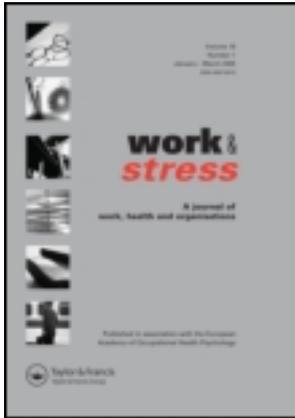


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The effectiveness of a new, coping flexibility intervention as compared with a cognitive-behavioural intervention in managing work stress

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In typical stress management programmes, working adults acquire various coping skills for managing work stress. In addition to building coping skills, we propose the inclusion of a “meta skill” of coping flexibility, which helps individuals to recognize the distinctions among the coping requirements of diverse stressful events and to facilitate employment of appropriate skills for handling the specific demands of those events. Our study tested this proposal by comparing the efficacy of a new coping flexibility intervention with that of a commonly adopted cognitive-behavioural intervention in reducing depression. We randomly assigned 161 healthy Chinese working adults (55 men, 106 women, $M_{\text{age}} = 32$ years) to (1) attend a coping flexibility intervention for acquiring both coping skills and coping flexibility, (2) attend a cognitive-behavioural intervention for acquiring coping skills only, or (3) a waiting list to receive an intervention after the study had been completed. Participants were followed up four months later. Those who had attended the coping flexibility intervention reported the largest increase in levels of coping flexibility, and such an increase corresponded to a reduction in depression immediately and four months after the intervention. These results indicate the value of teaching individuals to adapt their coping strategies to specific requirements of stressful situations.

Keywords: coping flexibility; depression; intervention; cognitive-behavioural; work-related stress

Introduction

In this age of globalization, many jobs are outsourced to low-wage countries, inevitably leading to corporate downsizing and layoffs. There is a rising number of employees facing work-related stressful events, such as work restructuring and reduced job stability (Abraham, Spletzer, & Harper, 2010). Maladjustment to work stress in the form of depression is common (Iacovides, Fountoulakis, Kaprinis, & Kaprinis, 2003), and thus researchers have sought to identify psychological resources that improve working adults’ quality of life, and practitioners’ designed stress management programmes in which working adults learn to cope effectively with work stress. Our study aimed to extend this literature by translating findings derived from recent coping research into practice by proposing a new intervention programme for managing work stress.

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Coping flexibility: A psychological resource for managing work stress

It is common for organizations to undergo constant changes in order to keep pace with current economic developments (Pohjola, 2002). We propose coping flexibility as a relevant resource that fosters adjustment to the changing work environment, because such adjustment requires abandonment of old habits and formulation of new action plans (Brammer, 1991). Psychologists have conceptualized coping flexibility as the deployment of coping strategies that meet the specific demands of stressful situations (Fresco, Williams, & Nugent, 2006; Lester, Smart, & Baum, 1994).

Coping flexibility is derived from the transactional theory of coping (Lazarus & Folkman, 1987), which conceptualizes coping as a dynamic process that is receptive to situational changes rather than a trait that remains relatively stable across situations. It is important to note that situational variations in strategy deployment may reflect active adjustment to the changing environment, but they may also reflect random coping or dysfunctional personality, such as overdependence and indecisiveness (Paulhus & Martin, 1988). To explicate the process underlying active adjustment to the changing environment, the transactional theory of coping puts forward a goodness-of-fit hypothesis. Specifically, individuals take into account the contextual characteristics of the situation and evaluate whether the outcome of an event is controllable, and such appraisals guide their subsequent use of coping strategies to meet specific situational demands. If they perceive that the outcome of a stressful event is amenable to change, they are more prone to use problem-focused coping (e.g. confrontation, problem solving) to manage it directly. If they appraise the event outcome to be uncontrollable, however, they are more prone to use emotion-focused coping (e.g. relaxation, catharsis) to regulate unpleasant feelings elicited by the stressful event.

The problem- versus emotion-focused coping taxonomy has been widely adopted in coping research. Although the transactional theory of coping also proposes the effectiveness of meaning-focused or appraisal coping (e.g. perspective taking, positive thinking), many researchers have failed to include this type of coping strategy that seeks to change one's thoughts about the stressor to make it accord with one's beliefs and goals. We addressed this issue by adopting a primary- versus secondary-control coping taxonomy. According to the two-process theory of perceived control (Rothbaum, Weisz, & Snyder, 1982), primary control coping refers to effort made in an attempt to change external or environmental factors to fit one's needs and expectations, whereas secondary control coping refers to attempts to change aspects of oneself (e.g. feelings, thoughts) to fit the environment.

Adopting the primary- versus secondary-control coping taxonomy (Rothbaum et al., 1982), we propose that individuals who are flexible in coping tend to employ primary control coping in controllable stressful events, but resort to secondary control coping in uncontrollable stressful events. Such situational changes in strategy use are guided by situational characteristics (i.e. controllability) of stressful situations, thus establishing a strategy-situation relationship that gives meaning to the variable coping pattern (Mischel & Shoda, 1998). By contrast, random coping entails mere situational variations in strategy use without a coherent pattern, thus reflecting a poor strategy-situation fit.

Social-cognitive theories (Cantor & Kihlstrom, 1989; Mischel & Shoda, 1995) supplemented the transactional theory by postulating that there are individual

differences in levels of coping flexibility. Individuals lower in coping flexibility are more attuned to their personal characteristics (e.g. needs, preferences) and tend to employ preferred types of coping strategy regardless of situational characteristics. In contrast, those higher in coping flexibility are more likely to detect subtle environmental changes and tend to use various types of coping strategy when handling an array of stressful events. Studies have supported this theoretical notion by revealing that individuals who are more flexible tend to experience lower levels of depression than those who are less flexible (Cheng & Cheung, 2005a; Fresco et al., 2006).

Coping flexibility as a “meta skill”

In light of these recent advances in the coping literature, we advocate the training of coping flexibility in stress management programmes to equip working adults to deal with the changing work environment more effectively. The cognitive-behavioural approach is one of the most common theoretical orientations adopted in current stress management programmes (Gaab, Sonderegger, Scherrer, & Ehlert, 2006). In a cognitive-behavioural intervention, attendees acquire an array of cognitive and behavioural skills. Studies have documented that the acquisition of this set of skills is generally beneficial in enhancing attendees' coping efficacy and mitigating depression (Stevenson, Scope, & Sutcliffe, 2010).

The mere acquisition of coping skills, however, may not necessarily lead to successful coping. This is because attendees may not know how to translate the acquired skills into practical strategies for handling real-life stressful events, nor use different strategies to cope with the specific demands of a variety of real-life stressors. To address these unresolved issues, we posit the incorporation of a “meta skill” of coping flexibility into the commonly adopted cognitive-behavioural intervention for working adults, as will be described in the current paper.

Our proposal of coping flexibility as a useful skill for handling work stress is consistent with the postulations of the person-situation interactionist approach (Mischel & Shoda, 1995), which emphasizes the constant, dynamic transactions between workers and their work environment. Specifically, this meta skill is targeted at sharpening people's sensitivity in distinguishing among distinct demands of diverse situations, and increasing their responsiveness in order to use different acquired skills to meet the specific demands of an array of stressful situations (Chiu, Hong, Mischel, & Shoda, 1995). Coping flexibility may thus be beneficial for fostering a better fit between working adults and their changing work environment.

Overview of this study

To supplement the usual cognitive-behavioural intervention that focuses only on building coping skills, we designed a coping flexibility intervention with the additional goal of fostering flexible use of coping skills to meet specific situational demands. Similar to the usual type of cognitive-behavioural intervention, participants learned a vast array of cognitive and behavioural strategies for handling stressful events (Munz, Huelsman, & Craft, 1995). To achieve this, we trained participants to be more sensitive and responsive to the environment by distinguishing

among distinct situational demands and the characteristics of various coping strategies (Cheng & Hutton, 2003).

The present study evaluated the efficacy of the coping flexibility intervention that expanded the usual type of cognitive-behavioural intervention with additional training in flexible coping. To realize this aim, we compared the psychological characteristics of participants who took part in this new intervention with those of participants from two control groups. The first control group – the cognitive-behavioural intervention condition – served as a treatment comparison group to control for the possible effects of basic skills training and intervention experience. Participants took part in the same intervention as their counterparts in the coping flexibility intervention condition, but the key element of coping flexibility was missing. Therefore, these participants learnt the same set of coping skills but not the meta skill of coping flexibility, and thus their coping flexibility should remain largely unchanged after attending the intervention. The second control group comprised of participants who were put onto a waiting list for intervention and did not take part in any intervention during the period of the study.

In the literature on work stress, depression is the most common outcome measure (Iacovides et al., 2003; Tsutsumi, Kayaba, Theorell, & Siegrist, 2001). We thus evaluated the effectiveness of our intervention programme by comparing the levels of coping flexibility and depression among these three groups. In light of previous findings that revealed an inverse link between coping flexibility and depression (Fresco et al., 2006; Gan, Zhang, Wang, Wang, & Shen, 2006), we formulated the following hypotheses that guided our study design and analyses.

Hypothesis 1: Participants who attend the coping flexibility intervention will report higher levels of coping flexibility than their counterparts who take part in the cognitive-behavioural intervention and those on the waiting list.

Hypothesis 2: Participants who take part in the coping flexibility intervention will report lower levels of depression than those who attend the cognitive-behavioural intervention, who in turn will report lower levels of depression than participants on the waiting list.

We also evaluated the intervention programme's effectiveness by scrutinizing within-participant changes in coping flexibility and depression over time. We adopted a longitudinal design in which these two variables were assessed before (Time 1), immediately after (Time 2), and four months after (Time 3) the intervention.

Hypothesis 3: Participants who take part in the coping flexibility intervention will report an initial increase in levels of coping flexibility from Time 1 to Time 2, and then the augmented levels will level off from Time 2 to Time 3.

Hypothesis 4: Participants who take part in the coping flexibility intervention will report an initial decrease in depression levels from Time 1 to Time 2, and then the reduced levels of depression will level off from Time 2 to Time 3.

For a more robust test of the effectiveness of the coping flexibility intervention, it was essential to show that changes in depression were attributed to shifts in coping flexibility. Hence, we examined changes in coping flexibility in relation to corresponding variations in depression across the time points.

Hypothesis 5: An increase in coping flexibility levels will be associated with corresponding changes in depression levels over time.

Method

Participants

We recruited 161 Chinese working adults from four community centres in various districts in Hong Kong. An advertisement was placed in these centres inviting working adults to take part in a stress management workshop, and those who showed interests submitted a paper or electronic application form.

Using a computer-generated random number list, we assigned 54 participants (19 men and 35 women; mean age = 31.1, $SD = 8.8$) to attend the coping flexibility intervention, 53 participants (21 men and 32 women; mean age = 31.8, $SD = 8.9$) to take part in the cognitive-behavioural intervention, and 54 participants (15 men and 39 women; mean age = 32.1, $SD = 9.1$) to the waiting list group. The preliminary analyses revealed no statistically significant effects of demographic variables, and these variables were excluded in subsequent analyses. The distribution of demographic characteristics and depression scores in this sample largely resembles that of a normal Hong Kong working population.

Participants from both intervention groups were remunerated 200 Hong Kong dollars (about 25 US dollars) for attending all the intervention sessions and an additional 100 Hong Kong dollars (about 12.50 US dollars) for completing a questionnaire sent to them four months later. Those from the waiting list group were remunerated a total of 300 Hong Kong dollars (about 37.50 US dollars) for completing a questionnaire set at Time 2 and Time 3, respectively.

Before the study began, participants from the three groups did not differ significantly in their coping flexibility and depression scores, $F(6, 314) = .34, p = .92$. At the end of the study, six participants who took part in the coping flexibility intervention, seven participants who took part in the cognitive-behavioural intervention, and 12 participants from the waiting list group had dropped out. There were no statistically significant differences in any demographic and Time 1 measures between participants who attended all the sessions and those who dropped out.

Research design and procedure

This study adopted a longitudinal design that comprised three time points. When participants signed up for a stress management intervention, a research assistant requested them to sign a consent form before completing a set of questionnaires (Time 1). Then participants were invited to attend the two types of stress management intervention made up of 6 two-hour sessions held biweekly. Participants completed the same questionnaires at the end of the last session (Time 2). The research assistant mailed the questionnaires to participants on the waiting list. Four months later (Time 3), all the participants received the same questionnaires by mail. They were thanked and paid after they had returned the questionnaires. We invited participants on the waiting list to take part in a stress management intervention held a few weeks later.

Intervention conditions

Coping flexibility intervention. We adapted the coping flexibility intervention from two well-developed models: a cognitive-behavioural model (Munz et al., 1995) for the first four sessions and a coping flexibility model (Cheng & Hutton, 2003) for the last two sessions. The manual of the coping flexibility model was originally developed for patients in clinical settings (Cheng, Yang, Jun, & Hutton, 2007), and we modified its content to render it applicable to the work context. Specifically, participants were invited to discuss diverse types of stress related to work instead of health problems as specified in the original manual. Both manuals described the aims, framework, and scripts of each intervention session, and we advised the instructor to refer closely to the manuals for standardization of practice.

The first session provided an overview of the nature of work stress and participants' discussion about their own sources of work stress. Participants acquired a variety of cognitive and behavioural techniques in the next three sessions. In the final two sessions, participants learned how to distinguish between coping strategies that change the problem or environment (i.e. primary control coping) and those that alter aspects of oneself such as thoughts and emotions (i.e. secondary control coping), and to distinguish between stressful events whose outcome is amenable to change (i.e. controllable events) and those whose outcome cannot be altered (i.e. uncontrollable events). Then participants were told that sensitivity to the controllability of event outcome is crucial for determining the effectiveness of a coping strategy. Specifically, a particular type of strategy might not be useful under all circumstances. Primary control coping is more useful in handling controllable events, whereas secondary control coping is more useful in handling uncontrollable ones.

Cognitive-behavioural intervention. We adapted the cognitive-behavioural intervention from the same cognitive-behavioural model (Munz et al., 1995) for all six sessions. The overall contact time of this intervention and the nature of the first four sessions matched exactly that of the coping flexibility intervention. However, in the last two sessions, the instructor asked the participants to practise the acquired cognitive and behavioural skills in daily life and then discuss their experiences. In addition, we reminded the instructor not to use any of the specific elements of the coping flexibility intervention in the cognitive-behavioural intervention sessions.

Adherence to the intervention conditions

To check whether in practice the instructor had adhered to each intervention condition (i.e. coping flexibility vs. cognitive-behavioural), two independent judges observed and rated all six sessions of 10% of the cases randomly selected from each condition. Both judges correctly categorized the rated sessions into the condition from which they were drawn, thus indicating the instructor's adherence to the intervention conditions. The instructor, judges, research assistants, and participants were blind to the research design and hypotheses to avoid biases.

Measures

Coping flexibility. The Coping Flexibility Questionnaire (CFQ; Cheng, 2001) is a situation-based measure for assessing flexible strategy employment. In the first section, participants recalled a number of controllable and uncontrollable stressful events encountered in the workplace. In the second section, they described all the strategies they used to handle each type of stressful event. Then they classified each as a “strategy used for managing the event” (i.e. primary control coping) or a “strategy used for regulating your thoughts or emotions associated with the event” (i.e. secondary control coping). If participants considered that their goal in using a particular strategy applied to both options, they chose the one that represented their most important goal.

To check the reliability and validity of participants’ responses, two independent judges classified participants’ reported events into either the “controllable” or “uncontrollable” category, and their reported strategies into one of the two categories: primary and secondary control coping. Adopting the method of multiple-coder triangulation, each judge independently coded 10% of the cases in a training session. In a follow-up meeting, the judges reconciled the discrepancies and then the first author reconciled any unresolved disagreements. The kappa coefficients showed consistencies in the final coding between the two judges (κ s ranged from .88 to .96). These results indicate that the participants had understood and followed the instructions, and the data given were reliable and valid.

To distinguish adaptive from random changes in strategy use, we computed a coping flexibility score to indicate the extent of fit between the goal of a particular strategy and the specific characteristics of a stressful situation. We adopted the scoring criterion derived from the transactional theory of coping (Cheng, 2003): A score of 1 was given to the use of primary control coping in a controllable stressful situation, or secondary control coping in an uncontrollable stressful situation. A score of 0 was given otherwise. Because there were individual differences in the number of stressful events reported, we aggregated the scores and then divided the scores by the total number of stressful events. The coping flexibility score ranges from 0 to 1. The CFQ displays good reliability, criterion-related validity, and discriminant validity (Cheng, 2009; Gan et al., 2006).

Depression. We used the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), which is a common measure for assessing non-clinical depression in the general population. The CES-D scores range from 0 to 60, with a higher score indicating a greater depression level. Following Brislin’s (1986) procedures, the Chinese CES-D had been back-translated to ensure that particular version has equivalent meanings with the English version (Yang, 1997). The Chinese version also displays good psychometric properties (Yang, 1997) and has high internal consistency in this study (Cronbach’s α ranged from .89 to .92).

Results

Testing hypothesized group differences

In the present study, we designed the coping flexibility intervention to build coping skills and to foster a greater fit in strategy deployment to meet situational demands, whereas the cognitive-behavioural intervention focused on the former goal only.

Participants from the waiting list group did not take part in any of the intervention programmes. Table 1 represents the descriptive statistics of the three groups, and Figures 1 and 2 depict longitudinal profiles of coping flexibility and depression for these groups. We conducted profile analyses to test the hypothesized group differences in levels of coping flexibility (Hypothesis 1) and depression (Hypothesis 2).

Coping flexibility. A profile analysis involves the performance of a series of ANOVAs. First, we tested Hypothesis 1 by examining the overall differences in the coping flexibility levels reported by the three groups of participants. Results showed a statistically significant main effect of group, $F(2, 133) = 12.53, p < .001$. Such results indicated that the three groups of participants, on average, had different levels of coping flexibility.

Second, we conducted a parallelism test to examine whether the groups had different longitudinal coping profiles across the time points. Using Wilks' lambda as a criterion, the test revealed a statistically significant Time \times Group interaction effect, $F(4, 266) = 11.11, p < .001$. Such results indicated distinct longitudinal coping profiles among the groups.

Third, post hoc tests further showed group differences in coping flexibility levels at each time point. At Time 1, there were no statistically significant differences in coping flexibility levels among the three groups, $F(2, 133) = .08, p = .92$. However, statistically significant group differences were found at Time 2 and Time 3, $F_s(2, 133) = 21.87$ and $12.31, p_s < .001$. The Bonferroni tests showed that at Time 2, participants who took part in the coping flexibility intervention had higher levels of coping flexibility than the other two groups (see Figure 1), $p_s < .001$. Although participants who took part in the cognitive-behavioural intervention also reported higher levels of coping flexibility than their counterparts on the waiting list group (see Figure 1), the difference was only marginally significant, $p = .07$. At Time 3, the coping flexibility level of participants who attended the coping flexibility intervention was also higher than those of the other two groups (see Figure 1), $p_s < .001$. Consistent with Hypothesis 1, these results provided support for the effectiveness of

Table 1. Descriptive statistics for the three groups.

Variable	Coping Flexibility Intervention ($n = 54$)		Cognitive-Behavioural Intervention ($n = 53$)		Waiting list ($n = 54$)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Coping flexibility – Time 1	0.47 _a	0.18	0.48 _a	0.16	0.46 _a	0.16
Coping flexibility – Time 2	0.70 _b	0.21	0.56 _a	0.16	0.47 _a	0.16
Coping flexibility – Time 3	0.68 _b	0.19	0.50 _a	0.22	0.48 _a	0.16
Depression – Time 1	24.53 _a	6.03	23.34 _a	6.68	24.92 _a	7.19
Depression – Time 2	14.24 _a	6.44	17.59 _b	6.91	23.78 _c	7.46
Depression – Time 3	13.94 _a	6.77	19.12 _b	5.95	23.11 _c	5.85

Note: Values in the same row that do not share the same subscripts differ at $p < .05$.

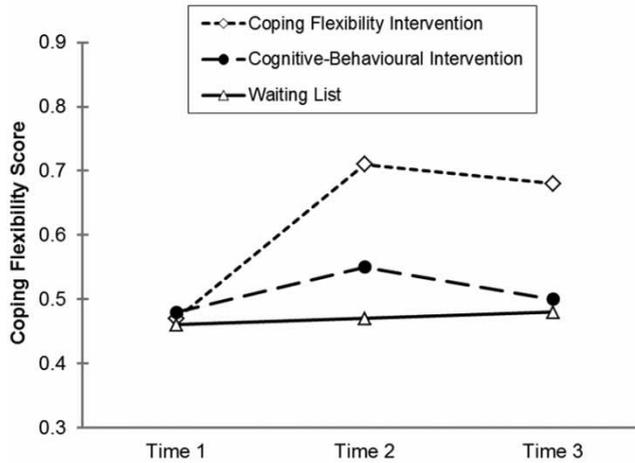


Figure 1. Longitudinal coping flexibility profiles of the three groups.

the coping flexibility intervention in facilitating flexible coping to deal with real-life work stress.

Depression. We tested Hypothesis 2 by examining overall differences in the depression levels reported by the three groups. Results from the profile analysis revealed that the main effect of group was statistically significant, $F(2, 133) = 20.41$, $p < .001$. These results revealed that on average, participants in the three groups reported different levels of depression. The parallelism test revealed that the interaction effect between time and group was also statistically significant, $F(4, 266) = 11.95$, $p < .001$. Such results indicated that the longitudinal profiles of depression scores for the three groups were different.

Post hoc tests showed that at Time 1, the three groups did not differ significantly in depression levels (see Figure 2), $F(2, 133) = .44$, $p = .64$. In contrast, there were statistically significant differences in depression among the groups at Time 2 and Time 3, $F(2, 133) = 21.81$ and 31.83 , $ps < .001$. At Time 2, participants who took part in the coping flexibility intervention reported lower depression levels than those who took part in the cognitive-behavioural intervention ($p = .009$), who in turn reported lower depression levels than their counterparts in the waiting list group ($p = .001$; see Figure 2). At Time 3, participants who attended the coping flexibility intervention also reported lower levels of depression than their counterparts who attended the cognitive-behavioural intervention ($p < .001$), who in turn reported lower levels of depression than participants on the waiting list ($p = .006$; see Figure 2). Such findings supported Hypothesis 2 in indicating the effectiveness of the coping flexibility intervention in mitigating depression.

Testing hypothesized temporal changes

Apart from group differences, we also investigated intra-individual differences in coping flexibility (Hypothesis 3) and depression (Hypothesis 4) over time. We employed hierarchical linear modelling (HLM 6.08) in which each participant's

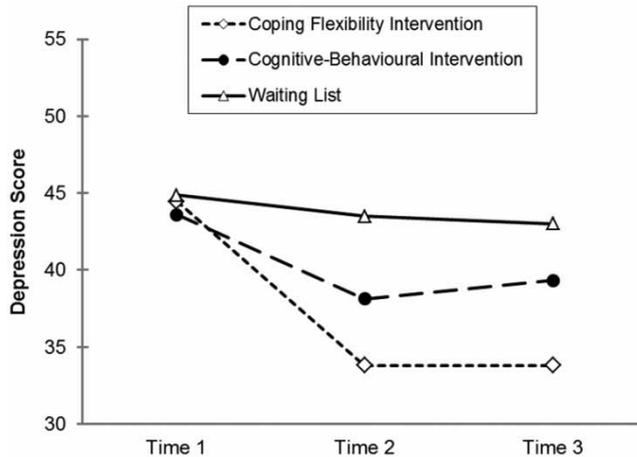


Figure 2. Depression profiles of the three groups.

coping flexibility or depression scores were measured at each time point (i.e. within-participant level or Level 1), and scores obtained at each time point were nested within the participants who differed from each other in their average scores (i.e. between-participants level or Level 2).

Before conducting the HLM, we followed the procedures recommended by Raudenbush and Bryk (2002) by creating two files. We first created a Level 1 file where each participant had three data points (one for each time point), so that each participant's coping flexibility or depression scores assessed at a particular time point could be compared with the next. Then we created a Level 2 file where each participant had one data point, so that the coping flexibility or depression scores could be compared among the three groups. Table 2 presents the unstandardized *b*-values, which reflected the within-participant changes in coping flexibility or depression from one time point to the next. Group differences in such temporal changes in coping flexibility or depression are indicated by distinct subscripts in this table.

Table 2. Changes in levels of coping flexibility and depression by group.

Change	Coping Flexibility Intervention (<i>n</i> = 54)		Cognitive-Behavioural Intervention (<i>n</i> = 53)		Waiting list (<i>n</i> = 54)	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
<i>Coping Flexibility</i>						
From Time 1 to Time 2	0.23** ^b	0.02	0.08** ^a	0.03	0.01 ^a	0.03
From Time 2 to Time 3	-0.02 ^a	0.02	-0.06 ^a	0.04	0.01 ^a	0.04
<i>Depression</i>						
From Time 1 to Time 2	-10.29** ^c	1.02	-5.75** ^b	1.08	-1.14 ^a	1.21
From Time 2 to Time 3	-0.29 ^a	0.65	1.53 ^a	1.26	-0.68 ^a	1.18

Note: Values in the same row that do not share the same subscripts differ at $p < .05$.

* $p < .01$, ** $p < .001$.

Coping flexibility. We tested Hypothesis 3 by scrutinizing the temporal trajectories of coping flexibility for each group. As shown in Table 2, participants who took part in the coping flexibility intervention showed a statistically significant increase in their levels of coping flexibility from Time 1 to Time 2, $t(434) = 9.80, p < .001$. However, there was no statistically significant change from Time 2 to Time 3, $t(434) = -1.01, p = .31$. As predicted, the coping flexibility intervention was effective in enhancing participants' coping flexibility and then maintaining coping flexibility at stable levels four months after the intervention.

Compared to their counterparts who attended the coping flexibility intervention, there was a smaller increase in coping flexibility among participants who attended the cognitive-behavioural intervention from Time 1 to Time 2, $t(434) = 2.78, p = .006$, and they showed a decreasing trend from Time 2 to Time 3, $t(434) = -1.64, p = .10$ (see Table 2). While there was an increase in coping flexibility after attending both the coping flexibility and the cognitive-behavioural intervention programmes, the increase in coping flexibility levels from Time 1 to Time 2 was larger for participants who took part in the former than the latter intervention, $t(434) = 4.33, p < .001$. However, these two intervention groups did not differ from one another in the magnitude of change in coping flexibility levels from Time 2 to Time 3, $t(434) = -.83, p = .41$.

Then we examined the temporal trajectory of coping flexibility for the waiting list group. As shown in Table 2, participants in this group showed no statistically significant change in coping flexibility from Time 1 to Time 2, $t(434) = .47, p = .64$; or from Time 2 to Time 3, $t(434) = .27, p = .79$. For the magnitude of change in coping flexibility from Time 1 to Time 2, the waiting list group differed from the coping flexibility intervention group, $t(434) = -5.63, p < .001$; but not the cognitive-behavioural intervention group, $t(434) = -1.50, p = .13$. For the magnitude of change in coping flexibility from Time 2 to Time 3, the waiting list group did not differ from either the coping flexibility intervention group, $t(434) = -.77, p = .44$; or the cognitive-behavioural intervention group, $t(434) = -1.33, p = .18$.

Depression. We next tested Hypothesis 4 by examining the hypothesized temporal changes in depression levels for the three groups. The results are also presented in Table 2. Among the participants who took part in the coping flexibility intervention, there was a statistically significant reduction in depression from Time 1 to Time 2, $t(434) = -10.09, p < .001$, but no statistically significant changes from Time 2 to Time 3, $t(434) = -.46, p = .65$. As expected, participants reported a statistically significant decrease in depression after attending the coping flexibility intervention, and then their depression levels were maintained at lower levels.

For participants who took part in the cognitive-behavioural intervention, there was also a statistically significant reduction in depression levels from Time 1 to Time 2, $t(434) = -5.33, p < .001$. However, such a decrease in depression levels was significantly smaller than that of the participants who attended the coping flexibility intervention, $t(434) = -3.06, p = .003$. There was also no statistically significant changes in depression levels from Time 2 to Time 3 for the cognitive-behavioural intervention group, $t(434) = 1.22, p = .22$. This intervention group did not differ from the coping flexibility intervention group in the magnitude of change in depression levels from Time 2 to Time 3, $t(434) = 1.30, p = .20$.

Parallel to the set of results regarding coping flexibility, participants in the waiting list group showed no statistically significant change in depression levels from Time 1 to Time 2, $t(434) = -.94$, $p = .35$, or from Time 2 to Time 3, $t(434) = -.57$, $p = .57$. For the magnitude of change in depression levels from Time 1 to Time 2, the waiting list group showed a smaller change than the two intervention groups, $t(434) = 5.78$ and 2.84 , $ps < .005$. For the magnitude of change in depression levels from Time 2 to Time 3, however, there were no statistically significant differences between the waiting list group and both intervention groups, $t(434) = .28$ and 1.28 , $ps = .78$ and $.20$. Taken together, these findings were in line with our predictions.

Testing the hypothesized coping flexibility-depression link

Although these results revealed a reduction in depression levels after attending the intervention programmes, it is essential to establish that such changes in depression levels corresponded to changes in coping flexibility levels. To test the hypothesized link between within-participant changes in coping flexibility and depression levels across the period (Hypothesis 5), we again performed HLM analysis. Specifically, we included coping flexibility as a group-mean centred Level 1 predictor of depression. Group-mean centring subtracts each participant's average coping flexibility score from each specific coping flexibility score. This method can disentangle within- and between-participants effects, thus making the analyses completely within participant. In this set of analyses, the unstandardized b -value represents the associated change in depression scores for every unit increase in coping flexibility scores relative to each participant's average.

The results revealed that an increase in coping flexibility scores was significantly related to a reduction in depression scores over time, $b = -21.91$, $SE = 2.34$, $t(441) = -9.36$, $p < .001$. Moreover, within-participant changes in coping flexibility accounted for 29% of the variance in the temporal change in depression levels. These findings provided support for Hypothesis 5 by indicating that the lowering of depression levels was associated with an increase in coping flexibility levels over time.

Discussion

In the present study, we evaluated a new stress management programme that expanded the usual type of cognitive-behavioural intervention with the additional goal of enhancing the meta skill of coping flexibility. The coping flexibility intervention was originally developed for patients with psychosomatic problems (Cheng et al., 2007), and our study suggests that it is also relevant for non-clinical samples such as working adults. After taking part in the coping flexibility intervention, participants showed greater flexibility in handling real-life stressful events in the workplace. The augmented levels of coping flexibility remained largely stable at least four months after the intervention. Such an increase in coping flexibility levels was significantly larger than the increase reported by participants who attended the cognitive-behavioural intervention without the meta skill training and in those who did not take part in any intervention. These findings thus provide some evidence that the coping flexibility intervention is also applicable in the context of work-stress management.

Interestingly, our study showed some unexpected increases in the level of coping flexibility among participants who attended the cognitive-behavioural intervention, but such increases were much smaller than those reported by participants who attended the coping flexibility intervention. This weaker effect suggested that although participants who took part in the cognitive-behavioural intervention were not instructed in how to apply the acquired strategies to meet situational demands, some participants still used situation-appropriate strategies while others failed to demonstrate this competence in real life. These results were consistent with previous studies that revealed temporal changes in coping flexibility in natural settings (Cheng & Cheung, 2005b; Gan, Liu, & Zhang, 2004). In light of these studies, it is reasonable to infer that the slight increase in coping flexibility in participants who took part in the cognitive-behavioural intervention may reflect their responses to environmental vicissitudes rather than the intervention per se, because that intervention did not include training that enhances coping flexibility. Our findings extend existing studies by showing that such an increase in coping flexibility waned in the follow-up phase, suggesting that these desirable changes in those who attended the cognitive-behavioural intervention rather than the coping flexibility intervention were not only weak but also short-lived.

Consistent with the transactional theory of coping and social-cognitive theories, the present findings paralleled previous studies that showed a link between coping flexibility and depression (Gan et al., 2006; Roussi, Krikeli, Hatzidimitriou, & Koutri, 2007). It is noteworthy that all these studies adopted a cross-sectional design, and thus the direction of influence between the two variables remains uncertain. The present study fills this knowledge gap using an intervention design. As shown in our study, participants who attended the coping flexibility intervention reported lower depression levels after the sessions, and the level of depression remained stable, at least over a four-month period. Such a reduction in depression level was larger than the changes reported by the other two groups. These results provide empirical evidence for the effectiveness of the coping flexibility intervention in enhancing coping flexibility that leads to subsequent reduction in depression levels.

Apart from participants who attended the coping flexibility intervention, those who attended the cognitive-behavioural intervention also reported lower depression levels than their counterparts who did not attend any intervention. Consistent with previous findings (Della-Posta & Drummond, 2006; Ruwaard, Lange, Bouwman, Broeksteeg, & Schrieken, 2007), such results also provide some support for the efficacy of the cognitive-behavioural intervention in mitigating work stress. Our study extends previous ones by further revealing that although participants reported a significant reduction in depression levels immediately after the cognitive-behavioural intervention, there was a slight increase in depression levels over the four-month follow-up period. Such a subsequent increase in depression may indicate initial signs of a relapse (Ivancevich, Matteson, Freedman, & Phillips, 1990), but such a possibility remains largely speculative because the findings are derived from a four-month follow-up analysis only.

Implications for theory development, research and practice

Our study may also have broader implications for theory development, research design, and practice. Regarding theoretical implications, the present findings may

shed light on an integrative approach that aims to transcend the dichotomy of personality stability versus change. In the extant literature, some researchers conceptualize coping flexibility as a trait that is largely stable (Lester et al., 1994), whereas others conceptualize it as a dynamic process that changes as situational characteristics vary (Gan et al., 2006). We proposed the potential utility of an integrative approach that addresses the confluence of these two seemingly opposing conceptualizations of coping flexibility.

This integrative approach proposes that coping patterns for an individual can vary across situations but also remain largely consistent over time, while also recognizing that such patterns can be altered under certain circumstances. Our study showed that the coping flexibility pattern of participants who did not attend either intervention remained largely stable over time. In contrast, coping flexibility could be increased for participants who received training that sharpened their sensitivity to situational changes and responsiveness to situational demands. These findings thus provide empirical evidence that coping flexibility is largely stable but also can be increased, thus demonstrating the usefulness of incorporating coping flexibility into stress management workshops that equip working adults to meet the challenge of a rapidly changing economy.

With regard to research implications, this research demonstrates the value of using an intervention in the study of coping flexibility for managing work stress. Most previous research has adopted a longitudinal approach in the study of such changes in natural settings. Although the longitudinal approach is valuable in revealing how changes in coping flexibility are related to changes in depression level over time, what produces such changes is unknown. Given that coping flexibility is relatively stable, it is unlikely that patterns of coping flexibility can be changed naturally over a few months. Although an experimental approach can address this issue by manipulating changes in coping flexibility and examining the outcomes in response to these manipulations, that methodology is limited by being artificial.

An alternative method, namely the intervention approach, was used in this research to study the causal links between coping flexibility and depression. Workshop participants were presented with a meta skill that enhances their sensitivity to subtle environmental changes and responsiveness to meet the changing situational demands. Baseline and subsequent levels of coping flexibility and depression for participants who took part in the coping flexibility intervention can be compared. Such an intervention approach can clarify causal links by examining how depression levels change after the intervention. Manipulations of levels of coping flexibility are conducted in a natural setting so that the changes are closer to real life, thus enhancing the ecological validity of the method.

Regarding practical implications, the present research suggests the importance of enhancing flexibility in coping in stress management programmes. Most existing stress management workshops focus on the acquisition of specific coping skills such as problem-solving skills and relaxation (Munz et al., 1995). The present findings indicate that compared with intervention programmes that aim to build coping skills only, programmes that focus on both building coping skills and enhancing the ability to discriminate among different types of strategy could be more effective in reducing depression.

Our results imply that learning new strategies that supplement the existing ones in the coping repertoire is necessary but not sufficient. This is because if participants

apply the acquired strategies inappropriately for handling real-life stressful events, no desirable outcomes will occur. The present findings suggest that intervention programmes should incorporate the meta skill of coping flexibility, which supplements general-skill acquisition by enhancing participants' understanding of situational differences in the potential effectiveness of distinct coping strategies. Such knowledge may help participants to apply their acquired skills in a more situation-appropriate manner, thus equipping them to meet a variety of new life tasks required in major life changes. In short, a more comprehensive intervention programme, such as the one tested in the present study, should aim at equipping participants with both a broader coping repertoire and knowledge on how to apply situation-appropriate strategies.

Limitations and future research directions

Before concluding, some caveats about this study warrant attention. First, our study is the first to incorporate the meta skill of coping flexibility into the usual type of cognitive-behavioural intervention for managing work stress. Although the results provided some support for the effectiveness of the new intervention in mitigating the effects of work stress (measured as depression), it is noteworthy that the intervention effects may be relatively short term as they were only followed up at four months. Future studies are needed to evaluate the effectiveness of a coping flexibility intervention over a longer duration, such as 12 months or more. Such a design would allow researchers to examine whether the intervention effects are long term or whether over a longer period a relapse takes place (Ivancevich et al., 1990). Such data could serve as a guide for further refinement of the intervention design or development of relapse prevention measures.

Second, it is important to reiterate that the present study examines how working adults cope with general work stressors, which reflect experiences that arise during their daily work routine. The findings may not be generalizable to work stress that occurs in extremely stressful contexts, such as the bankruptcy of Lehman Brothers in 2008 and the European sovereign debt crisis in 2011. Further studies could be conducted to study whether a coping flexibility intervention is also useful for working adults directly affected by large-scale financial crises.

Finally, it is worth noting that the participants who took part in the intervention programmes were all ethnically Chinese, and thus whether the effectiveness of the coping flexibility intervention is applicable to other ethnic groups remains uncertain. Yet, it is reasonable to infer that the new intervention may also be beneficial for Western working adults because the intervention is grounded in Western theories and models (see the Introduction). Previous studies have also documented that coping flexibility is useful for reducing depression among Western samples (Fresco et al., 2006; Roussi et al., 2007). More studies are needed to investigate the benefits of the coping flexibility intervention across cultural regions.

Conclusion

The present study indicates that intervention programmes could incorporate the meta skill of coping flexibility, which supplements general-skill acquisition by

enhancing attendees' understanding of situational differences in the effectiveness of distinct coping strategies. Such knowledge may help attendees to apply these acquired skills in a more situation-appropriate manner, thus equipping them to deal with a variety of new events encountered in their working life. We thus propose a more comprehensive stress management programme aimed at both the person and situation levels, that equips employees with both a broader coping repertoire and knowledge on how to apply situation-appropriate strategies.

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