougher, 1994; Wells & Matthews, 1994). CBTs attempt to change the way that people think about the causes and effects of negative emotions. Psychological acceptance describes a willingness to experience pleasant and unpleasant psychological events, such as thoughts, feelings, and sensations, without trying to change, avoid, or otherwise control them (Hayes, 1987). Advocates of acceptance-based

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An earlier version of this article was presented at the conference "Work, Stress, and Health '99: Organization of Work in a Global Economy," held by the American Psychological Association and the National Institute of Occupational Safety and Health in Baltimore, Maryland, in March 1999.

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psychotherapies maintain that if people accept those events, the events will not lead to emotional problems such as strain, depression, and anxiety.

There is a large literature that shows an association between emotional willingness or acceptance and positive outcome in psychotherapy (see Hayes, Wilson, Gifford, Follette, & Strosahl, 1996, for a review). Hayes (1987) developed an acceptance-based form of psychotherapy, called Acceptance and Commitment Therapy (ACT), that is at least as effective as Cognitive Therapy (Beck, Rush, Shaw, & Emery, 1979) in treating depression (Zettle, 1984; Zettle & Hayes, 1987; Zettle & Rains, 1989), and in one of these cases even more effective (Zettle, 1984). In this study, we used ACT as our emotion-focused SMI.

Various CBTs have been shown to be effective in treating strain at work (e.g., Barkham & Shapiro, 1990; Reynolds, Taylor, & Shapiro, 1993a, 1993b), but it is striking that no research has examined the effectiveness of ACT in such contexts. We believe ACT is particularly suited to work settings, as it explicitly emphasizes (a) commitment to goals and (b) acceptance of undesirable psychological events that stem from unalterable work circumstances (e.g., unavoidable deadlines in the media organization in the present research context). Through such emphases, ACT is hypothesized to alleviate and prevent emotional problems, such as strain (Hayes, 1987).

The problem-focused intervention with which we compared ACT is the Innovation Promotion Program (IPP), which encourages people to identify and change stressors in their workplace rather than changing their emotional reactions to those stressors. Using the IPP, Bunce and West (1996) found decreases in job-related strain (as opposed to general strain) and increases in the number of effective innovations that participants implemented at work.

Mediators of Change

Bunce (1997) noted that before one can design an SMI to achieve maximum effectiveness, a greater understanding of the mechanisms, or mediators, by which it helps people change is required. A mediator is "the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest" (Baron & Kenny, 1986, p. 1173). In other words, mediators change as a function of the independent variable but in turn have causal influence on change in the dependent variable. Previous SMI research (e.g., Bunce & West, 1996; Reynolds et al., 1993a, 1993b) has measured only one type of process variable directly: moderators of

change (i.e., variables that affect the strength and/or direction of the relationship between the independent and dependent variables). To our knowledge, no SMI research has directly examined mediators of change.

Here, we hypothesized that the two SMIs will produce changes in our dependent variables, through specific and conceptually distinct psychological mechanisms or mediators. With respect to the ACT condition, we expect change in outcome variables to vary as a function of participants' ability to accept their undesirable thoughts, feelings, and sensations, while still pursuing their various goals.

Many CBTs hold that people with emotional disorders become less distressed, because their undesirable or unpleasant thoughts attenuate (e.g., Beck et al., 1979). Two studies (Zettle & Hayes, 1987; Zettle & Rains, 1989) show, however, that ACT may work for a different reason: It helps people to accept their undesirable thoughts. We examined this hypothesis further by measuring the presence of participants' unpleasant thoughts, which is treated here as a mediating variable. We expected that, in the ACT condition, change in our outcome variables will be mediated by a change in the acceptance of undesirable thoughts and feelings, but not by a change in the presence of these unwanted thoughts.

With regard to the problem-focused IPP intervention, a considerable body of evidence indicates that beliefs and attitudes predict intentions and consequent behaviors (e.g., Ajzen & Fishbein, 1980). We expected that the IPP will change participants' attitudes, in that it will encourage them to alter their work environments, methods, and procedures in response to stressors. Therefore, we hypothesized that, in the IPP condition, mental health and work-related outcome variables will vary, as a function of changes in this attitude, which is measured by Work Change, a scale developed for this study.

In this article, we examined how ACT and IPP affect, through their mediating variables, both mental health outcomes (general mental health and depression) and work-related outcomes (job motivation, job satisfaction, and propensity to innovate). This last work-related variable records general attitudes toward innovation at work and is of particular interest in fast-moving, flexible work environments such as the media setting selected for the present study. Following Lazarus and Folkman (1984), we hypothesized that both the emotion-focused ACT and the problem-focused IPP interventions will lead to postintervention improvements in mental health and work-related variables, compared with a control group.

Method

Participants

Ninety people in a large media organization volunteered to participate "in a stress management program that is occurring during working hours." Participants were recruited by means of two notices sent through an internal electronic mail system, as well as a briefing paper read at team meetings. A total of 309 people received these notices, and consistent with the organization's composition, 70% of them were male. Matching for gender, we randomly allocated volunteers to one of the three conditions (ACT, IPP, or wait-list control group). Consequently, 15 men and 15 women participated in each condition at Time 1 (T1). Participants were age between 19 and 58 years (M age = 36.43, SD = 9.72), were primarily university graduates, and held a wide variety of the jobs (e.g., managerial, creative, and technical).

Biographical Variables

Data relating to age, gender, and educational qualifications were collected prior to Session 1 (T1). A battery of measures relating to mediator and outcome variables was administered to participants (see *Procedure* section for details), and these included the following scales.

Mediating Variables

Acceptance and Action Questionnaire (AAQ; Hayes, 1996). This variable contains 16 items that assessed people's ability to accept their undesirable thoughts and feelings, while still pursuing the goals that they wish to achieve (e.g., "It's OK to feel depressed or anxious"). A 7-point Likert scale labeled *never true* (1) to *always true* (7) was available for responses. Higher scores indicate less psychological acceptance. Cronbach alphas from T1 to T4 of .89, .91, .92, and .90, respectively, were obtained.

Dysfunctional Attitude Survey (DAS; Weissman, 1979). The DAS is a 40-item measure of beliefs indicating cognitive vulnerability to depression and general psychopathological conditions (Segal & Shaw, 1988; e.g., "People will probably think less of me if I make a mistake"). Responses were recorded on a 7-point Likert scale labeled *disagree totally* (1) to *agree totally* (7). Cronbach alphas of .77, .79, .77, and .76 were obtained from T1 to T4, respectively.

Work change. This five-item measure was developed for the present experiment and examined the extent to which people handle job strain by innovatively modifying their work methods, processes, and environment (e.g., "If I experience stress at work, I identify the cause and then try and do something about it"). A 5-point Likert scale, labeled *strongly disagree* (1) to *strongly agree* (5), was available for responses. Cronbach alphas of .73, .84, .86, and .79 were recorded from T1 to T4, respectively.

Outcome Variables

General Health Questionnaire-12 (GHQ; Goldberg, 1978). This is a 12-item scale, typically used as a measure of general mental health (McDowell & Newell, 1996). Here the Likert method of scoring was used (see Banks et al.,

1980), and each item (e.g., "Have you recently . . . lost much sleep over worry?") was scored from 0 (*not at all*) to 3 (*much more than usual*). Cronbach alphas were .73, .75, .76, and .75 from T1 to T4, respectively.

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). The BDI consists of 21 groups of four statements that measured the presence and severity of depression. In each group, the statements are numbered 1 to 4, with Statement 1 reflecting no depression (e.g., "I do not feel sad") and Statement 4 recording severe depression (e.g., "I am so sad or unhappy that I can't stand it"). Within each group, participants indicated the statement most appropriate to them. An overall score of below 10 suggests minimal or no depression, whereas scores of 10 and above indicate clinical depression (Beck & Steer, 1987). Cronbach alpha coefficients for this scale were .81, .89, .88, and .86 for T1 to T4, respectively.

Intrinsic job motivation (Warr, Cook, & Wall, 1979). This six-item scale measured respondents' wishes to work to the best of their ability (e.g., "I take pride in doing my job as well as I can"). Each item was anchored to a 7-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7). Cronbach alphas for this measure from T1 to T4 were .72, .74, .78, and .75, respectively.

Intrinsic job satisfaction (Warr et al., 1979). This seven-item measure explored the degree of satisfaction that workers derive directly from their work. The items are preceded by the question stem: "How satisfied or dissatisfied are you with the following?" and the items included "the recognition you get for good work." Responses were recorded on a 7-point Likert scale from *extremely dissatisfied* (1) to *extremely satisfied* (7). Cronbach alpha coefficients for this measure from T1 to T4 were .79, .82, .80, and .79, respectively.

Propensity to innovate (Burningham & West, 1995). This five-item measure assessed participants' general attitudes toward innovation and change at work (e.g., "I try to introduce improved methods of doing things at work"). Answers were recorded on a response scale from *strongly disagree* (1) to *strongly agree* (5). Cronbach alpha coefficients of .80, .77, .81, and .83, respectively, were obtained from T1 to T4.

Interventions

We adapted the "2+1" method of psychotherapy delivery (Barkham & Shapiro, 1990), in which groups of participants receive three half-day sessions: two on consecutive weeks and a third 3 months later. Specifically, Sessions 1, 2, and 3 occurred at Weeks 1, 2, and 14, respectively. At each of the three sessions, participants in both SMIs were exposed to group discussions, didactic teaching, and various experience-oriented exercises. Homework assignments were given at all three meetings, and the importance of them was heavily emphasized. In the last two sessions, previous assignments were thoroughly reviewed and discussed, so that problems were solved and compliance reinforced. Formal monitoring of homework compliance was not undertaken, but group discussions in Sessions 2 and 3 indicated that the vast majority of participants completed their assignments. The originators of both ACT and IPP were closely involved in the design of the respective, comprehensive, SMI manuals that were followed carefully. Details of the interventions are as follows.

ACT. This emotion-focused intervention taught participants how to experience or accept their undesirable

thoughts, feelings, and physical sensations without trying to change, avoid, or otherwise control them. Through various exercises, participants learned that they would not become distressed by uncomfortable thoughts, feelings, and sensations, if they would be willing to experience them or accept them.

IPP. Whereas ACT tried to help people cope emotionally with the workplace stressors that existed, the IPP encouraged people to modify stressors. Specifically, the problem-focused IPP encouraged participants first to identify features of their work that led to strain and then to innovatively change those features. Participants were taught specific brainstorming and creativity techniques with which to devise ways of changing identified workplace stressors. Action plans were then developed to implement those changes.

Procedure

Mediator and outcome variables were recorded before Sessions 1, 2, and 3 (T1 to T3, respectively) and again at Week 27 (T4). During those weeks, measures were distributed individually to control group members, and each participant was asked to complete the questionnaires in a quiet place, by the end of their shift. Because of varying work schedules, to minimize attrition, we repeated Sessions 1 to 3 of both SMIs three times during their respective weeks. Thus, there were three meetings for each of the three SMI sessions. For each session, participants chose the ACT or IPP meeting that best fitted their schedules. No meeting ever had more than 11 or fewer than 5 participants. Each session lasted 3.25 hr.

Results

As a result of participant attrition and consequent listwise deletion, statistical analyses reported below are based on the following group sizes: ACT = 24, IPP = 21, and control = 20. With this sample size, there was a 73% chance of detecting medium-sized ($\eta^2 = .09$) main and interaction effects for the group and time variables, using a two-tailed alpha level of .05 (Cohen, 1988). According to Cohen (1977), effect sizes, measured by means of eta-squared (η^2), are small at .01, medium at .09, and large at .25.

Between each observation time, there was no evidence of a differential attrition rate between the three groups. Comparisons between participants who dropped out and those who remained in the experiment revealed no significant T1 differences on any of the biographical, mediator, or outcome variables. Also there were no between-groups differences on biographical variables.

Outcome Variables

To examine whether ACT and IPP led to improvements on the outcome variables, we first conducted a

3×4 repeated measures multivariate analysis of variance (MANOVA) involving all dependent variables, with treatment group as the between-subjects variable and time as the within-subject variable. This procedure identified a significant Group \times Time interaction, $F(30, 98) = 3.28, p < .000, \eta^2 = .50$, and a significant multivariate main effect for time, $F(15, 48) = 4.95, p < .000, \eta^2 = .61$. Given these significant multivariate effects, repeated measures MANOVAs were performed for each dependent variable.

Where significant main or interaction effects were found, simple (or pairwise) contrasts were performed on the dependent variable. For each variable, the T1 score served as a covariate for between-groups contrasts at T2, T3, and T4. To prevent the experimentwise error rate from inflating when those analyses were conducted, we adjusted alpha levels using a Bonferroni correction (Pedhazur & Schmelkin, 1991).

GHQ. Table 1 shows a significant main effect for time and a Group \times Time interaction. Simple contrasts indicated that in the ACT condition only, GHQ scores decreased significantly between T2 and T3, $F(1, 68) = 43.78, p < .000, \eta^2 = .39$, and between T1 and T4, $F(1, 62) = 20.44, p < .000, \eta^2 = .25$. Furthermore, at T3 and T4, GHQ scores were significantly lower in the ACT condition than they were in the IPP condition, T3: $F(1, 67) = 32.72, p < .000, \eta^2 = .33$; T4: $F(1, 61) = 12.36, p = .001, \eta^2 = .17$; and the control condition, T3: $F(1, 67) = 35.47, p < .000, \eta^2 = .35$; T4: $F(1, 61) = 17.38, p < .000, \eta^2 = .22$.

BDI. A main effect for time was identified with respect to this variable and also a significant Group \times Time interaction (see Table 1). Simple contrasts suggested that, in the IPP condition, BDI scores reduced significantly from T1 to T2, $F(1, 84) = 13.00, p = .006, \eta^2 = .13$. Analyses also indicated that, in the ACT condition, BDI scores decreased significantly from T2 to T3, $F(1, 68) = 17.61, p < .000, \eta^2 = .21$.

P propensity to innovate. Table 1 shows a significant main effect for time, and a significant Group \times Time interaction was obtained for this measure. Simple contrasts indicated that innovation propensity improved significantly from T1 to T2, in the IPP condition only, $F(1, 84) = 55.89, p < .000, \eta^2 = .40$, and also from T2 to T3 in this condition, $F(1, 68) = 11.94, p = .007, \eta^2 = .15$, and in the ACT condition, $F(1, 68) = 51.64, p < .000, \eta^2 = .43$. Furthermore, scores at T4 were significantly higher than they were at T1 in both the ACT, $F(1, 62) = 16.47, p < .000, \eta^2 = .21$, and the IPP, $F(1, 62) = 38.08, p < .000,$

Table 1
Means, Standard Deviations, and Analysis of Variance (ANOVA) Statistics for the Outcome Variables as a Function of Group and Time

Measure	ACT		IPP		Control		Effect	ANOVA F ratio	df
	M	SD	M	SD	M	SD			
GHQ									
T1	12.17	4.33	12.37	3.61	12.03	3.11	T	4.21**	3, 186
T2	12.00	4.35	12.55	3.59	12.21	2.92	G × T	10.00***	6, 186
T3	10.42	2.98	13.18	3.92	12.57	2.98			
T4	10.42	2.95	12.95	3.96	12.65	3.38			
BDI									
T1	3.83	2.97	3.77	2.51	3.17	3.11	T	2.92*	3, 186
T2	3.97	3.11	3.28	2.42	3.18	3.10	G × T	3.26**	6, 186
T3	3.08	2.64	3.36	2.34	3.35	3.63			
T4	3.13	2.76	3.38	2.01	3.45	3.24			
Work motivation									
T1	35.10	2.66	34.17	3.00	34.83	2.45			
T2	35.07	2.86	34.03	3.27	35.07	2.81			
T3	35.50	2.47	34.09	3.38	34.17	3.05			
T4	36.17	2.63	34.38	3.40	34.80	3.61			
Job satisfaction									
T1	30.33	3.44	31.03	3.53	30.77	2.54			
T2	29.83	3.65	30.34	4.26	30.61	2.77			
T3	29.31	4.40	30.32	4.72	30.87	2.63			
T4	29.38	3.83	30.14	5.23	30.15	2.03			
Propensity to innovate									
T1	19.07	1.74	18.90	1.37	19.40	1.33	T	28.75***	3, 186
T2	19.03	1.52	20.59	1.45	19.61	1.52	G × T	8.01***	6, 186
T3	21.08	2.12	21.55	1.90	19.91	1.53			
T4	21.00	2.55	21.76	2.36	19.60	1.98			

Note. ACT = Acceptance and Commitment Therapy; IPP = Innovation Promotion Program; G = group; T = time; GHQ = General Health Questionnaire-12; BDI = Beck Depression Inventory; Work motivation = intrinsic job motivation; Job satisfaction = intrinsic job satisfaction.

* $p < .05$. ** $p < .01$. *** $p < .001$.

$\eta^2 = .38$, conditions. Contrasts examining between-groups differences showed that at T2 participants in the IPP condition scored significantly higher on this variable than those in the ACT condition, $F(1, 83) = 32.93, p < .000, \eta^2 = .28$. At T3, individuals both in the IPP and ACT conditions demonstrated significantly more propensity to innovate than control group members: respectively, $F(1, 67) = 19.70, p < .000, \eta^2 = .22$ and $F(1, 67) = 9.79, p = .020, \eta^2 = .13$. Finally, at T4, participants in the IPP condition scored significantly higher than those in the control condition, $F(1, 61) = 14.82, p < .000, \eta^2 = .20$.

Motivation and satisfaction. As can be seen in Table 1, statistical analyses did not identify any significant main or interaction effects for these variables. Therefore, no orthogonal contrasts were undertaken.

Mediator Variables

Our principal interest was to identify the extent to which the hypothesized underlying psychological

mechanisms explained the significant between-groups and within-group differences in outcome variables detailed in the previous section. To this end, we established that significant within-group differences occurred in the ACT condition in relation to the GHQ, BDI, and propensity to innovate, whereas in the IPP condition such changes related to the BDI and propensity to innovate. Table 2 details within-group repeated measures MANOVAs for those outcome variables, which were then repeated with the hypothesized mediator variables entered as covariates, at the corresponding time points. A reduction in the effect size of the original MANOVA would suggest that the covariate (i.e., the mediator) is explaining a proportion of the variance in the outcome variable (e.g., Pedhazur & Schmelkin, 1991).

With respect to the ACT condition, Table 2 clearly shows that when the hypothesized mediator AAQ was taken into account, the effect sizes attenuated for all of the outcome variables in which significant change

Table 2

Within-Group Effects Before and After AAQ and Work Change Entered as Covariates

Measure	Effect	F ratio	ES	df	% reduction in ES	
ACT	GHQ	T	15.13***	.397	3, 69	
		T with AAQ	8.74***	.278	3, 68	30
BDI		T	4.42**	.161	3, 69	
		T with AAQ	0.85	.036	3, 68	78
Propensity to innovate		T	15.24***	.399	3, 69	
		T with AAQ	12.39***	.353	3, 68	12
IPP	BDI	T	3.96*	.156	3, 60	
		T with WC	3.58*	.154	3, 59	1
Propensity to innovate		T	22.96***	.534	3, 60	
		T with WC	12.64***	.391	3, 59	27

Note. AAQ = Acceptance and Action Questionnaire; ES = effect size; ACT = Acceptance and Commitment Therapy; GHQ = General Health Questionnaire; BDI = Beck Depression Inventory; T = time; T with AAQ = time with AAQ as a covariate; IPP = Innovation Promotion Program; T with WC = time with work change as a covariate.

* $p < .05$. ** $p < .01$. *** $p < .001$.

over time occurred. The reductions in effect size for the GHQ, BDI, and propensity to innovate were 30%, 78%, and 12%, respectively. Of particular note, the F statistic for BDI became nonsignificant when AAQ was controlled. Effect sizes did not attenuate at all when work change and DAS were taken into account. In the IPP condition, when the hypothesized mediator, work change, was taken into account, the effect size of change in propensity to innovate attenuated (by 27%). However, with respect to the BDI, the mediating influence of work change is minimal. Effect sizes did not attenuate at all when AAQ and DAS were taken into account. Taken together, these findings clearly suggest that, in the main, our hypothesized mediator variables appear to be explaining substantial proportions of variance in outcome change. (Consistent with these findings, AAQ scores decreased significantly from T1 to T4, indicating greater psychological acceptance, only in the ACT condition, $F[1, 62] = 33.18, p < .000, \eta^2 = .35$. Furthermore, work change scores increased significantly from T1 to T4, only in the IPP condition, $F[1, 62] = 44.67, p < .000, \eta^2 = .42$.)

Finally, we conducted analyses to assess the extent to which the AAQ and work change variables explained significant between-groups differences. Following the exact procedure recommended by Baron and Kenny (1986), linear regression analyses suggested that the AAQ mediated between-groups differences only with respect to the GHQ. In brief, results showed that the significant relationship between group and GHQ at T3, $t(68) = 2.29, p = .025$, and T4, $t(62) = 2.21, p = .031$, became

nonsignificant when controlling for the variance attributable to AAQ at the respective time points. These results further suggest that in the ACT condition, the acceptance and change construct played a key explanatory role in our findings.

Discussion

This study possesses a number of unusual features. Specifically, a true experimental design was used to contrast an emotion-focused and a problem-focused occupational SMI with a wait-list control group, using the 2+1 method of delivery. Furthermore, we have uniquely specified and measured mediator variables hypothesized as underpinning change in outcome variables.

Broadly, our expectations were met. Consistent with Lazarus and Folkman (1984), the emotion-focused ACT intervention significantly improved mental health outcomes (GHQ and BDI) and a work-related variable, propensity to innovate. Furthermore, the problem-focused IPP intervention also significantly improved a mental health (BDI) and a work-related (propensity to innovate) variable. Contrary to our hypotheses, neither intervention influenced job satisfaction or motivation. There were also no significant changes, as predicted, on any variable in the control group. General mental health (i.e., GHQ) improved significantly in the ACT condition compared with the IPP and control conditions at T3 and T4. This is a particularly welcome finding because, according to the mean GHQ score at T1, many participants in this study suffered a diagnosable

psychiatric disorder (McDowell & Newell, 1996), although BDI scores suggested that this was not depression. Furthermore, as predicted, at T3 and T4, propensity to innovate was significantly higher in the IPP condition than in the control condition, although this variable did not differ significantly between the ACT and IPP conditions at those time points. According to criteria recommended by Cohen (1977), all significant effects in this experiment were either of a "medium" or "large" magnitude.

Of primary interest were our findings relating to the mechanisms of change. As hypothesized, in the ACT condition, change in outcome was mediated by the acceptance of undesirable thoughts and feelings, but not by change in the presence of those thoughts or by innovatively modifying work stressors. In contrast, but as predicted, change in propensity to innovate in the IPP condition was mediated by work change but not by the AAQ or DAS.

Our findings in relation to the ACT intervention are consistent with work elsewhere showing improvements on mental health variables (e.g., Long, 1988; Sommerville, Allen, Noble, & Sedgwick, 1984; West, Horan, & Games, 1984) and propensity to innovate (Bunce & West, 1996) as a result of emotion-focused SMIs. Regarding the work-related outcome variables for which no change was found (job satisfaction and motivation), Murphy (1996) noted that improvements in such variables are seldom found following emotion-focused SMIs. As Murphy observed, in order for emotion-focused SMIs to affect work-related and organizational outcomes, it may be necessary for them to be supplemented by initiatives to modify workplace stressors effectively and comprehensively. However, it is of note that our problem-focused IPP intervention sought to do exactly that but did not achieve improvements in work-related variables.

A possible explanation for this is that the IPP limited workplace change to the individual and work-group level. Long-term interventions elsewhere (e.g., Wall & Clegg, 1981; Wall, Kemp, Jackson, & Clegg, 1986), which bring about far greater changes to organizational processes, procedures, and structures, have produced significant increases in job satisfaction and motivation. However, such interventions are not always possible for cost and practical reasons, and thus a worthwhile direction for future research is to evaluate individual- and group-level interventions combining emotion-focused and problem-focused approaches to workplace stress management.

Scores for BDI and propensity to innovate

significantly improved in response to the IPP. Problem-focused interventions elsewhere (e.g., Jackson, 1983; Wall & Clegg, 1981) have also produced positive change in mental health and work-related variables.

According to predictions, our findings suggest that change in outcome in the ACT condition was mediated only by participants' acceptance of unpleasant thoughts, feelings, and sensations and a commitment to achieve desired goals. These findings are consistent with theories of acceptance and emotional distress, which promote mental health through the acceptance of unpleasant psychological events (e.g., Hayes, 1987; Linehan, 1993).

In respect to the IPP, work change appeared to mediate the improvements in propensity to innovate scores, but not the significant T1 to T2 improvements in BDI scores. It is possible that the IPP gave participants a sense of control over their work environments, and this underpinned change in BDI scores (which were maintained for the remainder of the study). It would be worthwhile to test this hypothesis through incorporating work control and empowerment mediator variables into future studies.

In conclusion, our primary theoretical predictions were largely supported in that the findings suggest that change mechanisms vary as a function of intervention type (i.e., ACT or IPP). For the theoretical and applied reasons noted earlier, it is important, therefore, that further research is undertaken that contrasts differing SMIs, while taking into account their underlying change mechanisms.

Finally, the present study suggested that the 2+1 format is an effective method of delivering emotion-focused and problem-focused occupational SMIs. It also offers considerable flexibility in that the three sessions are short and spaced over 3 months. As flexibility is essential in fast-moving work environments, we recommend that researchers and practitioners consider adopting and evaluating this SMI format, particularly given our positive outcomes.

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Received June 3, 1998

Revision received February 4, 1999

Accepted April 20, 1999 ■