

Cognitive Processes Underlying Coping Flexibility: Differentiation and Integration

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ABSTRACT This study investigates how individuals formulate flexible coping strategies across situations by proposing differentiation and integration as two stress-appraisal processes. Results showed that participants who coped more flexibly adopted the dimensions of controllability and impact in differentiating among different stressful situations. They also deployed an integrated strategy: the deployment of more monitoring in situations perceived as controllable but less of this strategy in situations perceived as uncontrollable. Participants who coped less flexibly did not adopt any given dimensions and tended to use more monitoring regardless of situational characteristics. These results suggest that individuals with different extents of coping flexibility differ in the cognitive processes. Individuals who cope more flexibly display a greater extent of differentiation and integration than do those who cope less flexibly. These findings are translated into strategies for stress management workshops.

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COGNITIVE PROCESSES UNDERLYING COPING FLEXIBILITY DIFFERENTIATION AND INTEGRATION

Stress is inevitable in life. When encountering a stressful event, people endeavor to cope with it by attempting to solve the problem or by avoiding a direct confrontation with it by changing their thoughts and emotions (see Roth & Cohen, 1986). However, they rarely cope with only a single type of stressful event; instead, they face a variety of stressful events with distinct characteristics. Some stressful events have a large impact on individuals (e.g., being fired), whereas some stressful events are trivial (e.g., hurting a finger). Some of them are controllable (e.g., failing an examination), but other events are uncontrollable (e.g., being turned down by a client).

The same coping strategy can have distinct extents of usefulness in different stressful situations. For instance, monitoring or attending to threat-related information, a kind of approach coping, has been found to be beneficial for enhancing people's awareness of the danger aspect of a situation, thus preparing them to handle it (e.g., Muris, van Zuuren, & De Vries, 1994; van Zuuren & Dooper, 1999). However, excessive monitoring can, by heightening anxiety levels, be harmful (e.g., Cheng, Hui, & Lam, 2000; Roussi, 2002). Blunting or turning away from threat-related information, a kind of avoidant coping, is useful in pacifying anxiety in times of stress (e.g., Muris, De Jong, Merckelbach, & van Zuuren, 1994; M. D. Schwartz, Lerman, Miller, & Daly, 1995). Yet, excessive blunting desensitizes individuals from the danger of a stressful situation, thus making individuals more vulnerable to the possible harm of stress (e.g., Carver, Pozo, Harris, & Noriega, 1993; Derogatis, Abeloff, & Melisaratos, 1979). This body of studies indicates that the predominant use of any type of coping strategy can be debilitating. People need to be flexible in the deployment of strategies for effective coping with diverse types of stressful situations.

Studies on coping flexibility (e.g., Cheng, 2003; Schmidt, Nachtigall, Wuethrich-Martone, & Strauss, 2002; C. E. Schwartz & Daltroy, 1999; Watanabe, Iwanaga, & Ozeki, 2002) have shown that individuals differ in the extent of their coping flexibility across stressful situations. Some individuals use different types of coping strategies in distinct stressful situations, and the characteristics of coping strategies fit the specific situational demands. By contrast, other individuals use the same type of coping strategies consistently across

situations. Moreover, coping flexibility with a good strategy-situation fit is related to adaptive coping outcomes, such as psychological well-being (e.g., Cheng, 2003; Watanabe et al., 2002), physical well-being (e.g., Cheng et al., 2000; C. E. Schwartz & Daltroy, 1999), social adaptation (e.g., Schmidt et al., 2002; Slangen-de Kort, Midden, Aarts, & Van Wagenberg, 2001), and reduced strain symptoms (Kaluza, 2000, 2001). Such flexibility in coping was unrelated to self-monitoring, social desirability, and education levels (Cheng, 2001, 2003). Apart from individual differences in coping flexibility and coping outcomes, it is also important to explore the process underlying coping flexibility, that is, how individuals formulate flexible or inflexible coping strategies across stressful situations. This information is valuable for not only advancing knowledge in the coping literature but also the design of stress management workshops in deriving effective coping methods.

Two Appraisal Processes of Coping Flexibility: Differentiation and Integration

The construct of coping flexibility has its roots in the transactional theory of coping (see Lazarus, 1993; Lazarus & Folkman, 1987), the most influential coping theory to date. The transactional theory of coping (Lazarus, 1993; Lazarus & Folkman, 1987) adopted phenomenological theories of personality (Kelly, 1955; Rogers, 1959) as the theoretical underpinning. Phenomenological theories propose that the same event can be perceived by different individuals in distinct ways, and individuals' subjective perception (phenomenal field) of the environment plays a significant role in influencing their behaviors. In the transactional theory, coping is seen as a process underlying how individuals interact with the environment. Specifically, coping is proposed as an ongoing, evolving process that occurs within the interface of changing persons and situational demands. Cognitive appraisal is proposed to play an important role in the coping process. Because the environment is ever changing, individuals perceive different stressful situations in distinct manners and vary their deployment of coping strategies across stressful situations. Flexible stress appraisal facilitates flexible coping responses.

Although the transactional theory contributed to the coping literature by highlighting cross-situational variability in coping, it did not address the issue of individual differences in cross-situational

variability. Previous studies (e.g., Riskind & Williams, 1999; Wilhelm, Roy, Mitchell, Brownhill, & Parker, 2002) have revealed individual differences in the extent of flexibility in strategy deployment across situations. Some individuals tend to vary their strategies in different situations, whereas others tend to use the same type of strategies regardless of situational characteristics. The present study explored some cognitive processes related to individual differences in coping flexibility across situations. Flexible stress appraisal involves complex thinking by which apparently contradictory information (e.g., controllable vs. uncontrollable situations, advantages and limitations of the same coping strategy) is processed. Because complex thinking comprises both differentiation and integration (e.g., A. Miller & Wilson, 1979; Wyer, 1964), these two cognitive processes are proposed as relevant theoretical underpinnings of coping flexibility.

Differentiation is conceptualized as an ability to recognize multiple dimensions embedded in a perceived domain and to the taking of different perspectives when considering the domain. (see, e.g., Stephan, 1977; Tramer & Schludermann, 1974). This construct originated from Kelly's (1955) personal construct theory, which proposed that individuals possess a system of dimensions for perceiving events. The relative complexity of a person's system of dimensions defines his or her capacity to perceive behaviors in a multifaceted way. Individuals high in differentiation can distinguish among persons or events by recognizing multiple perspectives of a perceptual phenomenon. They tend to discern more than one dimension when evaluating an event, or they tend to view the event from more than one perspective. Although differentiation refers to the perception of multiple dimensions within a perceived domain, it is a necessary but insufficient prerequisite for integration. Complex thinking should involve not only the making of many differentiations but also the development of an integrative synthesis of these differentiations. Differentiation and integration should thus be conceptualized as separate cognitive dimensions.

Integration is conceptualized as an ability to perceive trade-offs among alternatives in combination or interaction (see, e.g., Stewin, 1976; Suedfeld & Coren, 1992). Integration involves the development of conceptual connections among differentiated dimensions or perspectives. The differentiated dimensions are combined through the perception of such dimensions in interaction, combination, or as parts of a larger superordinate entity. This construct is consistent

with the postulations of both the conceptual complexity theory (Streufert & Streufert, 1978) and cognitive-affective processing system theory (Mendoza Denton, Shoda, Ayduk, & Mischel, 1999; Mischel & Shoda, 1998), both of which propose that information processing is operated by a highly dynamic system that constantly synthesizes and reconciles various pieces of information. Individuals high in integration are able to integrate various perspectives of a perceptual phenomenon by forming conceptual connections among the perspectives. Such connections are inferred from references to trade-offs between alternatives, a synthesis between them, or a reference to a higher-order concept that subsumes them (Suedfeld, Tetlock, & Streufert, 1992).

These two processes may be relevant to the flexible stress appraisal and flexible coping responses of individuals high in coping flexibility. These individuals may make differentiations in their strategy formulation by recognizing (a) multiple perspectives of stressful events (e.g., outcome controllability, perceived impact) and (b) trade-offs regarding the strengths and limitations of different coping strategies. They may be able to form integrated cognitions that incorporate discrepant information (e.g., controlling the situation if its outcome can be altered but changing oneself if the situation cannot be altered). The use of such an integrated strategy that matches the specific demands of different stressful events is related to adaptive outcomes, such as reduced anxiety and depression. Figure 1 outlines the conceptual framework depicting the relationships among differentiation, integration, flexible stress appraisal, flexible coping pattern, and coping outcomes.

Aims and Hypotheses of the Study

The present study examines two appraisal processes of coping flexibility: differentiation and integration. Differentiation is operationalized by the number of dimensions used to distinguish among different events (see, e.g., Harvey, Hunt, & Schroder, 1961; Schroder, 1971). To assess differentiation, we designed a task in which participants compared some common stressful situations based on a number of dimensions they might have had in mind. Studies on stress appraisal adopted self-report questionnaires in which participants rated their experienced stressful events along certain perceptual dimensions. A review of the coping literature revealed that controllability (e.g., Cheng et al., 2000; Roussi, Miller,

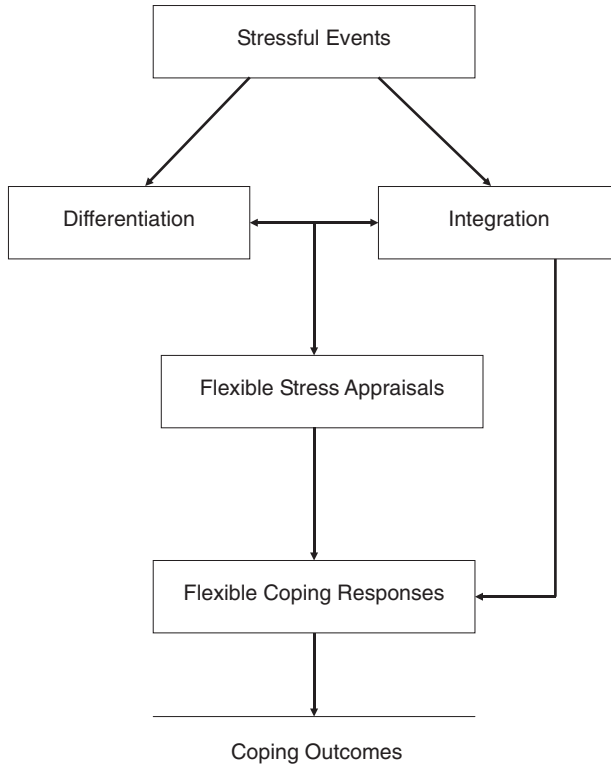


Figure 1

Conceptual framework depicting the relationships among stressful events, differentiation, integration, flexible stress appraisals, and flexible coping responses.

& Shoda, 2000), impact (e.g., Amirkhan, 1998; Maunsell, Brisson, Mondor, Verreault, & Deschenes, 2001), predictability (e.g., Anisman & Merali, 1999; Deck & Jamieson, 1998), and significance (e.g., Howe, 1997; Yue, 2001) are the dimensions most commonly adopted by researchers. It is noteworthy that in these studies, decisions regarding which dimensions to use in stress appraisal were made by researchers rather than by participants. Whether these dimensions represent the “implicit” dimensions actually represented in participants’ minds remains largely unknown. The present study extended this body of research by examining which of these dimensions were actually adopted by participants in appraising stressful events. Understanding these implicit dimensions may provide useful information on how individuals structure their thinking when handling stress.

Integration is operationalized by the development of conceptual associations among differentiated perspectives (see Baker-Brown et al., 1992; Suedfeld & Coren, 1992). To assess integration, we examined how participants deployed different strategies in distinct perceived categories of stressful situations. The relationships between the nature of strategies and situational characteristics may be best represented by a strategy-situation profile (see Figure 2). Although individuals high in coping flexibility are characterized by a highly

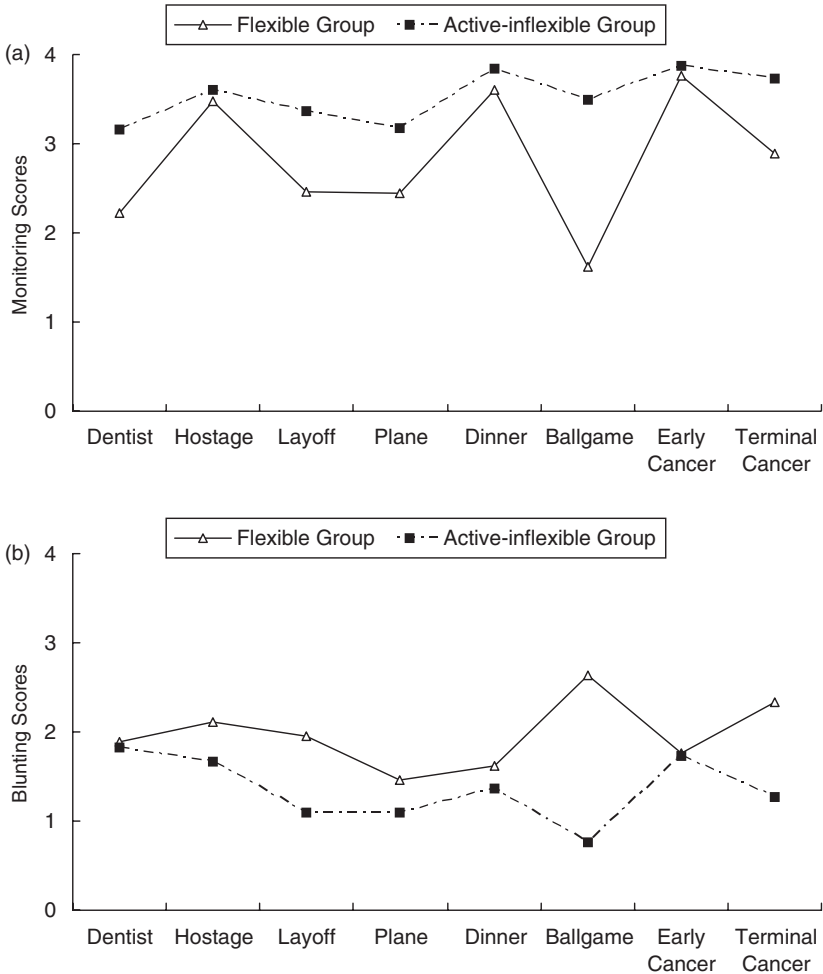


Figure 2
 Strategy-situation profiles for the flexible group and the active-inflexible group.

variable strategy-situation profile, they do not vary their deployment of coping strategies randomly. Their strategy-situation profile should reflect certain kinds of stable patterns (e.g., using strategy A in situations perceived as having a particular type of characteristics, using strategy B in situations perceived as having other characteristics), which reveal integrated connections between the nature of coping strategies and perceived characteristics of situations.

Two hypotheses were tested in this study. Compared to individuals lower in coping flexibility, individuals higher in coping flexibility are hypothesized to display (a) a greater extent of differentiation, as indicated by the use of a greater number of dimensions when making such differentiations, and (b) a greater extent of integration, as indicated by a variable strategy-situation profile with stable patterns of coping responses across different perceived categories of stressful situations.

METHOD

Participants and Procedure

One hundred twenty-seven Hong Kong undergraduates (48 men and 79 women) participated in this study as a partial fulfillment of a course requirement. Their average age was 21.10 years ($SD = .91$). Informed consent was obtained from them before the study began.

Measures

Strategy-situation profile. Participants' coping patterns across situations were assessed by the Extended Miller Behavioral Style Scale (EMBSS; Cheng, Chiu, Hong, & Cheung, 2001). The EMBSS was adopted because this is the only coping measure that consists of a number of hypothetical stressful situations with distinct nature (see Appendix A). The first four situations (i.e., Dentist, Hostage, Layoff, Plane) were adopted from the Miller Behavioral Style Scale (MBSS; S. M. Miller & Mangan, 1983). The other four (i.e., Business Dinner, Ballgame, Early Cancer, and Terminal Cancer) were constructed by Cheng and associates to broaden the diversity of the hypothetical situations. A stress measure with hypothetical stressful events, rather than those with self-report stressful events, was adopted to provide a set of situations common to all participants so that the perceived dimensions could be derived.

Participants were asked to vividly imagine themselves encountering the situation. Their task was to decide whether they would employ a given

strategy in handling each of the situations. Eight possible responses, with four assessing monitoring and four assessing blunting, were included in each hypothetical situation. Monitoring, a kind of approach coping, refers to the propensity of focusing one's attention on threat-related information. Blunting, a kind of avoidant coping, refers to the tendency to divert one's attention by turning away from threat-related information. The EMBSS has adequate internal consistency ($\alpha = .84$ for the monitoring subscale and $\alpha = .75$ for the blunting subscale). This measure was found to be related to university students' real-life coping strategies and their mood levels (Cheng et al., 2001).

Following Miller's (1992) scoring method, the monitoring responses endorsed in each of the eight hypothetical situations were aggregated to form a monitoring score, which ranges from 0 to 32. The blunting responses endorsed in each hypothetical situation were aggregated to form a blunting score, which also ranges from 0 to 32. Consistent with the body of research conducted by Miller (see S. M. Miller, 1992), this study revealed that these two subscales were relatively independent ($r = -.12, p = .17$). The monitoring and the blunting scores were thus reported separately. For each of these subscales, the scores of the eight situations were plotted to form a strategy-situation profile for subsequent analysis of integration.

Differentiation of stressful situations. Participants' differentiation of stressful situations was measured by a questionnaire designed by the authors. Differentiation was indicated by the adoption of perceptual dimensions in making the differentiations. Participants were asked to rate each stressful situation along four dimensions: controllability (ranging from 1 = *is extremely uncontrollable* to 6 = *is extremely controllable*), impact (ranging from 1 = *has no impact* to 6 = *has an extremely large impact*), predictability (ranging from 1 = *is extremely unpredictable* to 6 = *is extremely predictable*), and significance (ranging from 1 = *is extremely insignificant* to 6 = *is extremely significant*).

Coping outcomes. Three measures of coping outcomes were adopted in this study for measuring trait anger, trait anxiety, and depression, respectively. The State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1988) was used to assess general feelings of anger. The T-Anger scale, which comprises 10 statements, was adopted. Respondents give 4-point ratings to each of the statements. The trait anger scores range from 10 to 40, with a higher score indicating a higher trait level of anger. The Chinese version of the STAXI was both reliable and valid (Yang, 1997).

The State-Trait Anxiety Inventory (STAI Form Y-2; Spielberger, 1983) was used to measure general feelings of tension, apprehension, and nervousness. The T-Anxiety scale, which comprises 20 statements,

was adopted. Respondents give 4-point ratings to each statement. The anxiety scores range from 20 to 80, with a higher score indicating a higher trait anxiety level. The Chinese version of the STAI displayed good internal consistency and criterion-related validity (Shek, 1988; Ye, 1990).

The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) was adopted in this study for measuring general depressive feelings. The BDI consists of 21 items. The depression score ranges from 0 to 63, with a higher score indicating a higher level of depression. The Chinese version of the BDI had good reliability (Shek, 1990) and criterion-related validity (Shek, 1991).

Social desirability. A measure of social desirability was included to examine the possible confounding effect of social desirability on coping flexibility. The Marlowe-Crowne Social Desirability scale (MCSD; Crowne & Marlowe, 1960) was used to assess social desirability. This measure consists of 33 items to which respondents indicate “yes” (1) or “no” (0). The MCSD scores range from 0 to 33. A higher score indicates a desire to achieve greater social desirability. The Chinese version of the MCSD displays good reliability and criterion-related validity (Yang, 1997).

Procedures

The set of questionnaires was administered to participants in groups of 6 to 8. A trained research assistant read the instructions to participants and responded to any inquiries raised by them. Participants were allowed to take as much time as needed to complete the questionnaire. On completion of the task, they were thanked for their participation. Results were presented and discussed in a subsequent tutorial session.

RESULTS

Strategy-Situation Profile and Coping Flexibility

Strategy-situation profiles provide a picture of how participants deployed monitoring and blunting strategies in different situations. To identify groups of participants with similar strategy-situation profiles, hierarchical cluster analysis was performed to classify participants into discrete groups based on participants' endorsed strategies for the eight EMBSS situations. Hierarchical cluster analysis was used because it attempts to organize the data into a hierarchy, that is,

a tree diagram, or dendrogram. Organizing data into a hierarchy is deemed most suitable for exploring the data structure. This technique has been commonly used to identify underlying psychological dimensions (e.g., Dunn & Nielsen, 1993; Nosofsky, 1991).

A 16×127 data matrix was constructed with the 127 participants as cases and their raw scores of monitoring scores (the first eight columns) and blunting scores (the following eight columns) across the rows. Ward's (1963) minimum variance method was adopted as the grouping method because it performs better than other clustering methods in most conditions (see, e.g., Blashfield, 1984; Milligan & Cooper, 1987). This method has also been used in previous studies in identifying participants with different patterns of coping flexibility (e.g., Cheng, 2001; Kaluza, 2000). In this grouping method, cases with the least increase in error (within-group) sum of squares of each cluster were merged at each step in the analysis. A series of hierarchical clusters were generated to partition the data into optimally homogeneous groups. Two clusters of participants were identified, with 94 participants (35 men, 59 women) in Cluster 1 and 33 participants (13 men, 20 women) in Cluster 2. In comparison with other possible solutions, the two-cluster solution was the most meaningful

Table 1
Descriptive Statistics of Major Variables by Groups

Variable	Flexible Group/ Cluster 1		Active-Inflexible Group/ Cluster 2		
	<i>(n = 94)</i>		<i>(n = 33)</i>		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Monitoring	22.46	3.65	28.24	2.36	< .0001
Variability in monitoring	1.16	.29	.64	.33	< .0001
Blunting	15.80	4.26	10.79	4.48	< .0001
Variability in blunting	1.04	.28	.96	.25	.16
Trait anger	18.34	6.02	24.03	6.29	< .0001
Trait anxiety	30.42	4.29	32.55	3.87	.01
Depression	11.25	4.92	11.88	4.74	.52
Social Desirability	18.68	7.62	19.09	10.14	.81

and stable (as reflected by the replicable results using the split-half method and Cheng's [2001] previous study). Table 1 presents means and standard deviations of the major variables for these groups.

Group Differences in Coping, Psychological Well-Being, and Social Desirability

Group differences in coping flexibility. Differences in coping flexibility between the clusters were examined. Coping flexibility was operationalized by (a) variability in coping pattern, and (b) the deployment of situation-appropriate strategies that fit the specific demands of stressful situations (see Cheng, 2001). We first examined differences in the extent of variability in strategy-situation profiles between the clusters. Variability was calculated by the standard deviation across the EMBSS scores of the eight stressful situations (see, e.g., Greenleaf, 1992). This method has been adopted by previous studies on coping flexibility (see, e.g., Cheng, 2001; Murphy, 2001). Results showed that the monitoring strategy-situation profile of Cluster 1 was more variable than that of Cluster 2, $F(1, 126) = 71.13, p < .0001$. However, no statistically significant differences in variability in the use of blunting were found between the two groups, $F(1, 126) = 1.96, p = .16$.

Then we examined the situation-appropriateness of strategies by comparing the strategy-situation profiles of both clusters with an expert prototype profile, which is derived from previous theories and findings. Specifically, in the study by Chiu and associates (1995), a panel of independent experts evaluated the MBSS situations to determine the usefulness of monitoring and blunting in each situation. Only in the Hostage situation was monitoring deemed adaptive by experts (see also Strentz & Auerbach, 1988). In light of Carver and Scheier's (1983) control system theory, monitoring the audience's reactions to the self is useful in novel social situations (e.g., attending a business dinner for the first time) where new information or feedback from the audience is required for regulating one's behaviors. However, performance on a skilled task (e.g., ballgame) will be adversely affected when the performer tries to monitor the audience's reactions. Finally, in the face of lethal health threats (e.g., terminal cancer), studies (e.g., S. M. Miller, Rodoletz, Schroeder, Mangan, & Sedlacek, 1996) showed that active monitoring of danger signals can be debilitating.

In light of these theories and findings, the expert prototype profile of monitoring comprises eight scores: A score of 1 is assigned to situations in which the deployment of monitoring strategy is more effective (i.e., Hostage, Business Dinner, and Early Cancer). A score of 0 is assigned to situations in which the deployment of monitoring strategy is less effective (i.e., Dentist, Layoff, Plane, Ballgame, and Terminal Cancer). The expert prototype profile of blunting also comprises eight scores: A score of 1 is given to situations in which the deployment of blunting strategy is more effective (i.e., Hostage, Business Dinner, and Early Cancer). A score of 0 is given to the other five situations in which the deployment of blunting strategy is less effective. The prototype method (see, e.g., Wagner, 1987) was used to reveal the degree of similarity between the strategy-situation profiles and their respective expert prototype profiles. Adopting this method, we examined the clusters' deviation scores, which were derived from aggregating the deviations (absolute values were taken) of their respective set of scores from the set of scores of the expert prototype profile. The deviation score reflects the extent of deviations from the expert prototype profile. The smaller the value, the more similar a strategy-situation profile is to the expert prototype profile.

For both monitoring and blunting, the ANOVA results revealed a statistically significant difference in the deviation scores between the two clusters, $F_s(1, 126) = 65.93$ and 29.78 , $ps < .0001$. The deviation scores of Cluster 1 ($M_s = 12.80$ and 15.21) were smaller than those of Cluster 2 ($M_s = 17.58$ and 18.73), indicating that both the monitoring and the blunting strategy-situation profiles of Cluster 1 were more similar to those of the expert prototype profile. Cluster 1 was referred to as the "flexible group." By contrast, participants in Cluster 2 used more monitoring strategies and less blunting strategies than those in Cluster 1, $F_s(1, 126) = 71.22$ and 32.66 , $ps < .0001$. Cluster 2 was referred to as the "active-inflexible group." These results were consistent with those from the study by Cheng and colleagues (2001).

Group differences in psychological well-being and social desirability. Differences in trait anger, trait anxiety, depression, and social desirability between the clusters were then examined. Results from the multivariate analysis of variance (MANOVA) revealed a statistically significant effect of group, $F(4, 122) = 6.64$, $p < .0001$. Post hoc

univariate tests showed that participants of the flexible group reported lower levels of trait anger and trait anxiety, $F_s(1, 126) = 21.22$ and 6.29 , $ps < .01$. However, the groups did not differ in depression and social desirability, $F_s(1, 126) = .41$ and $.06$, $ps > .52$.

Differentiation and Coping Flexibility

Number of dimensions adopted in differentiation. Multidimensional scaling (MDS) was employed to uncover the spatially representable dimensionality or structure embedded in the differentiation ratings. Because there are only eight situations, solutions with more than two dimensions are not reliable (Hair, Anderson, Tatham, & Black, 1992). Only the one-dimensional and the two-dimensional solutions were considered. The optimal dimensionality of an MDS configuration is identified by two indices, stress value and R^2 (see Everitt, Landau, & Leese, 2001). The stress value indicates the extent of data mismatch, and R^2 indicates the proportion of variance accounted for by the configuration. A configuration with a good fit of the data should have a small stress value (.10 is deemed adequate, see Kruskal, 1964) and a large R^2 .

For the flexible group, the one-dimensional configuration of the differentiation ratings yielded a stress value of .27 and R^2 of .80. The two-dimensional configuration yielded a stress value of .11 and R^2 of .91. Hence, the two-dimensional configuration is adequate in explaining the differentiation ratings, but the one-dimensional configuration is not. For the active-inflexible group, the one-dimensional configuration yielded a stress value of .38 and R^2 of .61. The two-dimensional configuration yielded a stress value of .18 and R^2 of .79. The stress values of both configurations showed a poor fit, indicating that the differentiation ratings of the active-inflexible group could not be accounted for by both MDS configurations.

Perceptual map of the flexible group. The results showed that the two-dimensional configuration had a good fit of the differentiation ratings of the flexible group. Ratings of the four perceptual dimensions (i.e., controllability, impact, predictability, and significance) were included to examine which of these dimensions could account for the two-dimensional configuration. We performed the statistical technique of Property Fitting (PROFIT; Chang & Carroll, 1989) to fit the dimension ratings into the two-dimensional configuration.

PROFIT involves performing a multiple regression analysis, with the coordinates of the two-dimensional configuration (i.e., dimensions 1 and 2) as independent variables and the dimension ratings as dependent variables.

For the flexible group, the two-dimensional configuration had statistically significant multiple correlations (R) with the dimensions of controllability and impact only, $R_s = .88$ and $.84$, $ps < .05$. These results suggest that examining the perceptual dimensions of controllability and impact can allow us to decipher the underlying structure of the flexible group's perceptual map.

Figure 3 presents a perceptual map depicting the vectors of the two dimensions. This figure shows that the dimensions are almost perpendicular to each other. The "horizontal" dimension is controllability, whereas the "vertical" dimension is impact. These results indicate that for participants in the flexible group, their perception of the eight EMBSS stressful situations was organized in a two-dimensional manner: (a) Hostage and Early Cancer are perceived as more controllable and having greater impact, (b) Business Dinner is perceived as more controllable and having less impact, (c) Terminal Cancer is perceived as less controllable and having greater impact,

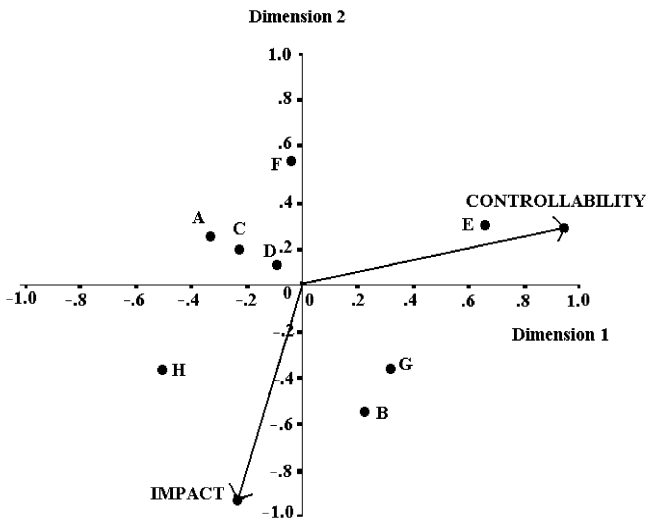


Figure 3

Perceptual map of the flexible group (A = Dentist, B = Hostage, C = Layoff, D = Plane, E = Business Dinner, F = Ballgame, G = Early Cancer, H = Terminal Cancer).

and (d) Dentist, Layoff, Plane, and Ballgame are perceived as less controllable and having less impact. Their perception matched well with the experts' ratings as well as previous theories and findings described above.

Conclusion. In making differentiations among the stressful situations, the flexible group adopted the perceptual dimensions of controllability and impact. The active-inflexible group did not adopt any given dimensions in perceiving the situations. Taken together, these results showed that the flexible group displayed a greater extent of differentiation in perceiving stressful events than did the active-inflexible group.

Integration and Coping Flexibility

Integration was operationalized by the development of conceptual associations between the perceived dimensions of stressful situations and coping responses. Profile analysis was conducted to examine such conceptual associations. Following the procedures outlined by Tabachnick and Fidell (1996), the overall group difference in the strategy-situation profile was examined first.

For the monitoring strategy-situation profile, results showed a statistically significant group difference, $F(1, 126) = 71.22, p < .0001$ (partial Eta squared = .36), indicating that the monitoring strategy-situation profile of the flexible group differs from that of the active-inflexible group. Then a parallelism test, which tests the Group \times Situation interaction, was conducted to examine whether the shape of the strategy-situation profile was different between the groups. Results from the parallelism test revealed a statistically significant interaction effect, $F(7, 875) = 10.96, p < .0001$ (partial Eta squared = .08), indicating that the profile shape was different for the groups.

Two sets of interaction contrasts analysis were conducted to further explore the interaction effect. First, the within-participant effect of situation was examined for each group. For the flexible group, the ANOVA results revealed that the situation effect was statistically significant, $F(7, 651) = 63.36, p < .0001$ (partial Eta squared = .41). The situation effect was also statistically significant for the active-inflexible group, $F(7, 224) = 5.88, p < .0001$ (partial Eta squared = .16). These results showed that although participants of both groups did vary their use of monitoring across the eight stressful situations,

the cross-situation variability in monitoring for the flexible group was greater than that for the active-inflexible group. Second, the source of group differences in the use of monitoring for each stressful situation was examined. Post hoc Bonferroni tests showed that the flexible group deployed fewer monitoring strategies than did the active-inflexible group in the situations of Dentist, Layoff, Plane, Ballgame, and Terminal Cancer ($ps < .01$). It is noteworthy that these situations were perceived as uncontrollable by the flexible group (see Figure 3). However, in the situations of Hostage, Business Dinner, and Early Cancer, the flexible and the active-inflexible groups deployed the same number of monitoring strategies ($ps > .17$). These situations were perceived as controllable by the flexible group (see Figure 3).

For the blunting strategy-situation profile, results revealed a statistically significant group difference, $F(1, 126) = 32.66$, $p < .0001$ (partial Eta squared = .21), indicating that the blunting strategy-situation profile of the flexible group differed from that of the active-inflexible group. Then a parallelism test, which tests the Group \times Situation interaction, was conducted to examine whether the shape of the blunting strategy-situation profile was different for the two groups. Results from the parallelism test revealed a statistically significant interaction effect, $F(7, 875) = 13.07$, $p < .0001$ (partial Eta squared = .07).

The within-participant effect of situation was first examined for each group. For the flexible group, results showed that the situation effect was statistically significant, $F(7, 651) = 13.20$, $p < .0001$ (partial Eta squared = .12). The situation effect was also statistically significant for the active-inflexible group, $F(7, 224) = 5.18$, $p < .0001$ (partial Eta squared = .14). These results showed that the shape of the blunting profile was similar for the two groups.

Conclusion. The present results showed that, compared to the active-inflexible group, the flexible group had more variable strategy-situation profiles. The monitoring strategy-situation profile of the flexible group bore a greater resemblance to the expert prototype profile. Participants of the flexible group deployed more monitoring strategies to handle situations perceived as controllable, but less monitoring strategies to handle situations perceived as uncontrollable. Their strategy-situation profile did reveal some conceptual integration in that the distinct strategies of monitoring were blended into

an integrated strategy. The integrated strategy incorporates the strength of the monitoring strategy to meet the specific demands of situations with distinct outcome controllability. However, the relatively flat strategy-situation profile of the active-inflexible group revealed that participants in this group deployed monitoring strategies regardless of situational characteristics. Taken together, the monitoring strategy-situation profile of the flexible group reflected more integration than that of the active-inflexible group.

DISCUSSION

As hypothesized, results from this study reveal that individuals higher in coping flexibility display a greater extent of differentiation and integration than do those lower in coping flexibility. Specifically, individuals who cope more flexibly tend to differentiate among stressful events using the perceptual dimensions of controllability and impact, and deploy an integrated strategy to handle stressful events with different extents of controllability. This integrated strategy refers to greater use of monitoring strategies in controllable situations and less use of monitoring in uncontrollable situations. By contrast, individuals who cope less flexibly perceive stressful situations as largely similar and consistently use more monitoring regardless of the characteristics of stressful situations.

It is noteworthy that the blunting strategy-situation profile was relatively less distinct between the groups. One possibility is that blunting is generally perceived by university students as socially undesirable (see, e.g., Flett, Blankstein, & Obertynski, 1996; Rambo-Chroniak, 1999). As shown in this study, most of the participants tended to use less blunting than monitoring strategies. This finding is consistent with other studies (e.g., Li, 1997; Westman & Shirom, 1995), which reveal that university students have a propensity for perceiving situations as more controllable and use more monitoring or approach coping to handle stressful events than do older adults. Variability in deploying blunting strategies may be more influenced by personal preferences than by flexible perception of stressful situations. Another possibility is that perceived control is closely associated with the use of monitoring, as proposed by the theory of cognitive adaptation to threatening events (Taylor, 1983) and the theory of reactance (Brehm, 1972). However, blunting may be close-

ly related to factors other than perceived control. Studies (e.g., Cohen, 2002; Ravindran, Matheson, Griffiths, Merali, & Anisman, 2002) reveal that blunting is related to pessimism and depression. Individuals with depression tend to use more blunting strategies than those without depression. As shown in this study, participants in the flexible group and those in the active-inflexible group did not differ in depression levels. This lack of difference in depression levels between the groups may account for the absence of differences in their blunting strategy-situation profiles.

Theoretical and Research Implications

The present results may have broader theoretical implications for the coping literature. The transactional theory of coping (Lazarus, 1993; Lazarus & Folkman, 1987) proposes that the coping process begins with individuals' cognitive appraisal of whether an encountered stressful event will have an impact on them (i.e., primary appraisal). Then they think about possible outcomes and what action they can take to handle the event (i.e., secondary appraisal). The present study may extend this theory in two major ways. First, the present results suggest that not all individuals undergo the same series of primary-secondary appraisal processes and some individuals may be less attuned to situational characteristics when deciding how to cope. This stress appraisal process as posited by the transactional theory may be more applicable to individuals who cope more flexibly than to those who cope less flexibly. The present findings further reveal that the extent of differentiation and integration may account for such individual differences. Hence, the issue of individual differences in the stress-appraisal process should receive greater attention among coping theorists and researchers in the study of coping flexibility.

Second, apart from individual differences in the underlying cognitive processes, results from this study also suggest that the cognitive processes underlying coping flexibility may be distinct for different kinds of coping strategies. For individuals high in coping flexibility, their use of monitoring may be closely linked to their perception of controllability of stressful situations. They may vary their use of monitoring as the extent of perceived controllability changes. Their use of blunting, however, may not be related to perceived controllability. As discussed previously, the greater use of blunting is associated with higher levels of depression. To examine

the cognitive processes underlying flexible deployment of blunting strategies across situations, further studies should be conducted among students with more severe levels of depression or among individuals with clinical depression. Taken together, future studies may explore both individual differences in cognitive processes and the nature of strategy characteristics as well as their conjoint influences on the use of flexible strategies.

Practical Implications

These results may also have practical implications for the design of stress management workshops. Most existing workshops emphasize enhancement of coping skills, such as problem solving and perspective taking (see, e.g., McNamara, 2001; Smith, 2002). The design of these workshops is generally based on the conceptualization of coping flexibility as the possession of a broad coping repertoire that equips individuals to handle a diversity of situational demands (see, e.g., Haythornthwaite, Menefee, Heinberg, & Clark, 1998; Schmidt et al., 2002). In this conceptualization, the application of diverse strategies is proposed as an effective way to manage stress rather than responding reflexively with a limited repertoire of strategies to changing stressful circumstances.

Although it is important to broaden the coping repertoire of workshop participants by acquiring new coping strategies, it seems to be more important to understand how to deploy various strategies to meet distinct situational demands. This study showed that, compared to individuals lower in coping flexibility, individuals higher in coping flexibility, who experience less anger and anxiety, are characterized by a greater ability to differentiate among distinct stressful events and to apply an integrative strategy to handle different stressors. In light of these findings, we advocate that workshop participants also learn two possible “meta-skills” of differentiation and integration, both of which emphasize how to apply flexibly the learned skills of coping with stressful situations appropriately. Specifically, stress management workshops may strengthen participants’ ability to (a) differentiate among different types of stressful situations using dimensions such as controllability and impact, (b) recognize the pros and cons of various coping strategies, and (c) formulate integrated strategies to deploy situation-appropriate strategies to handle distinct types of stressful events. Because the present

results were derived from a sample of Chinese university students, these suggestions may not necessarily be generalizable to individuals of other age groups, individuals from other cultural contexts, or both.

Directions for Future Research and Concluding Remarks

Before concluding, several caveats for this study are noteworthy. First, this study is the first to examine perceived complexity in coping patterns across situations. It is important to note that hypothetical stressful situations were used in order to identify common dimensions underlying the perceptual processes. Results may only reflect individuals' ability to discern subtle differences embedded in distinct hypothetical situations, and thus, the present results should be considered as tentative. Whether such cognitive astuteness will be applied to individuals' actual perception of real-life stressful situations still remains to be explored. One possible obstacle to the use of real-life situations is that different individuals tend to report stressful events with distinct nature, thus making comparisons and the identification of common perceptual dimensions difficult, if not impossible. Researchers are encouraged to resolve this problem in examining the coping processes underlying stress appraisals of real-life stressful situations.

Second, it is also important to note that participants in this study were university students, who are characterized by a restricted range of age (i.e., young adults aged between 18 and 25) and education level. Studies (e.g., Li, 1997; Palisi & Canning, 1991) have shown that, compared to older adults and individuals with lower education levels, younger adults and individuals with higher education levels generally perceived that they have more control over an event outcome and use more approach coping. The generalizability of the present findings to the general population remained to be explored. Future studies should expand the scope of participants to a more heterogeneous sample in terms of age and education level.

Finally, it is noteworthy that participants of this study were ethnically Chinese. The generalizability of these results to Western populations remained inconclusive. Previous cross-cultural studies (e.g., Ji, Peng, & Nisbett, 2000; Peng & Knowles, 2003) have revealed differences in the perceptual style between Chinese and American students. When making decisions and attributions, American students tended to focus on internal factors, whereas Chinese students

tended to focus on situational factors. It is possible that the Chinese may be more sensitive to situational changes and thus more flexible in their perceptual patterns than their American counterparts (see Cheng, Lee, & Chiu, 1999 for a discussion). Other findings (e.g., McCarty et al., 1999; Rokach, 1999) also showed cultural differences in the use of coping strategies. While Americans tended to use more behavioral coping, Asians tended to use more cognitive coping. Taken together, the cognitive and coping patterns as found in this study may be different for Western samples.

To conclude, this study suggests that differentiation and integration are two relevant appraisal processes related to individual differences in coping flexibility. These two processes may provide rich perceptions and fine distinctions among specific situational characteristics and may facilitate the deriving of alternative strategies and making of choices among alternatives to meet distinct situational demands.

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Appendix A: Situations of the Extended Miller Behavioral Style Scale (EMBSS)

Dentist

Vividly imagine that you are afraid of the dentist and have to get some dental work done.

Hostage

Vividly imagine that you are being held hostage by a group of armed terrorists in a public building.

Layoff

Vividly imagine that, due to a large drop in sales, it is rumored that several people in your department at work will be laid off. Your supervisor has turned in an evaluation of your work for the past year. The decision about lay-offs has been made and will be announced in several days.

Plane

Vividly imagine that you are on an airplane, 30 minutes from your destination, when the plane unexpectedly goes into a deep dive and then suddenly levels off. After a short time, the pilot announces that

nothing is wrong, although the rest of the ride may be rough. You, however, are not convinced that all is well.

Dinner

Vividly imagine that your supervisor and you attend a business dinner. You have not attended this kind of formal dinner before. You realize that you do not know any guests who attend the dinner.

Ballgame

Vividly imagine that you have to participate in a very important ballgame. The outcome of the ballgame will have a huge impact on your team's reputation. Your team has been widely expected to be the champion. The audience cheers your team loudly in the stadium.

Early Cancer

Vividly imagine that you go to the clinic to get a body-check report. The doctor tells you that the report shows that you have got early stomach cancer, which can be controlled by medication.

Terminal Cancer

Vividly imagine that you have had stomach cancer for a long time. One day your doctor tells you that your cancer has reached a terminal stage and asks you to enjoy the rest of your life.