

Cognitive and Motivational Processes Underlying Coping Flexibility: A Dual-Process Model

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Discriminative facility was proposed as a cognitive process and need for closure was proposed as a motivational process underlying coping flexibility. The dual-process model posits that need for closure influences discriminative facility, which in turn modifies coping flexibility and psychological adjustment. In Study 1, results of structural equation modeling provided support for the dual-process model. This model was further examined using experimental methods (Study 2) and a prospective design (Study 3). Consistent with the dual-process model, results from all 3 studies showed that participants who were more motivated to seek alternative coping strategies tended to encode stressful situations in a more differentiated way. These individuals used a greater variety of strategies to fit different situational demands and were better adjusted.

Coping flexibility has aroused interest among researchers over the past 2 decades (e.g., Cheng, 2001; Compas, Malcarne, & Fondacaro, 1988; Forsyth & Compas, 1987; Vitaliano, DeWolfe, Maiuro, Russo, & Katon, 1990). Problem-focused coping was found useful in mitigating anxiety in controllable stressful events (e.g., Kim, Won, Liu, Liu, & Kitanishi, 1997; Marx & Schulze, 1991), but it could also elicit more anxiety in uncontrollable stressful situations (e.g., Cheng, Hui, & Lam, 1999; Miller, Rodolletz, Schroeder, Mangan, & Sedlacek, 1996). The stress-relieving role of emotion-focused coping was indicated in uncontrollable stressful situations (e.g., Chan & Hui, 1995; Holmes & Stevenson, 1990), but not in controllable stressful situations (e.g., Baum, Fleming, & Singer, 1983; Levenson, Mishra, Hamer, & Hastillo, 1989). Of more importance, individuals who keep using a particular type of coping strategy or those who vary their strategies randomly tend to report more anxiety (Cheng, 2001) and more psychosomatic symptoms (Cheng et al., 1999; Cheng, Hui, & Lam, 2000) than did those who vary their coping strategies according to the nature of stressful situations.

This body of research has advanced our knowledge by highlighting the conjoint influence of individuals' coping patterns and situational characteristics on coping effectiveness. However, there are two major gaps of knowledge to be filled. First, although coping is generally regarded as a process (see e.g., Lazarus &

Folkman, 1984; Moos & Schaefer, 1993), the question of how situation-appropriate coping is generated and linked to effective handling of life stressors remains unknown. Second, although vast differences in coping flexibility among individuals have been revealed, no attempts have been made to explore the more fundamental issue of why such individual differences exist. The present research was conducted to address these crucial but unexplored issues. Specifically, the issue of how situation-appropriate coping is generated was addressed by exploring a cognitive process underlying coping flexibility. The issue of individual differences in coping flexibility was addressed by exploring a motivational process. Two process models were proposed to explain how these cognitive and motivational processes may be related to coping flexibility and psychological adjustment.

Discriminative Facility as a Cognitive Process

Coping flexibility is conceptualized as a good fit between the characteristics of coping strategies and the nature of stressful events (Aldwin, 1994; Linville & Clark, 1989). For effective coping to take place, coping needs to be fine-tuned to meet the specific demands of different stressful situations. Such fine-tuning requires some cognitive ability (Neufeld, 1999). The transactional theory of coping (Lazarus & Folkman, 1984) proposes that cognitive processes "intervene between the encounter [i.e., the stressful situation] and the reaction [i.e., coping responses]" (Lazarus & Folkman, 1984, pp. 22–23). The cognitive individual-difference variable of discriminative facility (Mischel, 1984; Mischel & Shoda, 1995) may explain the process underlying how individuals deploy situation-appropriate or -inappropriate coping strategies when encountering stressful events. Discriminative facility refers to individuals' active appraisal of situational characteristics, and their choice among alternative behaviors in response to changing contingencies (Cheng, Chiu, Hong, & Cheung, 2001; Chiu, Hong, Mischel, & Shoda, 1995; Roussi, Miller, & Shoda, 2000; Shoda, 1996).

In this research, discriminative facility was proposed to regulate the display of effective coping behaviors through attending and

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responding to cues embedded in different types of stressful situations. This proposal was made on the basis of two sources. First, the construct of discriminative facility is related to cognitive competence. Compared with their counterparts lower in discriminative facility, individuals higher in discriminative facility responded to hypothesized stressful situations in ways more similar to those situation-appropriate responses made by experts (Cheng et al., 2001, Studies 1 and 2; Chiu et al., 1995). Second, the adaptive nature of discriminative facility has been well documented in previous research, as evidenced by its close association with adaptive outcomes in interpersonal relations and psychological well-being. Compared with individuals lower in discriminative facility, individuals higher in discriminative facility tend to have more pleasant and less conflictive social relations (Cheng et al., 2001, Study 2; Chiu et al., 1995) and to experience lower levels of anxiety (Cheng et al., 2000, 2001, Study 1; Roussi et al., 2000). Of more importance, the study by Cheng et al. (2000) revealed that participants with higher levels of discriminative facility had more flexible coping patterns than had those with lower levels of discriminative facility, thus suggesting that discriminative facility and coping are related in certain ways. In light of these findings, discriminative facility was proposed to be a cognitive process underlying coping flexibility.

Need for Closure as a Motivational Process

Although unveiling the cognitive processes underlying coping flexibility may enhance our understanding of the deployment of coping strategies, it is also important to address the question of why individuals are flexible or rigid in their use of coping strategies. Most people attempt to reduce anxiety in response to stressful situations, but they use different means to meet their distinct goals. Motivation plays an important role in influencing individuals' responses to situations for goal attainment. Needs theories (e.g., Maslow, 1970; Murray, 1938) posit that behaviors are motivationally influenced by certain needs. The construct of need for closure (Kruglanski, 1989) may be a motivational force that accounts for individual differences in coping flexibility because it is akin to goal attainment (Pervin, 1989). Need for closure refers to the desire for certainty and intolerance for ambiguity through the inclination to "seize" and then "freeze" on early judgment cues.

Encountering a stressful event elicits a considerable amount of ambiguity and uncertain feelings. Need for closure is deemed highly relevant to coping processes because it reflects individual differences in the ability to tolerate uncertainty when construing new knowledge (Kruglanski & Webster, 1996). Consistent with this notion, a study by Byun, Lee, You, and Lee (1997) revealed that participants with a higher need for closure, who experienced more discomfort in ambiguous situations, were more susceptible to the adverse impact of stress than were their counterparts with a lower need for closure. This finding indicates that individual differences in susceptibility to stress are related to need for closure. In times of stress, such a need may actuate individuals to act toward their own goal (e.g., to reduce anxious feelings, to solve the problem), bias their choices of coping strategies toward closure-bound pursuits, and induce affect when the goal is attained or not attained. Hence, need for closure was proposed to be a motivational process related to individual differences in coping flexibility.

Two Possible Models of Coping Flexibility

In this research, discriminative facility was proposed as a cognitive process and need for closure as a motivational process underlying coping flexibility. Two models were derived to explain how these two processes may be related to coping flexibility and psychological adjustment. The dual-process model hypothesizes that need for closure is the motivational basis that influences discriminative facility, which in turn modifies coping flexibility and psychological adjustment. This model is derived from the theory of lay epistemics (e.g., Bar-Tal & Bar-Tal, 1988; Kruglanski, 1989), which proposes that need for closure exerts a braking force on information processing. A myriad of studies (e.g., Dijksterhuis, van Knippenberg, Kruglanski, & Schaper, 1996; Ford & Kruglanski, 1995; Richter & Kruglanski, 1998; Shiloh, Koren, & Zakay, 2001) supported this notion by showing that need for closure is a motivational force that influences a variety of cognitive processes, such as person perception and judgment. Individuals higher in need for closure are more motivated to bring information processing to a close by leaping to a conclusion. Individuals lower in need for closure are more motivated to keep such processing going by delaying making a conclusion to avoid premature judgment. In light of a recent finding (Shiloh et al., 2001) revealing a significant influence of need for closure on decision complexity, the dual-process model proposes that need for closure may influence discriminative facility, which may in turn influence coping flexibility and psychological adjustment.

The interactionist-process model posits that need for closure interacts with discriminative facility and has a conjoint influence on coping flexibility and psychological adjustment. In the theory of lay epistemics (e.g., Bar-Tal & Bar-Tal, 1988; Kruglanski, 1989), motivation and cognitive processes are "conceptually separate and functionally complementary" and these processes are proposed as "jointly essential to understanding human epistemic behavior" (Kruglanski & Klar, 1987, p. 215). As speculated above, individuals higher in discriminative facility may encode information in a more elaborate way and display a greater extent of coping flexibility when handling stress. Individuals with lower needs for closure, who are more tolerant of ambiguity and motivated to come up with more alternatives, may also exhibit a greater extent of coping flexibility. Adopting an interactionist perspective, this model posits that individuals with both higher discriminative facility and lower needs for closure may display an even more flexible coping pattern than those with either higher discriminative facility or lower needs for closure.

Overview of the Present Research

On the basis of previous theories and research findings, I proposed two process models that attempted to explain individual differences in some personality processes underlying coping flexibility. The elements unique to these models include discriminative facility as a cognitive process that may account for how situation-appropriate or -inappropriate coping is generated; and need for closure as a motivational process that may explicate why individuals differ in the extent of coping flexibility.

By adopting a multimethod approach to coping (see Cheng, 2001), the present research sought to examine these models with different methods. In Study 1, the self-report method was used

because a large sample was needed for a thorough testing of the models using structural equation modeling. Study 2 was conducted to replicate the findings of Study 1 by a more refined and sophisticated experimental method. Study 3 further extended these studies with a prospective design, so as to (a) capture the actual process of how patients cope with a health problem within a 2-month period and (b) examine predictive relationships between elements of the model and psychological adjustment in 2 months' time. Using different methods with distinct samples enables independent assessment of various elements of the models, thus providing a more robust testing of the proposed models.

Study 1

Transition to university life is an appropriate context for studying coping flexibility because it involves a myriad of new life tasks, including academic, social, emotional, and attachment adjustment (Cantor, 1994; Halamandaris & Power, 1997; Mathis & Lecci, 1999; Tao, Dong, Pratt, Hunsberger, & Pancer, 2000; see also Higgins & Parsons, 1983; Levinson, 1978). First-year university students who adjusted well to the university environment displayed considerable flexibility in their appraisals of and reactions to different demanding life tasks (Zirkel & Cantor, 1990). The proposed models of coping flexibility were tested in the context of first-year university students' adjustment to university life.

Self-report measures were used to assess various elements of the proposed model, namely participants' perception of stress, need for closure, discriminative facility, coping, and anxiety in this study. It is noteworthy that self-report measures may be influenced by the problem of social desirability, which refers to the respondents' tendency to provide socially desirable answers. Self-report measures are also susceptible to the bias of negative affectivity because questionnaires of personality, coping, and anxiety may contain the component of negative affectivity (for a discussion, see Costa & McCrae, 1990; Parker & Endler, 1996; Stanton, Danoff-Burg, Cameron, & Ellis, 1994; Watson & Pennebaker, 1989). To minimize these problems, possible influences of these variables on the target variables of the models were examined.

Method

Participants

Two hundred eight first-year university students in Hong Kong were recruited through an advertisement, which was distributed in several introductory classes and placed on the university electronic bulletin board. Five students who had obtained a degree from another university and 3 mature students were excluded. The remaining 200 participants (112 females and 88 males) had just entered the university from high school. Their average age was 19.67 years ($SD = 1.26$). Participants were paid 50 Hong Kong dollars (approximately \$6) for taking part in this study. Informed consent was obtained from them before the study began.

Measures

Coping flexibility. The Inventory of College Students' Recent Life Experiences (ICSRLE; Kohn, Lafreniere, & Gurevich, 1990) was used to identify the stressful events encountered by first-year university students in transition to university life. The ICSRLE comprised 49 stressful events. Participants were instructed to endorse all the stressful events that occurred

during their first month of university life. For each endorsed stressful event, they rated the extent of controllability and stressfulness on 6-point scales (ranging from 1 = *extremely uncontrollable* to 6 = *extremely controllable* and 1 = *not stressful at all* to 6 = *extremely stressful*, respectively). The ICSRLE has been shown to be a reliable and valid measure (Chen & Zheng, 1999; Lai, 1995).

The Coping Flexibility Questionnaire (CFQ; Cheng, 2001) was used to examine coping flexibility. Participants were instructed to describe all the strategies deployed to handle each endorsed stressful event in the ICSRLE, and then to classify each strategy into one of two categories: "strategy used for managing the event" (i.e., problem-focused) and "strategy used for regulating the emotion associated with the event" (i.e., emotion-focused). If participants considered that their goal of using a particular strategy applied to both options, they were instructed to choose the one that represented their primary goal for using that strategy. A strategy-situation fit index was derived to reflect the extent of situation-appropriateness of coping patterns. According to the goodness-of-fit theories (see, e.g., Aldwin, 1994; Miller, 1992), problem-focused coping is more effective in handling controllable stressful situations, whereas emotion-focused coping is more effective in handling uncontrollable stressful situations. The scoring criterion used in Cheng's (2001) study was adopted: A score of 1 was given to the use of (a) problem-focused coping in a controllable stressful situation, or (b) emotion-focused coping in an uncontrollable stressful situation. A score of zero was given to the use of (a) problem-focused coping in an uncontrollable stressful situation, or (b) emotion-focused coping in a controllable stressful situation. Because there are considerable individual differences in the number of coping strategies used, the scores are aggregated and then divided by the total number of coping strategies. This index ranges from 0 to 1. The CFQ displayed good reliability and criterion-related validity (Cheng, 2001).

Discriminative facility. The Extended Miller Behavioral Style Scale (EMBSS; Cheng et al., 2001) was used to assess discriminative facility. The EMBSS includes eight hypothetical situations. Each situation consists of four monitoring and four blunting strategies. The endorsement of an EMBSS item that matches the situation-appropriate criteria (see Cheng et al., 2001; Chiu et al., 1995) was given a score of 1 and the endorsement of an item that does not match those criteria was given a score of 0. The EMBSS has good internal consistency and criterion-related validity (Cheng et al., 2000, 2001).

Need for closure. The Need for Closure Scale (NFCS; Webster & Kruglanski, 1994) was used in this study. The NFCS comprises 42 items, each with a 6-point response criterion (ranging from 1 = *strongly disagree* to 6 = *strongly agree*). The NFCS has good internal consistency, criterion-related validity, and construct validity (Chiu, Morris, Hong, & Menon, 2000; S. F. Lam, Lau, & Chiu, 1998).

Anxiety. The State-Trait Anxiety Inventory (STAI Form Y-2; Spielberger, Gorsuch, & Lushene, 1970) was used to assess anxious feelings. This scale comprises 20 statements, each with a 4-point response criterion (ranging from 1 = *almost never* to 4 = *almost always*). The STAI has been found to be a reliable and valid measure (Shek, 1988; Ye, 1990).

Negative affectivity. The Neuroticism subscale of the Eysenck Personality Questionnaire (EPQ-N; H. J. Eysenck & Eysenck, 1975) was used to assess negative affectivity. This subscale comprises 19 items and respondents give "yes" (1) or "no" (0) answers. The EPQ has good reliability and criterion-related validity (S. B. Eysenck & Chan, 1982).

Social desirability. For the assessment of social desirability, the Marlowe-Crowne Social Desirability scale (MCSD; Crowne & Marlowe, 1960) was used. The MCSD consists of 33 items, and respondents indicate "yes" (1) or "no" (0). The MCSD displays good reliability and criterion-related validity (Yang, 1997).

Procedures

At the end of September, a package of questionnaires was administered to participants in groups of 8 to 10. The presentation order of question-

naires was counterbalanced to minimize order effects. 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 questionnaires. On completion, they were debriefed, paid, and thanked for their participation.

Results and Discussion

Multivariate analysis of variance (MANOVA) procedures were used to examine the overall between-subjects effects of gender on all the variables. The effect of gender was nonsignificant, $F(6, 193) = 1.64, ns$. Table 1 shows the descriptive statistics of all the variables and the Pearson product-moment correlations among them.

To examine whether need for closure and discriminative facility are relevant mechanisms of coping flexibility, a regression analysis has been conducted with coping flexibility regressed on the two variables. Results revealed that both need for closure and discriminative facility have significant effects on coping flexibility (standardized regression coefficients = $-.34$ and $.29$, respectively; $ps < .001$), thus indicating that these two mechanisms are related to coping flexibility.

Test of Proposed Process Models

This study sought to test the goodness of fit of the proposed models by structural equation modeling, which allows simultaneous analyses of the entire system of variables in a model. The EQS 5.7b program (Bentler & Wu, 1998) was adopted. The viability of the tested models was evaluated by three indices of model fit. First, the chi-square fit index was examined for absolute model testing, that is, whether the model can predict what is actually observed. A nonsignificant chi-square fit index indicates that the model is empirically valid. Second, the root-mean-square-error of approximation (RMSEA) supplements the absolute model testing with its penalty function for lack of parsimony. A smaller value of RMSEA indicates a better model fit. Third, the comparative fit index (CFI) compares the goodness of fit among several models. Four models were evaluated in this study. The first was a null model (M_0), which posits no relationships between any of the measured variables. This model serves as a basis for estimating the variance in the data. The second was the dual-process model (M_1), which posits that need for closure influences discriminative facility that in turn modifies coping flexibility and anxiety. The third was

the interactionist-process model (M_2), which posits the presence of a conjoint influence of discriminative facility and need for closure on coping flexibility and anxiety. The fourth was the “reverse” model (M_3), which examines reverse relationships: coping flexibility and anxiety as possible causes, whereas the two processes as possible consequences. A greater CFI value indicates a better model fit.

Figure 1 summarizes the results of the structural equation modeling. The M_0 , M_2 , and M_3 were rejected because of their significant chi-square fit indices. The nonsignificant chi-square fit index of the M_1 indicates that this model adequately fits the data. With a RMSEA value of .10 and a CFI value greater than .90, results further showed a good model fit for the M_1 (see, e.g., Bentler, 1992, for a discussion on the criteria for good model fit). Taken together, different indices of model fit consistently provided support for the dual-process model (M_1) as the only model that fits the data. Results showed that need for closure was inversely related to discriminative facility (see Figure 1B), but had weak relationships with coping flexibility and anxiety (see Figure 1C). Research also showed that discriminative facility was associated with anxiety in two ways: It had (a) a direct inverse relationship with anxiety, and (b) an indirect relationship with anxiety through influencing coping flexibility (see Figures 1B and 1C). These results were consistent with the dual-process model of coping flexibility. Moreover, Figure 1D shows that the “reverse” relationships among these variables were generally weak, thus providing further support for the directionality of relationships among elements of this model.

In summary, results from this study suggest that a greater extent of coping flexibility is related to higher discriminative facility and a lower need for closure. Moreover, results of the structural equation modeling provide tentative support for the dual-process model of coping flexibility in showing that need for closure is the motivational basis that influences discriminative facility, which in turn modifies coping flexibility and anxiety.

Study 2

This study sought to replicate and extend the generality of the findings from Study 1 by experimental methods. In this study, an experiment was designed on the basis of three existing experimental paradigms. First, the goodness-of-fit paradigm designed for assessing coping flexibility (see Cheng, 2001, Studies 2 and 3) was

Table 1
Zero-Order Correlation Coefficients and Descriptive Statistics for Variables of Study 1
($n = 200$)

Variable	2	3	4	5	6	<i>M</i>	<i>SD</i>
1. DF	-.28***	.39***	-.29***	.03	-.10	33.95	14.48
2. NFC	—	-.30***	.16*	.01	.09	96.59	63.31
3. CF		—	-.34***	-.06	.08	0.38	0.24
4. ANX			—	.19**	-.01	43.97	6.48
5. NA				—	-.02	10.41	5.24
6. SDes					—	17.92	7.24

Note. DF = discriminative facility; NFC = need for closure; CF = coping flexibility; ANX = anxiety; NA = negative affectivity; SDes = social desirability.
* $p < .05$. ** $p < .01$. *** $p < .001$.

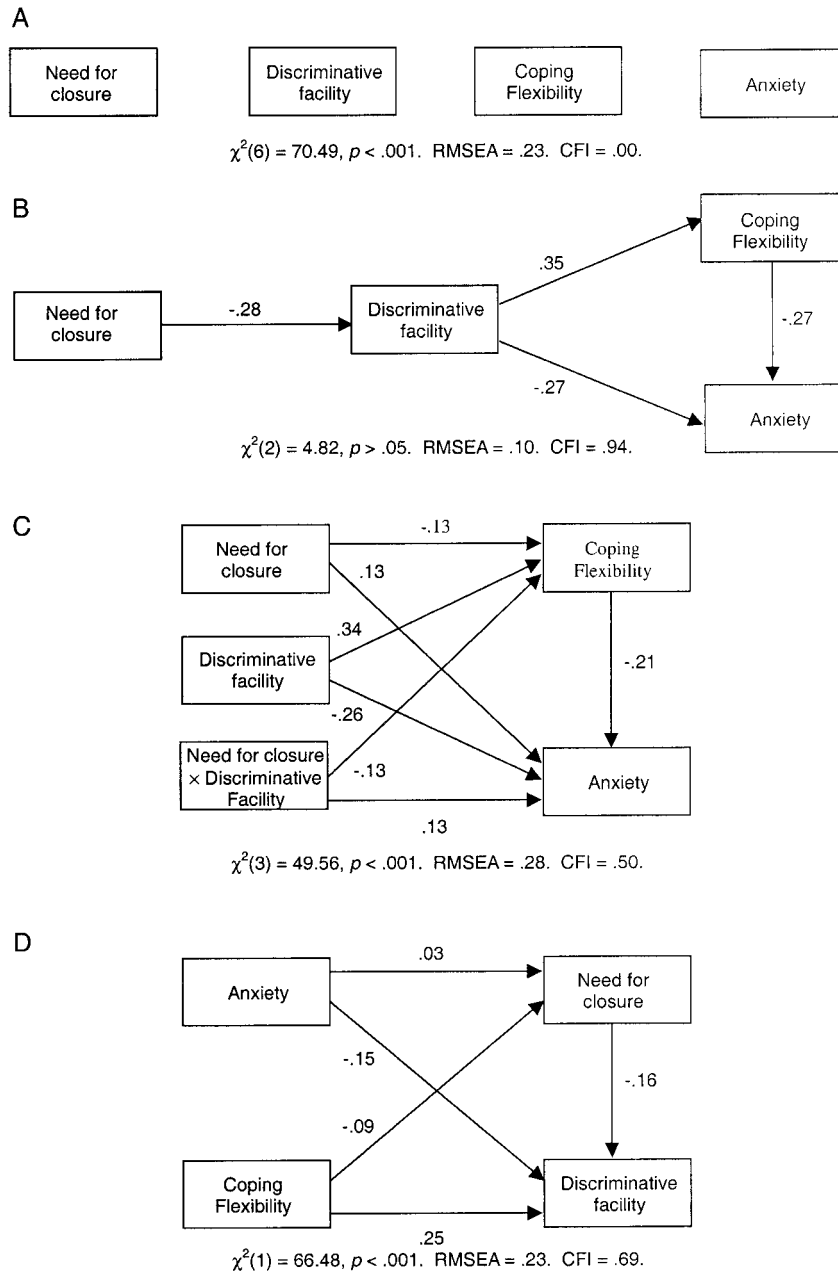


Figure 1. Summary of model testing with goodness-of-fit indices for all path models (numbers next to arrows represent standardized loadings from structural equation modeling). A = the null model (M_0); B = the dual-process model (M_1); C = the interactionist-process model (M_2); D = the “reverse” model (M_3). RMSEA = root-mean-square error of approximation; CFI = comparative fit index.

adopted to manipulate the nature of stressful situations, and to assess possible differences in coping and emotional responses across different situations. In this paradigm, participants underwent the same set of stressful tasks. Each set contained a variety of tasks. Flexibility in the participants’ coping patterns across different stressful tasks was examined. Coping flexibility was indicated by the extent of fit between the nature of stressful situations and the type of coping strategies used (see Aldwin, 1994; Folkman, Schaefer, & Lazarus, 1979; Menaghan, 1983; Miller, 1992). Anx-

ety levels both before and during the performance of stressful tasks were assessed by physiological measures. Second, a relatively objective assessment of discriminative facility was adopted using the conditional encoding paradigm proposed by Chiu et al. (1995). In the practice phase of the experiment, participants took some practice trials of different stressful tasks and then were instructed to think aloud through their strategies for handling the tasks. Their responses were recorded verbatim and analyzed to yield a discriminative facility–experiment (DF-E) score. Third,

need for closure was manipulated following the time-pressure paradigm designed by Kruglanski and Freund (1983). Some participants were randomly selected to undergo the high-need for closure condition with a tighter time constraint, which enhances one's motivation to come up with an answer quickly. The other half underwent the low-need for closure condition with a looser time constraint, which reduces one's motivation to come up with a quick answer.

Method

Participants

Three hundred thirty-one final-year university students in Hong Kong completed a set of questionnaires assessing discriminative facility, need for closure, and negative affectivity as a partial fulfillment of course requirements. One hundred thirty-three of them whose discriminative facility scores met the selection criteria were approached about whether they would like to participate in an experiment. Eight of them refused and 5 failed to show up. The final sample consisted of 120 university students (73 females and 47 males). The average age of the final sample was 22.16 years ($SD = 1.05$). This sample consisted of two groups, each with 60 participants. Participants whose discriminative facility scores fell one standard deviation above the group mean were assigned to the high-discriminative facility (high-DF) group. Those whose discriminative facility scores fell one standard deviation below the group mean were assigned to the low-discriminative facility (low-DF) group. There were 39 females and 21 males in the high-DF group and 34 females and 26 males in the low-DF group. Informed consent was obtained from all participants before the study began. All participants were paid 100 Hong Kong dollars (approximately \$12) for participation in this study.

Research Design and Procedures

Participants were assigned to one of the conditions of a 2 (discriminative facility [DF]: high vs. low) \times 2 (need for closure [NFC]: high vs. low) between-subjects design. They were assigned to either the high-DF or the low-DF groups according to their EMBSS-Form A scores. For the high-DF group, half of the participants were randomly selected to undergo the high-NFC condition (i.e., the high-DF/high-NFC group), whereas the other half underwent the low-NFC condition (i.e., the high-DF/low-NFC group). For the low-DF group, half were randomly assigned to the high-NFC condition (i.e., the low-DF/high-NFC group), whereas the other half were assigned to the low-NFC condition (i.e., the low-DF/low-NFC group).

All participants completed the tasks individually in a computer laboratory. A research assistant gave instructions and provided answers to questions raised by the participants. All the experimental stimuli were presented through a monitor under the control of a computer. Participants gave their responses through a keyboard connected to the computer, which recorded their answers and response times.

The experiment consisted of three parts. Part 1 was the cognitive interview, in which participants were first given 5 min to familiarize themselves with the two types of experimental tasks (i.e., controllable and uncontrollable tasks) and then 5 min to think about strategies to handle the tasks. They were instructed to "think aloud," that is, to say whatever came to mind while thinking about the strategies. Their verbal responses were recorded by a digital voice recorder for subsequent coding of sentences with condition encoding and the number of possible coping strategies generated.

Part 2 was the test phase, which comprised four blocks of trials. Each block lasted for 5 min. Two of the blocks contained controllable tasks, whereas the other two contained uncontrollable tasks. Within each block, the trials were presented in a randomized order. The blocks of controllable tasks (A) and those of uncontrollable tasks (B) were presented alternately.

The presentation order of these two types of tasks was counterbalanced (i.e., ABAB or BABA), and participants were randomly assigned to either of these orders. For all four groups, half of the participants performed the controllable task first (i.e., ABAB), and the other half performed the uncontrollable task first (i.e., BABA). The items that were used in the practice trials did not appear in the test trials.

Part 3 was the postexperiment phase. On completion of all the experimental tasks, participants reported their use of coping strategies in different tasks by filling out the CFQ. The EMBSS-Form B and a feedback form were then given. At the end of the session, participants were debriefed, paid, and thanked for their participation.

Measures

Stressful tasks. Procedures designed by the author (see Cheng, 2001) were used to induce stress. Two types of stressful tasks, controllable and uncontrollable, were given to all participants alternately. The controllable task was a test of memory and reaction time, and the task difficulty was set at a controllable level that made improvement in performance possible with practice. In this task, participants were asked to memorize a six-digit number before performing a judgment task, and to recall the number when prompted after the judgment task. Their task was to have as many correct recalls and accurate judgments as possible in 5 min.

The uncontrollable task was a "mental IQ" test, and the task difficulty was set at an uncontrollable level that made improvement in performance impossible even with practice. In this task, participants were asked to do mental calculations by multiplying as many pairs of three-digit numbers as possible in 5 min. The time limit for multiplying each pair of numbers was 30 s. These two types of tasks have been used in previous studies on stress induction (e.g., Cheng & Chiu, 2002; Hinton et al., 1992), and were found to display good criterion-related and discriminant validities (Cheng, 2001).

Coping flexibility. The CFQ (see Study 1 for details) was used to assess coping flexibility. On completion of the tasks, participants were asked to report all coping strategies used in each task. The scoring method of the strategy-situational fit index was the same as the method adopted in Study 1.

Discriminative facility. Discriminative facility was assessed in two ways. Before the study, participants were screened to take part in the main study according to their discriminative facility scores obtained from the EMBSS (see Study 1 for details). The EMBSS-Form A, which comprises the first four scenarios, was given in the pretest. The EMBSS-Form B, which comprises the last four scenarios, was given after the experiment as a manipulation check of group membership. To evaluate the extent of equivalence between these forms, the discriminative facility data of Study 1 were reanalyzed by splitting the EMBSS scores into two subscores. The Spearman-Brown correlation was used to evaluate the split-half reliability (e.g., Anastasi, 1988). Strong correlation coefficients were obtained between the subscores for Study 1 and Study 2 ($r_s = .92$ and $.89$, $p_s < .001$), indicating that these two forms are largely equivalent.

In the experiment, discriminative facility was measured by the conditional encoding paradigm designed by Chiu et al. (1995). Participants were first given samples of both controllable and uncontrollable stressful tasks. Then the technique of cognitive interview in which participants were instructed to "think aloud" while deriving strategies to handle these tasks was adopted, aiming to reveal the underlying cognitive processes (e.g., Frey & Oishi, 1995). Participants' responses were recorded verbatim and analyzed by conditional encoding, which refers to the "encoding of information into conditional *if . . . then . . .* propositions that link a behavior or outcome to the relevant psychological features in the situation" (Chiu et al., 1995, p. 51; see also Shoda, Mischel, & Wright, 1993a, 1993b). An example of conditional encoding is, "If the outcome of the task is relevant to the amount of my effort, I will try harder. But if the outcome is irrelevant to my effort, I will stop putting much effort into it." After the experiment, participants' verbal responses were coded by two independent research assistants who were blind to the research hypotheses and participants'

group memberships. The pilot study and Study 2 showed that the interrater consistencies were high (weighted $\kappa_s = .94$ and $.96$ respectively). This paradigm was shown to have high convergent and discriminant validities (Chiu et al., 1995).

Need for closure. Need for closure was also measured with two methods. Before the experiment, participants completed the NFCS (see Study 1 for details). In the experiment, participants' need for closure was manipulated by inducing the constraint of time pressure (see Kruglanski & Webster, 1996). The procedures designed by Kruglanski (e.g., Kruglanski & Freund, 1983) have been modified. In this study, participants were given 5 min for the cognitive interview and 20 min for the tasks in the experiment. Participants of the high-NFC group were told that most people need about 7 min for the cognitive interview and 30 min for the experiment to accomplish the tasks, whereas those of the low-NFC group were told that most people need about 3 min for the cognitive interview and 10 min for the experiment. Previous studies (e.g., Heaton & Kruglanski, 1991; Kruglanski & Freund, 1983) revealed that the time-pressure paradigm was effective for manipulating need for closure.

Anxiety. Anxiety was measured physiologically in this study. The physiological responses of anxiety were indicated by heart rate. A participant's heart rate was measured oscillometrically at 1-min intervals by a digital sphygmomanometer (UA-767, A&D, Tokyo, Japan), which was tied to the participant's nondominant arm. For each of these physiological measures, the various readings taken at 1-min intervals were averaged to yield an indicator of physiological stress response for each trial. Previous research on psychophysiological reactivity (e.g., Krantz & Manuck, 1984; Schwebel & Suls, 1999) has shown that this measure is sensitive to induced stress and is a valid indicator of anxiety responses.

To partial out the effects of individual differences in heart rate, heart-rate readings were obtained before the experiment as a baseline measure, and readings taken during the experiment were compared with the baseline readings. Thus, changes in heart rate, rather than the absolute readings, were examined in the present analyses.

Negative affectivity. The Neuroticism subscale of the EPQ (see Study 1 for details) was used to examine the possible confounding effect of negative affectivity.

Academic performance. Participants' examination results in both Chinese language and English language were examined to rule out the possibility that their verbal ability or fluency may confound with conditional encoding during the "think aloud" session. Moreover, their examination results in mathematics were examined to rule out the possibility that mathematics may influence their performance in digit-recall and mental calculation. At the end of the EMBSS-Form B, several blanks were given for participants to report their age, gender, and grades in Chinese language, English language, and mathematics from their high school public examinations. For each subject, the academic performance score ranges from 0 (*grade F*) to 5 (*grade A*). Results showed that both DF-E (conditional encoding) and the number of correct digit-recall trials were unrelated to the results in all these subjects (r values ranged from $.03$ to $.08$, *ns*). Regardless of their results in mathematics, participants could not give correct answers to the uncontrollable task of mental calculation.

Manipulation Checks

As a manipulation check of group membership, participants' discriminative facility scores were examined again with the EMBSS-Form B at the end of the experiment. Results showed significant differences in discriminative facility scores between the two groups both before and after the experiment, $t(118) = 41.72$ and 39.79 , respectively, $ps < .001$. Participants in the high-DF group ($M = 27.88$ and 28.07 for Form A and Form B, respectively) had higher scores than did their counterparts in the low-DF group ($M = 6.22$ and 5.93 for Form A and Form B, respectively), $F_s > 1,652.45$, $ps < .001$. These results indicate stable group membership for the present sample.

As a manipulation check of need for closure, participants were asked to give feedback on the adequacy of time allocation for performing the tasks. Specifically, at the end of the session, participants were given a feedback form with the following instructions:

Thank you for your participation in this experiment. Before you leave, we would like you to tell us whether you have had enough time to complete the tasks. Also, please suggest the optimal amount of time that should be allocated for completing the tasks.

Participants gave a rating on a 7-point scale, ranging from 1 (*not enough time given*) to 4 (*just enough time given*) to 7 (*too much time given*). Also, a blank was provided for participants to suggest the amount of time (in minutes) deemed appropriate for completing the tasks. Results showed significant differences in both the rating scale and the suggested time between the high- and low-NFC groups, $t(118) = -10.34$ and 9.85 , respectively, $ps < .001$. Participants in the high-NFC group ($M = 2.53$ and 31.62) gave a lower rating on the adequacy of time allocation and suggested a longer period for the experiment than did those in the low-NFC group ($M = 4.70$ and 17.42). These results indicate that participants' need for closure was successfully manipulated by the time-constraint paradigm.

In summary, this experiment adopted a 2 (discriminative facility: high vs. low) \times 2 (need for closure: high vs. low) \times 2 (presentation order: ABAB vs. BABA) \times 2 (task controllability: controllable vs. uncontrollable) design to examine cognitive and motivational processes that account for individual differences in coping flexibility and anxiety. Discriminative facility, need for closure, and presentation order are between-subjects variables, whereas task controllability is a within-subject variable.

Results and Discussion

A MANOVA was used to examine between-subjects effects of gender and group on all the major variables. Results showed a significant main effect of group, $F(21, 324) = 16.52$, $p < .001$ (effect size = $.52$), but the main effect of gender and the Group \times Gender interaction effects were nonsignificant ($F_s < 1.73$, *ns*). Participants in the four groups generally differed in all the variables ($F_s > 6.00$, $ps < .01$), except for need for closure and negative affectivity ($F_s < 1.64$, *ns*). Table 2 presents descriptive statistics of the variables and a summary of the post hoc Tukey's honestly significant difference tests for the four groups.

Table 3 presents the correlation coefficients among the variables. The patterns of relationships are similar to those of Study 1. In the present results, several interesting relationships are worth noting. First, although discriminative facility was assessed with different methods (i.e., by a structured self-report questionnaire and unconditional encoding in an unstructured cognitive interview), these two forms of discriminative facility yielded similar patterns of results in association with coping flexibility and anxiety. Second, unlike those results from Study 1, results from Study 2 revealed that the self-report scores for need for closure were unrelated to other variables in the model. This is because participants, regardless of their self-report scores on need for closure, were randomly assigned into the high-NFC or the low-NFC groups in this study. Thus, only the experiment data on need for closure, which was manipulated in this study, yielded relationships with other variables similar to those results of Study 1. Third, although Study 1 showed that negative affectivity was also associated with self-report anxiety levels, this study revealed that negative affectivity was unrelated to the physiological measure of anxiety. This result is consistent with the findings of Schwebel and Suls (1999).

Table 2
Descriptive Statistics for Variables of Study 2 as a Function of Discriminative Facility and Need for Closure

Variable	Low-DF/ Low-NFC (n = 30)		Low-DF/ High-NFC (n = 30)		High-DF/ Low-NFC (n = 30)		High-DF/ High-NFC (n = 30)	
	M	SD	M	SD	M	SD	M	SD
DF-Form B	5.13 _a	3.00	6.73 _a	3.10	28.43 _b	3.11	27.70 _b	2.51
DF-E	1.20 _a	1.03	0.80 _a	1.10	4.27 _c	1.95	2.17 _b	1.26
NFC	95.00 _a	59.81	112.80 _a	55.18	100.60 _a	59.87	99.33 _a	64.90
NPCS	1.90 _b	0.56	1.27 _a	0.45	3.10 _c	1.56	1.40 _a	0.50
CF	0.24 _a	0.14	0.23 _a	0.15	0.65 _b	0.19	0.30 _a	0.14
CHANX	29.90 _b	27.43	36.50 _b	29.42	7.73 _a	25.20	26.10 _b	26.06
NA	10.53 _a	5.46	9.87 _a	5.02	10.13 _a	5.68	9.60 _a	4.15

Note. Within each row, means that do not share a common subscript differ from each other by the post hoc Tukey honestly significant difference tests at $p < .05$. DF = discriminative facility; DF-E = discriminative facility-experiment data; NFC = need for closure; NPCS = number of possible coping strategies; CF = coping flexibility; CHANX = changes in anxiety (heart rate); NA = negative affectivity.

Test of Dual-Process Model

The dual-process model was examined again in this study by structural equation modeling. As shown in Figure 2, experimental manipulation of need for closure had an inverse association with discriminative facility. Discriminative facility was both directly associated with the physiological measure of anxiety, and indirectly associated with it through modifying coping flexibility.

Study 3

Study 3 examined coping processes involved in psychological adjustment to a distressing health problem. The target participants were patients who had just learned they had functional dyspepsia, whose dyspeptic symptoms cannot be explained by organic or

biochemical causes (Sahay & Axon, 1995; Wittman & Tytgat, 1995). Despite the absence of any apparent identified causes, individuals with this disorder suffer from chronic gastrointestinal difficulties, such as acute abdominal pain and disturbed bowel habits (see Morris, 1991; Talley & Piper, 1985). Receiving limited medical explanations and treatment from health care professionals, individuals with functional dyspepsia seek a variety of ways to relieve their unpredictable and distressing somatic symptoms (Cheng et al., 1999, 2000). The adoption of different coping strategies may result in distinct outcomes regarding psychological adjustment to functional dyspepsia.

This study extended Studies 1 and 2 in three ways. First, the characteristics of participants were broadened by recruiting a heterogeneous sample of patients with a variety of ages and educational levels. Second, a two-wave prospective design in which participants' need for closure and discriminative facility obtained at the initial wave was used to predict outcomes at the second wave 2 months later. Third, the scope of outcome measures was expanded by including measures other than anxiety. Because patient-rated dyspeptic symptoms, anxiety levels, and quality of life have been identified as important outcomes indicating adjustment to functional dyspepsia (see Rentz et al., 2001), these outcome measures were adopted in this study.

Table 3
Zero-Order Correlation Coefficients for Variables of Study 2
(n = 120)

Variable	2	3	4	5	6	7
1. DF-Form B	.55***	-.01	.02	.51***	-.28**	-.11
2. DF-E	—	.05	-.33***	.48***	-.20*	.06
3. NFC		—	.07	.02	.15	.04
4. NFC-E ^a			—	-.39***	.22*	-.06
5. CF				—	-.21*	.05
6. CHANX					—	.06
7. NA						—

Note. DF = discriminative facility; DF-E = discriminative facility-experiment data; NFC = need for closure; NFC-E = need for closure-experiment data; CF = coping flexibility; CHANX = changes in anxiety (heart rate); NA = negative affectivity.

^a Because NFC-E is a dichotomous variable (i.e., high-NFC vs. low-NFC conditions), its relationships with all other variables are represented by point biserial correlation coefficients (r_{pb}) in this table.

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

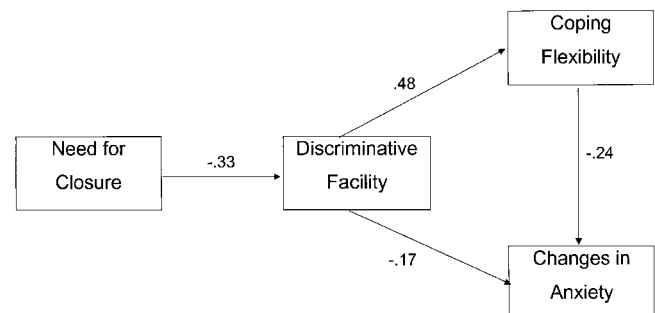


Figure 2. Path model depicting hypothesized links of the dual-process model of coping flexibility, Study 2 (numbers represent standardized loadings from structural equation modeling).

Method

Participants

Participants in this study were 100 outpatients from Hong Kong (57 females and 43 males). Their average age was 37.98 years ($SD = 10.66$, range = 19 to 66). The distribution of educational level for this sample was as follows: 17% primary school to junior high school, 49% high school, 24% matriculation, and 10% college/university.

Participants were recruited from a series of patients with functional dyspepsia randomly selected from the registration list provided by the gastroenterology section of the Queen Mary Hospital and the Tung Wah Hospital in Hong Kong. Patients included were those who (a) met the Rome II criteria of functional dyspepsia (see Drossman, Corazziari, Talley, Thompson, & Whitehead, 2000); (b) were endoscopically normal, that is, the endoscopic results indicated no physical abnormality or structural damage causing the dyspeptic symptoms; and (c) had never known they had functional dyspepsia until that appointment with the physician. Participants were paid 100 Hong Kong dollars (approximately \$12) to take part in both waves of this study. Every participant was asked to sign a consent letter before this study began. Seven participants dropped out from the second wave of the study. Participants who dropped out did not differ from those who took part in both waves of the study in any Time 1 measures (ts ranged from 0.17 to 1.04, ns).

Measures

Perceived stress and coping flexibility. The CFQ (see Study 1 for details) was used again in this study. Participants were first instructed to report any stressful event related to their dyspeptic problems (e.g., acute pain, conflict with family members) in the past 2 months. They rated the controllability and the stressfulness of each stressful event along 6-point scales (ranging from 1 = *extremely uncontrollable* to 6 = *extremely controllable* and 1 = *not stressful at all* to 6 = *extremely stressful*, respectively). Then they were instructed to recall all the strategies they had deployed to handle each event, and to classify the nature of each strategy as either "problem-focused" or "emotion-focused" (see Study 1). Procedures for calculating the strategy-situation fit index were identical to those used in Study 1.

Dyspeptic symptoms. The Dyspepsia Symptom Questionnaire (DSQ; Hu et al., 1999) was used to assess patient-rated dyspeptic symptoms. This measure comprises 24 common abdominal symptoms, with participants rating the severity of each symptom along a 4-point Likert scale. The DSQ has been found to display good internal consistency, test-retest reliability, criterion validity, and construct validity (Hu et al., 1999).

Quality of life. The Short-Form 36 Health Survey (SF-36; C. Lam, Gandek, Ren, & Chan, 1998) was adopted to examine generic health-

related quality of life. The SF-36 consists of 36 items. The SF-36 has been shown to be a reliable and valid measure (C. Lam et al., 1998; Thumboo et al., 2000).

Measures of discriminative facility, need for closure, anxiety, and negative affectivity were identical to those adopted in Study 1 (see Study 1 for details).

Procedures

In the first wave of this study, participants completed a set of questionnaires (discriminative facility, need for closure, anxiety, dyspeptic symptoms, quality of life, and negative affectivity) alone in a cubicle of the respective clinic in which they were recruited. On completion of the task, participants were thanked for their participation and asked to choose a time slot for their next appointment with the physician 8 weeks later. Three days prior to the appointment, a research assistant called them to remind them of the second part of the study. In the second wave, participants completed another set of questionnaires (perceived stress and coping flexibility, anxiety, dyspeptic symptoms, and quality of life) alone in the cubicle. The order of presenting these questionnaires was counterbalanced. After they had finished the task, they were debriefed, paid, and thanked for their participation.

Results and Discussion

This study aimed at testing the dual-process model with a two-wave prospective design. Instead of examining the interrelationships among the elements of the model at the same point of time, this study examined how need for closure and discriminative facility predicted changes in coping outcomes (i.e., anxiety, symptom severity, and quality of life) over a 2-month period. Differences between the scores of Time 2 measures and those of Time 1 (baseline) measures indicate changes across the period.

Between-subjects effects of gender, age, and educational level on all the variables were examined by a MANOVA. None of the main and the interaction effects were significant ($F_s < 2.07$, ns). Table 4 presents the descriptive statistics and the interrelationships among the variables. The patterns of relationships were highly similar to those of Studies 1 and 2.

Test of Dual-Process Model

The dual-process model was examined again using a prospective design by structural equation modeling. Figure 3 shows that

Table 4
Zero-Order Correlation Coefficients and Descriptive Statistics for Variables of Study 3 ($n = 93$)

Variable	2	3	4	5	6	7	<i>M</i>	<i>SD</i>
1. DF	-.31**	.43***	-.21*	-.19	.33**	.03	32.55	15.21
2. NFC	—	-.25*	.16	.21*	-.13	-.08	97.05	63.40
3. CF		—	-.42***	-.38***	.43***	-.05	0.32	0.23
4. CHANX			—	.48***	-.41**	.20	7.69	11.90
5. CHSYMP				—	-.30**	.08	5.73	13.95
6. CHQOL					—	-.08	-4.87	16.87
7. NA						—	9.88	5.82

Note. DF = discriminative facility; NFC = need for closure; CF = coping flexibility; CHANX = changes in anxiety over time; CHSYMP = changes in symptom severity over time; CHQOL = changes in quality of life over time; NA = negative affectivity.

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

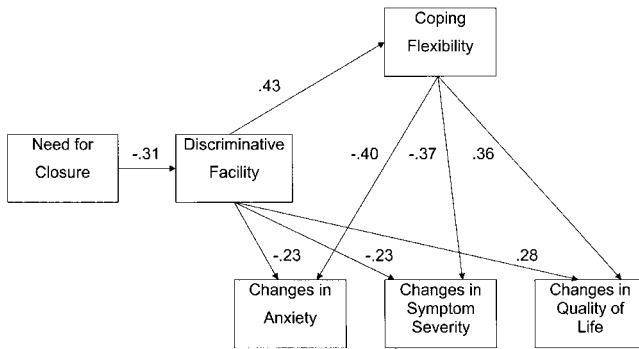


Figure 3. Path model depicting hypothesized links of the dual-process model of coping flexibility, Study 3 (numbers represent standardized loadings from structural equation modeling).

need for closure had an inverse relationship with discriminative facility. Discriminative facility was directly related to changes in anxiety, symptom severity, and quality of life across a 2-month period; and indirectly related to changes in these outcome measures through modifying coping flexibility. These results replicated those of Studies 1 and 2, thus providing further support for the dual-process model. Because this study adopted a prospective design, the present results extended these previous studies by showing that need for closure and discriminative facility can predict patients' coping flexibility and psychological adjustment 2 months later.

General Discussion

Adopting a multimethod approach, this research provided support for the dual-process model of coping flexibility. All three studies revealed that (a) discriminative facility is a possible cognitive process underlying coping flexibility, (b) need for closure is a possible motivational basis of coping flexibility, and (c) need for closure may influence discriminative facility, which may in turn modify coping flexibility and psychological adjustment. These results may advance our understanding of some cognitive and motivational processes underlying coping flexibility. More broadly, this research may have implications on discussions of dispositional differences and situational influences in the area of personality and social psychology, and on the design of stress management workshops.

Contributions to the Coping Literature

Many coping studies (e.g., S. L. Brown & Bedi, 2001; Catanzaro, 1997; Kardum & Krapic, 2001; Vollrath, Alnaes, & Torgersen, 1998) examine coping style and identify which coping styles are related to adaptive outcomes in stressful situations. The present research may extend this body of research by proposing a dual-process model, which seeks to explain individual differences in adaptive functioning in terms of some underlying processes. This model is an initial endeavor to address the unexplored "how" and "why" issues regarding adaptive coping.

The present research suggests that discriminative facility is a cognitive process underlying coping flexibility. Individual differences in this cognitive process may reveal how people formulate

strategies to cope flexibly or rigidly across different stressful situations. When devising a plan to cope with different stressful situations, individuals higher in discriminative facility may encode the situation in terms of specific *if-then* condition-response contingencies (see Chiu et al., 1995; Shoda et al., 1993a, 1993b; Shoda, Mischel, & Wright, 1994): "If the outcome of the stressful situation is amenable to change, then I will use problem-focused coping. If the outcome of the stressful situation is not amenable to change, then I will use emotion-focused coping." In contrast, individuals lower in discriminative facility may encode the situations in broad, abstract, and noncontextualized terms (Chiu et al., 1995), such as "The tasks are difficult" and "I have to actively do something to solve these problems." To sum up, the present results suggest that through the use of conditional encoding, some individuals make refined analyses of important features of stressful situations (e.g., controllability) and discriminative choices of coping strategies. Thus, their coping pattern may be more flexible and adaptive across situations.

This research also suggests that need for closure is a motivational force that influences discriminative facility. Individual differences in this motivational process may provide clues on why people differ in discriminative facility and coping flexibility. When encountering a myriad of stressful events with distinct natures, individuals higher in need for closure may be less flexible in coping because they tend to "seize" on a quick solution (e.g., a familiar or favorite coping strategy) and to "freeze" on this particular solution without considering other possible alternatives. However, individuals lower in need for closure may display more flexibility in coping because they are less likely to stick with a particular type of coping strategy and more motivated to think of a coping strategy most appropriate for each specific event. In short, individual differences in discriminative facility and coping flexibility may be attributable to the extent to which individuals are motivated to withstand uncertainty and search for alternative coping strategies.

Research and Practical Implications

Dispositional differences and situational influences have inspired considerable discussions and research studies among personality and social psychologists (e.g., Epstein, 1994; Mischel & Shoda, 1998; Vernon, 1964; Wright & Mischel, 1988). In the existing literature, dispositional differences have typically been examined by self-report questionnaires, whereas situational influences have typically been examined by experimental manipulations. This research adopted a multimethod approach to scrutinize both dispositional and situational influences on coping. As shown in this study, individuals higher in discriminative facility and coping flexibility can become less flexible under time constraint, which increases their motivation to seek an immediate solution. Such results suggest that both dispositional and situational characteristics can influence the processes through which individuals display a flexible array of behaviors across different stressful situations, and thus both the dispositional and the situational aspects of predictor variables should be examined for a comprehensive analysis of the coping process. The adoption of a multimethod approach enables the simultaneous examination of these two issues within a study.

Apart from having research implications, this research may also have practical implications on stress management intervention. The cognitive-behavioral approach is currently the most popular approach adopted in stress management workshops (e.g., Antoni et al., 2001; Berger & O'Brien, 1998; J. S. L. Brown, Cochrane, & Hancox, 2000; Kaluza, 2000). In these workshops, participants are taught a variety of cognitive (e.g., perspective taking, rational thought) and behavioral (e.g., problem-solving, interpersonal communication) skills to handle stress. The present results may provide further insights for mental health professionals in designing stress management workshops.

As shown in this research, discriminative facility and need for closure have been identified as possible processes underlying coping flexibility. Compared with their counterparts with higher anxiety levels, participants who were less anxious in stressful situations were more able to discriminate among characteristics of different stressful situations, and were motivated to seek more alternatives to cope with specific situational demands. In this light, the content of the workshop should focus not merely on the surface level through teaching participants skills to cope with stress, but also on the more fundamental level through (a) broadening their coping repertoire (e.g., problem-solving skills, emotion-regulating skills), (b) strengthening their ability to generate more strategies to deal with the stressful situation, and (c) enhancing their understanding of how to use these strategies appropriately. After the participants have acquired a repertoire of coping strategies, they can be taught the ways to distinguish among distinct characteristics of each type of coping skills, and among the demands of different stressful situations (e.g., event impact and controllability). Then they can be shown how these characteristics best fit the demands of different kinds of situations. In short, apart from acquiring coping skills, the present results suggest that participants' coping effectiveness can be further enhanced by (a) reducing need for closure so that a variety of strategies can be generated, and (b) adopting discriminative thinking to increase discriminative facility. Mental health professionals may incorporate these two "meta-skills" into the stress management process in workshops.

Cautionary Notes and Research Directions

Before concluding, several caveats are noteworthy. First, this research is the first to examine a process model of coping flexibility. Results provided initial support for this new model by revealing discriminative facility as a possible cognitive process and need for closure as a possible motivational process. It is important to note that discriminative facility and need for closure may not be the only variables that account for individual differences in coping flexibility. Other cognitive and motivational variables (e.g., behavioral inhibition vs. behavioral activation, need for achievement vs. affiliation), and even variables other than these two categories (e.g., social and physiological variables) may play a role in the process of coping flexibility. For instance, a recently completed study (Cheng & Hui, 2002) showed that social support may influence the coping process and stress-related distress. Researchers should broaden the scope of the present model by developing new models grounded on psychological, behavioral, social, and physiological processes underlying coping flexibility.

Second, the "causal" relationships in this research should be interpreted with great caution. Although the directions of these

relationships were derived from statistical (i.e., theory-driven models tested by structural equation modeling) and methodological (i.e., experiment and prospective design) means, this research presents only one possible interpretation of these relationships. There may be reciprocal causal relationships between the two processes and psychological adjustment, that is, these variables can be causal antecedents and consequences at different points of time. Further multiwave longitudinal studies and more sophisticated statistical procedures should be used to supplement the present findings by examining recursive models.

Finally, it is important to note that the participants in this study are all Chinese. The generalizability of the present findings to Western populations is unknown. Although previous studies (Chiu et al., 1995; S. F. Lam et al., 1998) revealed similar patterns of individual differences in discriminative facility and need for closure for Chinese and American participants, the recent study by Chiu et al. (2000) revealed that need for closure influences different types of dispositional attributions for these two groups. Specifically, need for closure facilitates attributions to personal dispositions for American participants, but facilitates attributions to group dispositions for Chinese participants. In this light, need for closure may benefit flexible deployment of interpersonal strategies (e.g., seeking help from different network members) for Chinese participants, and flexible deployment of personal strategies (e.g., shifting of strategies by oneself) for American participants. The present research should thus be replicated in other cultural settings, or preferably by cross-cultural research to address the issue concerning the process of coping flexibility across cultures.

To conclude, this research may provide new insights about coping by revealing discriminative facility as a possible cognitive process and need for closure as a possible motivational process underlying coping flexibility. Such new findings highlight the importance of exploring cognitive and motivational processes in the study of coping.

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