

# Coping Style of Individuals With Functional Dyspepsia

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**Objectives:** The objectives of the study described here were to 1) examine the coping style of patients with functional dyspepsia (FD) and 2) adopt a new interview questionnaire to examine the extent of discriminativeness in the use of coping strategies across different stressful situations. **Methods:** A matched case-control design was adopted to compare differences among a target group of 30 patients with FD, a pain control group of 30 patients with rheumatism, and a control group of 30 healthy persons. A new interview questionnaire, the Coping Flexibility Interview Schedule, was used to assess subjects' experience of stressful life events, use of coping strategies, and perceived severity of major FD symptoms. **Results:** Subjects with FD perceived their experienced stressors as more uncontrollable and as having a greater impact ( $p < .05$ ). They also used more direct-action strategies but fewer divert attention, acceptance, social support, and relaxation strategies when handling stressful life events ( $p < .05$ ). A significant group-by-controllability interaction effect was found ( $p < .001$ ), indicating that FD subjects tended to use coping strategies nondiscriminatively, whereas both rheumatic and healthy subjects tended to use coping strategies more discriminatively across stressful life events of different extents of controllability. **Conclusions:** These results indicate that FD patients are characterized by a nondiscriminative, action-oriented coping style. The implications of this finding for the extant body of research and the advantages of using our interview questionnaire, which has a more flexible format, are discussed. **Key words:** functional dyspepsia, psychological factors, stress, coping, interview.

ANCOVA = analysis of covariance; CFIS = Coping Flexibility Interview Schedule; FD = functional dyspepsia; HSD = honestly significant difference; MANCOVA = multivariate analysis of covariance.

## INTRODUCTION

FD is characterized by epigastric pain, nausea, vomiting, or belching for more than 4 weeks without evidence of peptic ulcer or gallstone disease (1, 2). Among patients with gastroenterological disorders, those with FD constitute the largest group (3). The pathogenesis of FD is unknown, but psychological factors are considered to play an important role. Compared with healthy persons and ulcer patients, patients with FD were found to have poorer perceptions of their psychological well-being, somatic conditions, and medical treatment (4, 5). A recent study on FD symptoms revealed that anxiety rather than dyspepsia is the most frequent complaint of FD patients (6).

One major psychological factor proposed to be related to FD symptoms is life stress. Research examining the relationship between stressful life events and FD has yielded conflicting results. Some studies have revealed a greater number of stressful life events experienced

by FD subjects than by healthy control subjects (7, 8), whereas others have found no significant difference in the number of stressful life events between FD patients and their healthy counterparts (9, 10). Attempting to resolve this inconsistency, Hui et al. (11) found that FD patients perceived their stressful life events to exert a more negative impact on their lives than did their healthy counterparts. The results of this study indicate that individual differences in FD symptoms rest largely on psychological qualities rather than on the mere amount of stressful life events experienced.

Another major psychological factor proposed to be related to FD symptoms is coping response. A myriad of psychological research (12, 13) has found that effective coping strategies play a significant role in mitigating anxiety, depression, and somatic problems. With regard to the relationships between coping behaviors and well-being, FD patients may adopt a distinct coping pattern that is related to their heightened level of anxiety. The present study was thus conducted to explore possible differences in the use of coping strategies between individuals with FD symptoms and those without such symptoms.

Perceived controllability is an important appraisal dimension characterizing stressful life events, and this appraisal dimension may influence the use of coping strategies (14, 15). Previous studies (16, 17) revealed that compared with controllable life events, uncontrollable life events yielded a stronger relationship with psychological maladjustment and were better predictors of psychological distress over time. As posited by coping theorists (eg, Refs. 18 and 19), action-oriented coping (eg, problem-solving and confrontation) is more useful for handling controllable life events, but emotion-focused coping (eg, acceptance and religious

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Received for publication October 19, 1998; accepted May 18, 1999.

support) is more useful for handling uncontrollable life events.

### Aims of Research

One major aim of the present study was to examine the coping style of FD patients. On the basis of recent findings on the relationship between excessive use of action-oriented coping and anxiety (20, 21), we proposed that the heightened levels of anxiety of FD patients may be reflected in their consistent use of action-oriented coping strategies (eg, direct action or confrontation) regardless of the controllability of stressful life events. However, it is likely that healthy persons generally use more action-oriented coping strategies when the stressful life events are perceived as controllable (ie, it is possible to alter the event outcome) but use more passive strategies when the stressful life events are perceived as uncontrollable (ie, it is impossible to alter the event outcome).

Another aim of this study was to adopt a new interview questionnaire, the CFIS (22), for assessment of the discriminativeness of coping strategy use across different stressful situations. The CFIS differs from previous coping measures in two major ways. First, the CFIS assesses coping patterns by examining individual differences in discriminative use of coping strategies across different types of stressful life events. With a more flexible format, the CFIS allows researchers to examine both stressful life events and coping responses at the same time (see Methods). Second, subjects may not categorize a coping behavior in the same way as researchers do (23). Our interview questionnaire is designed to allow subjects to categorize their coping behaviors in an idiosyncratic manner that provides richer information on the perceived nature and functions of coping strategies.

In summary, the present study was an initial attempt to relate individuals' coping patterns to FD symptoms. FD patients were hypothesized to adopt a coping pattern characterized by nondiscriminative use of action-oriented coping responses regardless of the controllability of stressful life events. The CFIS was used to assess subjects' perception of stressful life events and their use of coping strategies across different stressful situations.

## METHODS

### Subjects

Subjects in this study were 90 Hong Kong adults (42 women and 48 men) aged 35 to 62 years. This sample comprised three groups of 30 subjects (14 women and 16 men) each. A sample of 30 meets the minimum requirement for a study using interviews (cf. Ref. 24) and yields a power of 0.90 for a large effect size (cf. Ref. 25). Patients in

the first group were recruited from a consecutive series of FD patients randomly selected from the registration list provided by the gastroenterology section of Queen Mary Hospital, Hong Kong. FD patients were defined as those with normal findings on endoscopy. The other two groups served as control groups, with rheumatic patients (pain control subjects) recruited from the Apleichau Clinic and healthy persons (community control subjects) recruited from all walks of life within the same community. Because abdominal pain is a major symptom of FD, a pain control group (rheumatic patients) was needed to ensure that any characteristics identified in FD patients could be attributed to their psychological rather than physical symptoms. Our pilot studies revealed that rheumatic patients and FD patients report a highly similar level of pain severity.

Adopting a matched case-control design, subjects in these control groups matched the target group on sex, age, education level, and socioeconomic status. To eliminate the possibility of overlapping among different groups of subjects, the recruited patients with FD and those with rheumatism were screened in advance to ensure that they had experienced only the respective target symptoms for more than 4 weeks and had not experienced symptoms from the other disorder for the past 5 years. Healthy control subjects were screened in advance to ensure that they had experienced none of the above symptoms in the past 5 years, and those who had any of the symptoms were excluded.

### Measure

The CFIS (22) (available on request from C.C.) was used in this study. This interview questionnaire, which consists of three major sections, was semistructured in format. A number of specified questions were included in each section. The first section comprised questions covering the number and subjective appraisals of stressful life events experienced during the past 6 months, whereas the second section comprised questions about coping strategies used to handle each experienced stressor. Subjects' perception of their FD symptoms was assessed in the third section.

Specifically, subjects were first asked to recall events that had a large effect on their lives or led to changes in how they felt about themselves, their relationships with others, and their well-being. These instructions, adopted from Compas et al. (14), define stressful life events in lay terms. If subjects recalled that they had experienced stressful life events, they were asked to describe one of them in greater detail, with specific emphasis on their perceptions of the controllability and impact of the event. Subjects were asked to rate the controllability and impact of each experienced stressor on a seven-point scale.

After describing a stressful life event, subjects were asked to recall all the strategies they had used to handle that particular event. They were then asked to classify the nature of each strategy into one of the nine major categories. The first eight categories (ie, divert attention, perspective taking, direct action, catharsis, acceptance, social support, relaxation, and spiritual support) were adopted from Stone and Neale (23). The ninth category, "others," was also included in case subjects found it difficult to categorize their coping responses. Brief descriptions defining each of these coping categories, as used by Stone and Neale, were included to guide subjects' classification of their coping behaviors. The subjects were asked to repeat the procedure for each stressful life event reported. Additional questions might be appended for further elaboration and clarification.

Subjects were then asked to give severity ratings to the major somatic symptoms outlined in the report of Drossman et al. (26), namely, epigastric pain, nausea, vomiting, and belching. Because anxiety has been consistently found to be a major symptom in

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patients with FD (6), subjects were asked to rate their general anxiety level as well. Subjects gave ratings to all these symptoms using a 10-point Likert scale.

According to our validation research (see Ref. 22 for more details), the CFIS displayed good psychometric properties. For test-retest reliability, results of weighted  $\kappa$  (27) showed that the CFIS has adequate test-retest reliability over a 2-week period ( $\kappa_w = 0.78, p < .01$ ). For criterion-related validation, when using the CFIS to examine perceived stressful events and coping strategies, higher levels of depression and anxiety were associated with 1) lower controllability ratings of experienced life events and 2) a greater amount of divert attention and acceptance strategies endorsed ( $r > -0.33, p < .01$ ). These results were consistent with the literature on stressful life events and coping (28, 29).

### Procedure

Interviews were conducted with one subject at a time in a cubicle of the clinic in which they were recruited. Healthy persons were interviewed in a cubicle in the Department of Psychology of the University of Hong Kong. Every subject was asked to sign a written consent form that included a brief description of the purpose and procedure of this research. After signing the consent form, the interview began. On completion of the interview, all subjects were debriefed and thanked for their participation.

### Data Analysis

Subjects' verbal responses were recorded. Recorded data were then coded and quantified by a panel of experienced judges, who were blind to our proposals and to the group membership of each subject. The average interrater reliability for the quantified data was high ( $\kappa_w = 0.85, p < .001$ ). In analyzing these data, ANCOVA was used to examine possible differences in the number of stressful life events experienced, perceived nature of these events (ie, controllability and impact), use of coping strategies, and perceived severity of

FD symptoms among the three subject groups. Demographic variables (ie, sex, age, education level, and socioeconomic status) served as covariates in the ANCOVA analyses.

Moreover, to examine the hypothesized differences in discriminativeness in the use of coping strategies across different stressful situations, a repeated-measures MANCOVA was performed to examine 1) within-subject differences in the use of coping strategies across stressful life events of different levels of controllability and 2) between-subject (ie, group) effects on discriminativeness in the use of coping strategies across different stressful life events. To examine within-subject differences in using a particular coping strategy between controllable and uncontrollable stressful life events, the number of coping strategies used in controllable stressful life events (ie, events with controllability ratings of 4–6) and that of coping strategies used in uncontrollable stressful life events (ie, events with controllability ratings of 1–3) were calculated separately. Demographic variables again served as covariates in this analysis. Paired  $t$  tests were performed to explore possible differences in the amount of coping strategies adopted for controllable stressful events and uncontrollable ones by each subject group.

## RESULTS

Table 1 presents descriptive statistics of the number of stressful life events, perception of stressful life events, probability of using each of the eight coping strategies (calculated by dividing the aggregated frequency of endorsing that particular coping strategy by the total number of stressful life events reported by subject; range, 0–1), and perceived symptom severity by the three groups.

**TABLE 1. Means and Standard Deviations of Major Variables (N = 30 in Each Group)**

Variable	FD		Healthy		Rheumatic		F
	Mean	SD	Mean	SD	Mean	SD	
Stressful life events							
Stressful life events	2.33	(1.83)	2.33	(1.60)	2.00	(1.53)	0.40
Controllability ratings	4.10	(3.59)	6.23	(4.22)	3.93	(3.89)	3.23*
Impact ratings	6.70	(3.49)	4.30	(4.27)	4.47	(4.09)	2.93
Coping strategies							
Divert attention	0.08	(0.23)	0.31	(0.32)	0.28	(0.31)	5.60**
Perspective taking	0.34	(0.38)	0.35	(0.38)	0.18	(0.21)	2.46
Direct action	0.77	(0.25)	0.52	(0.30)	0.38	(0.29)	14.85**
Catharsis	0.34	(0.43)	0.28	(0.29)	0.16	(0.27)	2.21
Acceptance	0.20	(0.38)	0.46	(0.34)	0.65	(0.32)	12.67**
Social support	0.33	(0.37)	0.55	(0.35)	0.54	(0.33)	3.77*
Relaxation	0.14	(0.31)	0.40	(0.35)	0.25	(0.32)	4.78*
Spiritual support	0.29	(0.42)	0.24	(0.28)	0.32	(0.38)	0.37
FD symptoms							
Epigastric pain	6.83	(1.95)	1.80	(1.10)	2.57	(1.28)	99.33**
Nausea	6.67	(1.67)	2.10	(1.52)	2.17	(1.29)	91.33**
Vomiting	6.07	(1.80)	1.83	(1.21)	2.37	(1.40)	71.94**
Belching	6.77	(1.91)	1.97	(1.07)	2.57	(1.38)	91.92**
Anxiety	7.07	(1.84)	2.57	(1.17)	3.00	(1.44)	81.28**

\*  $p < .05$ , \*\*  $p < .01$ .

### Group Differences in Stressors, Coping Behaviors, and FD Symptoms

*Number of stressful life events.* The ANCOVA results revealed nonsignificant group differences in the number of experienced stressors ( $F(2,83) = 0.48$ , mean SE = 2.68, NS), indicating that all subjects experienced a similar number of stressful life events.

*Subjective appraisals of stressful life events.* The ANCOVA results showed reliable group differences in subjective appraisals of the controllability of stressful life events ( $F(2,83) = 3.25$ , mean SE = 15.06,  $p < .05$ ). Post hoc Tukey HSD tests revealed that healthy subjects generally perceived their experienced stressors as more controllable (mean = 6.23) than did rheumatic (mean = 3.93) and FD (mean = 4.10) subjects ( $p < .05$ ). Also, marginal group differences were found in perceived impact of stressful life events ( $F(2,83) = 2.92$ , mean SE = 18.89,  $p = .06$ ). Post hoc Tukey HSD tests revealed that FD subjects generally perceived their experienced stressors to exert a greater impact on them (mean = 6.70) than did healthy control subjects (mean = 4.30,  $p < .05$ ).

*Use of coping strategies.* In addition, the ANCOVA results revealed significant group differences in five of the eight coping strategies endorsed, namely, direct action, divert attention, acceptance, social support, and relaxation ( $F(2,83) > 3.07$ ,  $p < .05$ ). Post hoc Tukey HSD tests revealed that compared with rheumatic and healthy control subjects, FD subjects used more direct-action strategies but fewer divert attention, acceptance, social support, and relaxation strategies to handle stressful life events ( $p < .05$ ). Summarizing these results, FD patients generally preferred action-oriented coping strategies to relatively passive coping strategies when they encountered stressful life events.

*Perceived severity of FD symptoms.* As a manipulation check, five major FD symptoms, epigastric pain, nausea, vomiting, belching, and anxiety, were compared among the three subject groups. Results of ANCOVA showed reliable group differences ( $F(2,83) > 8.60$ ,  $p < .0001$ ), indicating that FD patients perceived a greater extent of severity in all these FD symptoms.

### Discriminateness in Use of Coping Strategies

MANCOVA was used to examine between-subject group effects and within-subject differences in the use of coping strategies across stressful life events of different controllability. Results revealed significant main effects of group and controllability ( $F > 3.99$ ,  $p < .0001$ ). However, these two main effects should be

examined in light of the significant group-by-controllability interaction effect ( $F(2,83) = 2.42$ ,  $p < .001$ ).

For FD subjects, the controllability main effect was nonsignificant ( $F(2,83) = 2.31$ , NS). As shown in Figure 1 (*top*), FD subjects tended to use similar coping strategies across stressful life events of different levels of controllability ( $t < 1.97$ , NS). However, for both rheumatic and healthy subjects, significant main effects were found in controllability ( $F > 3.49$ ,  $p < .05$ ), indicating that both groups tended to use different coping strategies in controllable and uncontrollable stressful life events. As also shown in Figure 1, (*middle and bottom*), both healthy and rheumatic subjects generally adopted more direct-action strategies in controllable stressful situations but more acceptance strategies in uncontrollable stressful situations ( $t > 3.48$ ,  $p < .01$ ). Moreover, healthy subjects generally used more perspective-taking strategies in controllable stressful situations but more divert attention and catharsis strategies in uncontrollable stressful situations ( $t > 2.73$ ,  $p < .05$ ). Rheumatic subjects generally sought more social support in uncontrollable stressful situations ( $t(28) = 3.13$ ,  $p < .01$ ).

### DISCUSSION

Results from this study may extend the literature about FD in three major ways. First, consistent with our hypothesis, a *nondiscriminative, action-oriented coping pattern* was found to be a characteristic of FD patients. Specifically, FD subjects generally adopted direct-action strategies regardless of the controllability of stressors. In contrast, subjects without FD symptoms (ie, rheumatic and healthy control subjects) tended to show discriminative patterns in the use of coping strategies across stressful situations of different controllability. Such results suggest that the nondiscriminative coping pattern is a psychological factor associated with FD symptoms.

Second, the results suggest that an action-oriented coping pattern may not be useful in mitigating distress under all stressful situations. Although previous research generally revealed that action-oriented coping strategies were functional in handling a considerable number of stressful life events (30), this body of research did not distinguish the use of action-oriented coping strategies in different stressful situations. Examining *within-individual differences* in the use of coping strategies across stressful situations with different extents of controllability, the present research suggests that the *consistent* use of action-oriented coping strategies under all circumstances may provoke anxiety. One possibility is that action-oriented coping strategies may not be useful in handling all stressful

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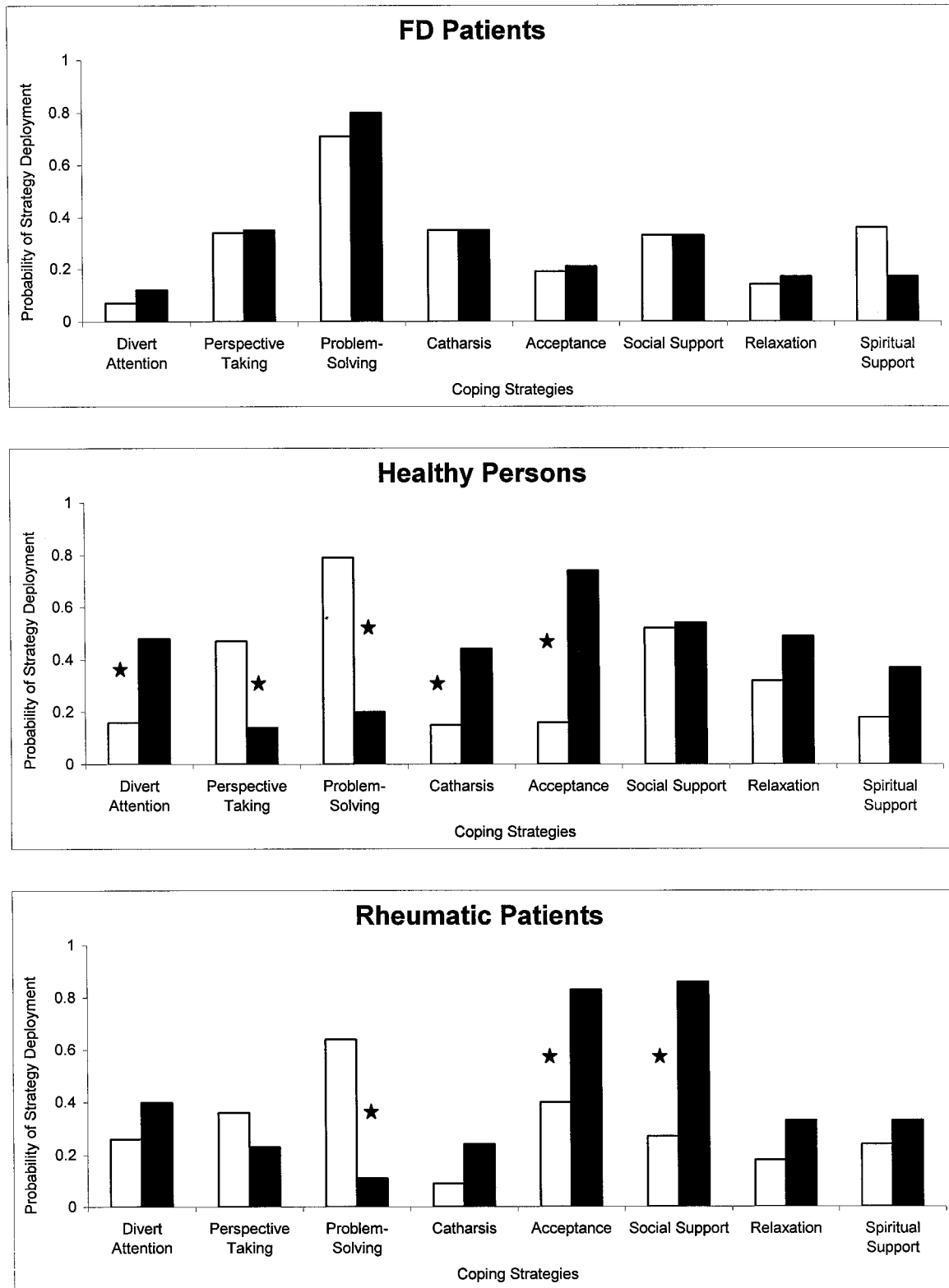


Fig. 1. Coping strategies adopted in stressful events of different controllability by different subject groups. □ = controllable stressful situations; ■ = uncontrollable stressful situations; ★ = differences in strategy usage between controllable and uncontrollable stressful situations.

life events. This may be especially relevant for uncontrollable stressful situations in which nothing can be done to alter the occurrence of their consequences. Another possibility is that despite the usefulness of action-oriented coping in solving problems, the use of this strategy can sometimes be costly. Specifically, consistent use of action-oriented coping may create considerable psychological strains, in addition to the already heightened anxiety level of FD patients. In this regard, the seemingly passive coping strategies, such as relaxation and acceptance, may also be useful if the nature of stressful events is uncontrollable. Hence, the present research highlights the necessity to examine the use of coping strategies across different stressful situations in future research.

Third, a new interview questionnaire, the CFQ, was adopted in this research. The CFQ is adequate in assessing subjects' experience of stressful life events and their adoption of coping strategies in handling stressors. More importantly, it is flexible enough for researchers to examine the extent of discriminativeness in the use of coping strategies across stressors with different natures. Instead of confining the assessment of stressful life events and coping strategies in two independent measures, as most researchers have done in previous studies, our interview questionnaire enables researchers to merge these two sections into an integral part of the interview session.

### CONCLUDING REMARKS

The present research provides new insights into the body of FD research by revealing that FD patients are characterized by a nondiscriminative, action-oriented coping style across stressors of different controllability. However, it is noteworthy that this new finding can only be regarded as tentative. Additional research is needed to examine 1) the replicability of this new finding with independent samples of FD patients and 2) the generalizability of this new finding with other psychosomatic patients, such as those with irritable bowel symptoms. Moreover, the correlational nature of the design of this study should be noted. Although the multiple regression results with the severity ratings of the FD symptoms regressed on the controllability ratings of stressful life events were nonsignificant ( $F(4,25) = 4.49$ , NS; adjusted  $R^2 = 0.10$ ), multiwave prospective or longitudinal designs should be conducted to further clarify any casual relationships among these variables. The present research highlights 1) the unique coping style of FD patients and 2) the importance of using semistructured interviews that allow more room for tapping coping flexibility across different stressful situations.

*Preparation of this article was supported by the Research Grants Council, Competitive Earmarked Research Grant HKUST6049/98H (C.C.).*

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