

# Seeking Medical Consultation: Perceptual and Behavioral Characteristics Distinguishing Consulters and Nonconsulters With Functional Dyspepsia

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**Objective:** Subjects with functional dyspepsia (FD) in most previous studies have been confined to those who sought medical consultation. The generalizability of results from these studies to individuals with FD who do not seek medical consultation is limited. This study examined 1) differences in perceptual and behavioral characteristics between “nonconsulters” and “consulters” with FD and 2) the influence of these characteristics on dyspeptic and psychological symptoms. **Methods:** A matched case-control design was used to compare differences among 43 nonconsulters with FD, 43 consulters with FD, and 43 healthy individuals. Subjects’ monitoring perceptual style, confrontative coping behaviors, dyspeptic symptoms, anxiety, and depression were assessed by using well-validated questionnaires. **Results:** FD consulters exhibited higher levels of monitoring, confrontative coping, anxiety, and depression than FD nonconsulters and healthy subjects ( $p$  values  $< .01$ ). Results from discriminant analysis revealed that all these variables reliably predicted the membership of the three groups. Significant Monitoring by Confrontative Coping interaction effects were also found, indicating the conjoint influences of these variables on dyspeptic and psychological symptoms. **Conclusions:** These results show that FD nonconsulters are distinguishable from FD consulters by their perceptual style, coping behaviors, and psychological symptoms. Both monitoring perceptual style and confrontative coping behaviors may magnify dyspeptic and psychological symptoms in individuals with FD, especially those who seek medical consultation. **Key words:** functional dyspepsia, psychological factors, anxiety, depression, medical consultation.

ANCOVA = analysis of covariance; BDI = Beck Depression Inventory; CFI = Coping Flexibility Inventory; DU = duodenal ulcer; FD = functional dyspepsia; HSD = honestly significant difference; MANCOVA = multivariate analysis of covariance; MANOVA = multivariate analysis of variance; MBSS = Miller Behavioral Style Scale; STAI = State-Trait Anxiety Inventory.

## INTRODUCTION

Individuals with FD are characterized by symptoms of the upper gastrointestinal tract, such as epigastric pain and belching, not explained by structural or biochemical abnormalities (1–4). Patients with FD make up the largest group of patients with functional gastrointestinal disorders (5), and the prevalence of FD has made this condition a considerable research interest in the realms of both medicine and psychology. Previous studies have consistently shown that patients with FD report higher levels of anxiety (5–8) and depression (9–12) than patients with DU and healthy individuals.

A critical review of this body of research revealed that FD is frequently associated with psychological symptoms, but the FD subjects in the majority of stud-

ies were recruited from outpatient sections of hospitals and clinics, and only a small number of patients with FD who did not consult medical professionals were included (13, 14). Findings from studies of patients with FD who sought medical consultation are confounded by the problem of self-selection (15, 16), and the impact of psychological factors on FD will remain unclear unless a greater number of studies evaluate individuals with FD who do not seek medical consultation. The dearth of studies of “FD nonconsulters” limits the representativeness and generalizability of the findings of previous studies. To fill this knowledge gap, the present study examined differences in psychological characteristics among samples of individuals with FD who do not consult physicians (nonconsulters), individuals with FD who consult physicians (consulters), and healthy individuals (community control group).

Interestingly, FD consulters have been shown to seek more frequent psychiatric consultations (17) and medical consultations for abdominal and other somatic complaints (18) than their DU counterparts with structural gastrointestinal symptoms. The greater number of professional consultations sought by FD consulters may be related to perceptual and behavioral characteristics that influence the decision to seek professional help.

Previous studies revealed that consulters with rectal bleeding (19) and coughs (20) differed from nonconsulters in their perceptions of symptom severity. Although there were no significant differences in symptom characteristics and diagnoses between the two groups, consulters in these studies perceived their symptoms to be more severe than nonconsulters, sug-

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gesting that nonconsulters and consultants may have different perceptual styles.

Moreover, in a recent study by Cheng et al. (21), FD subjects were more sensitive to adverse cues embedded in stressful situations than patients with rheumatic illness and healthy individuals. Other studies (22–24) have shown that FD subjects are more sensitive to experimental stimulation of their stomach than healthy subjects, perceiving a greater amount of discomfort at lower stimulation levels than healthy subjects. According to Barsky et al. (25, 26), individuals who are hypersensitive to their body may have a lower threshold for experiencing bodily discomfort. They tend to incorrectly attribute their discomfort to a serious illness, and their attribution motivates them to monitor their bodily conditions more closely. Such a vicious cycle between subjective beliefs and bodily sensations may impel these individuals to seek professional advice for their symptoms. Together these findings suggest that perception plays a role in FD individuals' decisions to seek medical consultation.

Some findings also suggest that FD consultants may differ from FD nonconsulters in their coping behaviors. Cheng et al. (21, 27) found that FD subjects were characterized by nondiscriminative confrontative coping behaviors, as shown by their greater tendency to actively do something by themselves regardless of the controllability of stressful events. However, subjects with rheumatism, who perceived similar degrees of pain as FD individuals, tended to accept their conditions more and to seek more social support. Another study (9) showed that FD subjects tended to adopt a "fighting spirit" when encountering stressful events. Because the subjects in these studies had all sought medical consultations for their dyspeptic symptoms, these findings suggest that healthcare seeking is a kind of problem-focused coping adopted by FD consultants to fight their symptoms.

Two hypotheses were proposed in this study. First, FD consultants may differ from FD nonconsulters in having both a monitoring perceptual style and confrontative coping behaviors. Second, because a monitoring perceptual style and confrontative coping behaviors are associated with anxiety and depression (21, 27; C. Cheng et al., submitted), consultants may also have higher levels of anxiety and depression than nonconsulters.

## METHODS

### Subjects

Subjects were 129 Chinese adults (81 women and 48 men). This sample comprised three groups of 43 subjects each (27 women and 16 men). The average age of each group was 38.6 years (SD = 9.82

years, range = 19–67 years). This sample size meets the minimal requirement for a study using multivariate and discriminant analyses (28) and yields a power of 0.90 for a large effect size (29). The protocol of this study was approved by the Human Subject Research Panel of Hong Kong University of Science and Technology.

The first group comprised FD nonconsulters, who were recruited by telephone survey using random-digit dialing. Two thousand telephone numbers were randomly drawn from a computer, and 1343 Hong Kong households (792 women and 551 men, age = 18–82 years) were interviewed by telephone. The criterion for inclusion in the survey was an age of 18 years or above; if more than one member of a household was older than 18, the one with the most recent birthday was surveyed. Interviewees were screened with a set of diagnostic questions for FD (ie, the Rome criteria). One hundred seventy-two interviewees (13%) met the Rome diagnostic criteria for FD. Sixty-six had sought medical consultation for their dyspeptic symptoms, and 106 had not sought any medical or psychiatric consultation during the previous 12 months. Subjects who had not sought medical consultation were told of their diagnosis and were invited to participate in the study, in which they would undergo endoscopy for a more thorough examination of their dyspeptic symptoms. They were told that endoscopy was not necessary and that they could participate in the study if they were interested. Seventy-three of these interviewees agreed to participate, but 3 did not show up, leaving 70 subjects in this group. The results of endoscopy were normal in 43 subjects from this group of FD nonconsulters. Twenty-seven subjects who were diagnosed with gastrointestinal problems, such as mild gastritis, were excluded. No significant differences in dyspeptic symptom severity scores (see Measures) were found between nonconsulters (mean = 30.35), those with gastrointestinal problems (mean = 32.15), and those who did not participate (mean = 30.94) ( $F(2,103) = 2.61$ , NS).

A matched case-control design was used for the study. Subjects of the second group (FD consultants) and third group (healthy control subjects) matched those of the first group of FD nonconsulters in sex and age. FD consultants were recruited from the gastroenterology section of the Queen Mary Hospital, Hong Kong. Those who were recruited 1) matched the demographic characteristics of the FD nonconsulters and 2) had normal results on endoscopy. FD consultants had previously sought medical consultation an average of three times during the previous 12 months (mean = 2.93, SD = 0.94, range = 0–4). Healthy subjects were recruited using the same telephone survey used to recruit FD nonconsulters. Those who were recruited 1) matched the demographic characteristics of FD nonconsulters, 2) did not report dyspeptic symptoms, and 3) had not had any major health problems or injuries during the past 5 years.

### Measures

The measures used in this study are all in Chinese, the native language of all subjects in the sample. To assess monitoring perceptual style, the Extended MBSS (C. Cheng et al., submitted) was used. The Extended MBSS comprises eight hypothetical stressful situations: dentist, hostage, layoff, airplane, business dinner, ball game, early cancer, and terminal cancer (Table 1). The first four situations were adopted from the MBSS developed by Miller (30, 31). To broaden the diversity of the hypothetical situations, the other four situations were constructed on both theoretical and empirical grounds. The MBSS and Extended MBSS have been used as measures of perceptual style in patients with chronic illnesses (31–34) and in patients with FD (21, 27). Although hypothetical stressful situations were adopted to assess patients' general perceptual styles, such perceptual styles have been found to influence their health-care-seeking behaviors (31–35).

TABLE 1. Descriptions of the Hypothetical Situations of the Extended MBSS

Situations	Description
Dentist	You are going to have a wisdom tooth removed.
Hostage	You are being held by armed terrorists.
Layoff	Some staff in your department are rumored to be laid off.
Airplane	You are on a plane that suddenly takes a deep dive.
Business dinner	You attend a business dinner for the first time and do not know anyone in the party.
Ball Game	You participate in an important ballgame, and the audience has high expectations of your team.
Early cancer	Your physician tells you that your cancer is at the initial stage and can be controlled by medicine.
Terminal cancer	Your physician tells you that your cancer has reached the terminal stage and asks you to live for the rest of your life.

In the Extended MBSS, participants are asked to vividly imagine themselves encountering each situation and to decide whether they would use a given response. In each situation, there are eight possible responses. Four responses refer to monitoring (ie, attending to adverse cues), and the other four refer to blunting (ie, distracting oneself from adverse cues). Monitoring perceptual style is indicated by a monitoring score, which is obtained by dividing the number of monitoring items endorsed by the sum of the endorsed monitoring and blunting items. The monitoring score ranges from 0 (does not use monitoring/uses blunting all the time) to 1 (uses monitoring all the time/does not use blunting). A recent study (21) showed that the Extended MBSS has good test-retest reliability ( $\alpha_w = 0.89, p < .001$ ), internal consistency ( $\alpha = 0.81$  for the Monitoring subscale and  $\alpha = 0.70$  for the Blunting subscale), and criterion-related validity for patients with FD. The psychometric data of the Extended MBSS are comparable to those of the MBSS (35).

To assess coping behaviors, the CFI (27; C. Cheng, submitted) was used. This coping inventory follows a theoretically based approach to examine coping flexibility (C. Cheng, submitted) and has been used in samples of Hong Kong patients with FD (21, 27). In the CFI, subjects are instructed to recall events experienced during the past 6 months that had a large impact on their lives or led to changes in how they felt about themselves, their relationships with others, and their well-being. This instruction, adopted from Compas et al. (36), defines stressful life events in layperson terms. Subjects are asked to first describe two stressful events in which the outcomes could be changed by themselves. For each controllable stressful event, subjects are instructed to recall all the coping strategies they used. They are then asked to classify the nature of each coping strategy into two major categories, "strategies for managing the event" (problem focused) and "strategies for relieving the distress elicited by the event" (emotion focused). This procedure is then repeated for another two stressful life events in which the outcomes which could not be changed by themselves.

Because the number of coping strategies reported by the subjects was different, the probability of using problem-focused coping (vs. emotion-focused coping) rather than the total number of reported coping strategies was examined. The probability of using problem-focused coping (vs. emotion-focused coping) was calculated by dividing the aggregated frequency of problem-focused coping by the total number of problem-focused and emotion-focused coping strategies used. The probability of using problem-focused (vs. emotion-focused) coping ranges from 0 (did not use problem-focused coping at all/used emotion-focused coping to handle every event) to 1 (used problem-focused coping to handle every event/did not use emotion-focused coping at all). Confrontative coping was operationalized by a high probability of using problem-focused (vs. emotion-focused) coping across different stressful situations. Previous Hong Kong studies have revealed that the CFI has good test-retest reliability

( $\alpha_w = 0.86, p < .001$ ) and criterion-related validity in FD patients (27) and healthy individuals (C. Cheng, submitted).

To assess symptoms of FD, the Rome criteria (37) were used because they are the standard criteria used to determine the diagnosis of FD. Subjects responded to a set of symptom-based diagnostic questions for FD outlined by Drossman et al. (37). Subjects then rated the severity of four main dyspeptic symptoms (ie, epigastric pain, nausea, vomiting, and belching) commonly reported by Hong Kong patients with FD along a visual analog scale with 0 (no symptoms at all) at one end and 10 (extremely severe symptoms) at the other. Symptom severity scores range from 0 to 40. This measure of the severity of dyspeptic symptoms has good internal consistency ( $\alpha = 0.91$ ), test-retest reliability ( $\alpha_w = 0.78, p < .001$ ), and discriminant validity in Hong Kong FD patients (21).

The Chinese STAI (Form Y-2) was used to assess anxiety (38). This measure assesses symptoms of tension, apprehension, and nervousness. The T-Anxiety scale, which comprises 20 statements, was used to measure trait anxiety. Respondents rate each statement on a scale of 1 to 4. Anxiety scores range from 20 to 80, with a higher score indicating a higher level of trait anxiety. The Chinese STAI is reliable and valid in Hong Kong samples (39).

The Chinese BDI (40) was used to assess depression. The Chinese BDI consists of 21 items that assess symptoms of self-debasement (eg, self-dislike), hopelessness (eg, pessimism), motivational problems (eg, work inhibition), and physiological problems (eg, loss of appetite). A consistent weighted score of 0, 1, 2, or 3, as recommended by Beck et al. (41), was used to score the items. Depression scores range from 0 to 63, with a higher score indicating a higher level of depression. The Chinese BDI has good reliability (42) and criterion-related validity (43) in Hong Kong samples.

## Procedures

Nonconsulters completed the set of questionnaires (MBSS, CFI, STAI, and BDI) in the gastroenterology section of the Queen Mary Hospital. Consulters completed the same set of questionnaires and a dyspeptic symptom measure in the same hospital. Healthy subjects who participated in the telephone survey and expressed interest in the study were asked for their name and correspondence address. The same set of questionnaires was sent to them, and a self-addressed return envelope was provided.

Subjects gave informed consent before the study began. All subjects were paid HK\$100 (about US\$12) for participating in the study. Nonconsulters and consulters were debriefed and paid after they underwent endoscopy. A debriefing note and a check were sent to healthy subjects after they had returned the questionnaires.

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## Data Analysis

Four sets of analyses were conducted. First, MANOVA was used to examine the overall sex and age differences in monitoring, confrontative coping, dyspeptic symptoms, anxiety, and depression. Second, MANCOVA was used to examine the hypothesized differences among the three groups in these variables, with the effects of sex and age partialled out. If significant group differences were found in some variables, such group differences were further examined by post hoc univariate ANCOVA. If the results of ANCOVA showed significant differences for any variables, post hoc pairwise comparisons were conducted using the Tukey HSD method to identify the source of group differences. Third, a direct discriminant function analysis was performed using all the variables to predict membership in the three groups. Finally, multiple regression analysis was used to examine how monitoring and confrontative coping would be related to dyspeptic and psychological symptoms.

## RESULTS

The MANOVA results showed that the overall sex and age differences were nonsignificant for all variables except depression, for which a significant difference between sexes was observed ( $F(1,124) = 15.01, p < .001$ ). Post hoc independent-samples *t* test showed that female subjects generally reported higher levels of depression than male subjects ( $t(127) = 2.68, p < .01, \text{means} = 12.11 \text{ vs. } 9.19$ ).

### Group Differences in Psychological Characteristics

The MANCOVA results showed that the overall group effect was significant ( $F(20,242) = 163.52, p < .001, \text{effect size} = 0.87$ ). Table 2 presents descriptive statistics for all variables for the three groups. Post hoc univariate ANCOVAs revealed that the three groups differed in all variables ( $F \text{ values}(2, 126) > 31.27, p \text{ values} < .001$ ). Tukey HSD tests revealed that

nonconsulters and consulters reported greater severity of dyspeptic symptoms than healthy subjects ( $p \text{ values} < .001$ ). Consulters exhibited higher levels of monitoring and confrontative coping than healthy subjects, who in turn had higher levels than nonconsulters ( $p \text{ values} < .001$ ). Moreover, consulters exhibited the highest levels of anxiety and depression, followed by nonconsulters and then healthy subjects ( $p \text{ values} < .01$ ).

### Identification of Predictors of Group Membership

In the discriminant analysis, the variables of monitoring, confrontative coping, anxiety, and depression were entered simultaneously. Results revealed two discriminant functions. The first discriminant function, which indicates the total overlap between the groups and variables, was significant ( $\chi^2(8) = 270.4, p < .001$ ). After removal of the first function, the second discriminant function was also significant ( $\chi^2(2) = 92.70, p < .001$ ). These two discriminant functions accounted for 74% and 26% (eigen values = 3.17 and 1.11, respectively) of the between-group variability. Such results showed reliable discriminations of the three groups based on the combination of these four variables.

The first discriminant function distinguished nonconsulters from consulters and healthy subjects. The loading matrix of correlations between the variables and discriminant functions revealed that monitoring and confrontative coping (standardized canonical discriminant function coefficients = 0.73 and 0.79, respectively) were significant predictors in the first discriminant function. The second discriminant function distinguished healthy subjects from nonconsulters and

TABLE 2. Descriptive Statistics of Major Variables for the Three Groups

	Nonconsulters ( <i>N</i> = 43)	Consulters ( <i>N</i> = 43)	Healthy Subjects ( <i>N</i> = 43)	<i>p</i>
	Mean SD	Mean SD	Mean SD	
Monitoring	0.30 <sup>a</sup> A 0.11 (0.25–0.35) <sup>b</sup>	0.78 C 0.15 (0.73–0.83)	0.60 B 0.22 (0.55–0.65)	<.001
Confrontative coping	0.26 A 0.15 (0.20–0.32)	0.86 C 0.13 (0.80–0.92)	0.62 B 0.28 (0.56–0.68)	<.001
Dyspeptic symptoms	30.42 B 2.45 (29.87–30.97)	31.02 B 1.83 (30.47–31.58)	0.53 A 0.77 (0.03–1.09)	<.001
Anxiety	43.74 B 7.04 (41.53–45.97)	50.79 C 6.77 (48.56–53.00)	38.26 A 8.26 (36.04–40.48)	<.001
Depression	11.95 B 3.66 (10.70–13.20)	15.56 C 4.07 (14.31–16.81)	5.56 A 5.19 (4.31–6.81)	<.001

<sup>a</sup> Within each row, means that do not share a common subscript differ significantly from each other (Tukey's HSD post hoc test,  $p < .01$ ).

<sup>b</sup> The upper and lower limits of the 95% confidence interval are given in parentheses.

consulters. The loading matrix of correlations showed that anxiety and depression (standardized canonical discriminant function coefficients = 0.48 and 0.81, respectively) were significant predictors in this second function. Using both of these functions, 110 participants (85%) were correctly classified. These results indicate that membership in these three groups can be reliably predicted by using the four variables included in this study.

#### Influence of Monitoring and Confrontative Coping on Symptoms

The relationships among monitoring, confrontative coping, dyspeptic symptoms, anxiety, and depression were further examined using multiple regression analysis. Three sets of hierarchical regression analyses were performed.

In the first regression model, both monitoring and confrontative coping were entered as predictor variables of dyspeptic symptoms. To control for the influence of psychological symptoms and demographic variables, anxiety, depression, sex, and age were entered first into the regression model. The predictor variables of monitoring and confrontative coping were then entered. After the main effects were entered, the interaction term Monitoring by Confrontative Coping was entered into the regression model (44). This interaction term was calculated by a simple cross-product of the two main effects (44). Results revealed significant main effects of both monitoring and confrontative coping ( $\beta$  values = 0.51 and 0.60, respectively;  $t = 2.81$  and  $3.20$ , respectively;  $p$  values  $< .01$ ). Moreover, the Monitoring by Confrontative Coping interaction was also significant ( $\beta = 0.37$ ,  $t = 2.29$ ,  $p < .05$ ). Collectively, this model accounted for 53% of the variance in dyspeptic symptoms ( $F(7,121) = 21.18$ ,  $p < .001$ ).

In the second regression model, monitoring and confrontative coping were entered as predictor variables of anxiety. The procedures used were the same as those used in the previous model except for the first step, in which dyspeptic symptoms, depression, sex, and age were entered. Results showed that the main effect of monitoring was marginally significant ( $\beta = 0.37$ ,  $t = 1.85$ ,  $p = .07$ ) and that the Monitoring by Confrontative Coping interaction was significant ( $\beta = 0.80$ ,  $t = 2.30$ ,  $p < .05$ ). Collectively, this model accounted for 44% of the variance in anxiety ( $F(7,121) = 15.36$ ,  $p < .001$ ).

In the third regression model, monitoring and confrontative coping were entered as predictor variables of depression. The procedures were again identical to those used in the previous models except for the first step, in which dyspeptic symptoms, anxiety, sex, and

age were entered. Results revealed that the main effect of monitoring was significant ( $\beta = 0.22$ ,  $t = 2.85$ ,  $p < .01$ ) and that the Monitoring by Confrontative Coping interaction was marginally significant ( $\beta = 0.57$ ,  $t = 1.78$ ,  $p = .08$ ). Collectively, this model accounted for 53% of the variance in depression ( $F(7,121) = 21.42$ ,  $p < .001$ ). In short, these three sets of results consistently revealed a significant interaction between monitoring and confrontative coping, indicating the conjoint influences of these two variables on dyspeptic and psychological symptoms.

#### Reasons for Seeking or Not Seeking Medical Consultation

Apart from examining differences in psychological measures between the groups, this study also examined the reasons for seeking or not seeking medical consultation. As shown in Table 3, consultants consistently reported an intention to obtain information, explanations, or advice about their dyspeptic symptoms from physicians. Nonconsulters, however, reported more diverse reasons for not seeking consultation (Table 3). Forty-seven percent of nonconsulters reported that they either did not have time (27%) or did not want to take sick leave (20%). Forty-one percent of nonconsulters perceived their symptoms to be less adverse than they were. Eight percent reported having uncomfortable feelings about the hospital environment, which caused them to seek medical consultation only when necessary. These results revealed that the consultants and the nonconsulters had very different reasons for seeking or not seeking medical consultation.

TABLE 3. Reasons for Seeking or Not Seeking Medical Consultation

Reason	Frequency	
	N	%
Consulters ( $N = 109$ ) <sup>a</sup>		
Seek information about dyspeptic symptoms.	46	42
Seek explanations for the causes of dyspeptic symptoms.	37	34
Seek advice to cure dyspeptic symptoms.	26	24
Nonconsulters ( $N = 106$ ) <sup>a</sup>		
Do not have time.	29	27
Think the symptoms will disappear very soon.	27	25
Do not want to take sick leave from work.	21	20
Think the symptoms are a normal part of busy city life.	10	10
Have uncomfortable feelings about hospitals.	9	8
Think it is okay or not a problem.	6	6
Other	4	4

<sup>a</sup> Sixty-six consultants were recruited from the telephone survey; 43 participated in the full study. All nonconsulters were recruited from the telephone survey; 43 participated in the full study.

### DISCUSSION

This study examined differences in perceptual and behavioral characteristics between nonconsulters and consulters with FD. This study extends the FD literature in several major ways. There were considerable differences in perceptual and behavioral characteristics between nonconsulters and consulters. Although these two groups did not differ in severity of dyspeptic symptoms, consulters and nonconsulters differed in perceptual style and coping behaviors. Consulters tended to have a monitoring perceptual style, as indicated by their greater tendency to attend to threatening cues and to blunt these cues less often than nonconsulters. Consulters also exhibited confrontative coping behaviors, as indicated by their greater tendency to use more problem-focused coping and less emotion-focused coping than consulters in handling a variety of stressful events. Such group differences imply that previous findings based on FD consulters may not necessarily be extended to FD nonconsulters.

As shown in this study, the greater tendency of FD consulters to use problem-focused coping was associated with their higher levels of anxiety and depression. Although problem-focused coping has generally been found to be beneficial (45, 46), excessive use of problem-focused coping can be maladaptive, eliciting a greater amount of distress when a person must cope with chronic health threats (32, 47, 48) and uncontrollable stressful situations (C. Cheng, submitted). Also, the excessive use of problem-focused coping strategies has been associated with more distress in patients with FD (21, 27). Consistent with these findings, the results from this study further revealed that FD consulters used more problem-focused coping than nonconsulters, and their greater tendency to use problem-focused coping was related to their higher levels of anxiety and depression.

It is possible that the higher levels of anxiety and depression of FD consulters are related to goal frustration (49). In this study, when asked about the reasons for seeking medical consultation, the consulters expressed an intention to know more about and to reduce their dyspeptic symptoms. However, because no clear organic diseases and apparent causes can be identified for FD (2, 4), the somatic difficulties of FD patients have frequently not been treated with medication or medical advice but only with general reassurance (50, 51). Similarly, their higher levels of anxiety and depression may also be related to dissatisfaction with treatment. Morris et al. (18) found that patients with FD reported higher levels of dissatisfaction with their treatment and had poorer expectations of their improvement than patients with DU, who had lower lev-

els of anxiety and depression. In short, receiving limited explanations and treatment from medical professionals may lead FD consulters to become more anxious and depressed because of goal frustration or dissatisfaction with their treatment.

It is also possible that trait anxiety increases one's tendency to seek medical consultation. Previous studies (52, 53) have shown that consulters with irritable bowel syndrome report more worries than their healthy counterparts. In this light, FD consulters, who are characterized by a monitoring perceptual style and higher anxiety levels, may have a greater tendency to notice and worry about their dyspeptic symptoms than nonconsulters. The anxiety levels of consulters that coexist with dyspeptic symptoms may amplify the perceived severity of dyspeptic symptoms (54) and may influence their decision to seek medical treatment (55–57). In nonconsulters, however, anxiety levels may be dissociated from dyspeptic symptoms. Nonconsulters may be less influenced by their psychological symptoms and thus choose not to consult physicians for their dyspeptic symptoms. Given this possibility, instead of focusing merely on generalized trait anxiety and depression, future studies should also examine anxiety and depression specifically related to the experience of dyspeptic symptoms.

The present findings showed that nonconsulters tended to use less problem-focused coping and more emotion-focused coping than consulters, indicating that nonconsulters differ from consulters in their use of coping strategies to handle their dyspeptic symptoms. A number of nonconsulters reported that they thought the symptoms 1) would be gone very soon, 2) were a normal part of their stressful lives, and 3) were okay. These relieving thoughts resemble certain emotion-focused coping strategies, such as wishful thinking, acceptance, rationalization, and denial (58). Some coping theories (58–60) and empirical findings (32, 61) indicate that these thoughts can be adaptive, reducing anxiety and depression levels when a person encounters severe health problems. Thus, the relieving thoughts about their dyspeptic symptoms may be related to the lower anxiety and depression levels of nonconsulters. Apart from using emotion-focused coping, nonconsulters may also seek alternative ways to actively cope with their symptoms, such as reading books or searching the Internet to obtain information about their dyspeptic symptoms and seeking support from their social network. With such information and resources, these individuals may choose not to seek medical consultation.

This study examined the role of monitoring and confrontative coping on both dyspeptic and psychological symptoms. Results consistently revealed a sig-

nificant interaction between these two factors, indicating that these two factors moderate the effects of each other on dyspeptic and psychological symptoms (62). Specifically, greater use of confrontative coping by individuals with a monitoring perceptual style may magnify their symptoms, whereas lesser use of such coping behaviors may alleviate their symptoms. The greater tendency of individuals with confrontative coping behaviors to attend to adverse cues may magnify their symptoms, whereas their greater tendency to distract themselves from adverse cues may mitigate their symptoms. These results imply that both cognitive therapies (63), which emphasize changes in perceptual style, and behavioral therapies (64), which emphasize development of adaptive coping skills, are relevant and useful for individuals with FD. Moreover, in light of the conjoint influence of monitoring perceptual style and confrontative coping on dyspeptic and psychological symptoms, the use of cognitive behavioral therapy (65) may be especially beneficial for FD patients with severe symptoms. These psychotherapies may reduce not only the levels of anxiety and depression but also the frequency and severity of complaints about dyspeptic symptoms (16).

Before concluding, several major limitations of this study must be noted. This is the first study to examine differences in some perceptual and behavioral characteristics between nonconsulters and consultants with FD. Although reliable relationships were found among monitoring, confrontative coping, and various symptoms, the nature of these relationships was only correlational rather than causal. It is possible that monitoring and confrontative coping increase one's vulnerability to some symptoms, but it is equally possible that the uncertain feelings elicited by the symptoms lead one to use more monitoring and confrontative coping. This study should be supplemented with multiphase prospective or longitudinal studies to clarify the causal relationships among these variables.

Despite the cognitive and behavioral differences found between nonconsulters and consultants, these results are only tentative. These two groups may be similar in some characteristics other than perceptual style and coping behaviors, or they may differ in most characteristics, such as quality of life, social support, and costs of missing work. These characteristics may increase the probability of consulting a physician. More studies should be conducted to examine other differences between nonconsulters and consultants. In addition, other underlying factors, such as educational levels, prior knowledge about symptoms of FD, family consultation history, and the patient's own consultation history with FD, may also influence healthcare-seeking behaviors. Future studies should examine

these factors and compare consultants with nonconsulters along these dimensions for a better understanding of the decision-making process underlying healthcare seeking.

Although the FD nonconsulters of this study were randomly selected from the population using a telephone survey, the results concerning FD nonconsulters may be characteristic of only a portion of nonconsulters rather than all nonconsulters. Compared with the nonconsulters who participated in this study, those who declined were more reluctant to take sick leave from work and had more uncomfortable feelings about hospitals ( $\chi^2 = 8.34$  and  $4.99$ ,  $p$  values  $< .05$ ). These two groups may also differ in other characteristics, such as job stress and coping styles. Future studies should examine in greater detail the characteristics of individuals who are told of their dyspeptic symptoms but do not seek medical consultation.

Similarly, the results concerning FD consultants may be limited to those who attend the outpatient section of public hospitals. A recent study (66) revealed differences in presentation of somatic symptoms between patients who attend walk-in clinics and lack an ongoing relationship with a primary care physician and those who attend clinics that provide a personal form of primary care. Specifically, somatic symptoms were more commonly reported by patients who attended walk-in clinics than by those who attended clinics with a personal physician. The ongoing relationship between patients and personal physicians may function as not only a kind of professional support but also a kind of emotional support, which is generally considered effective in relieving physical and psychological symptoms in patients (67–70). Future studies should examine FD patients from a variety of clinic settings, especially those from private clinics with personal physicians.

Finally, it is important to note that all subjects in this study were Chinese. The generalizability of the findings of this study to Western populations is unknown. Previous Chinese studies (71, 72) have shown that the prevalence of functional gastrointestinal disorders, the physiological mechanisms influencing gastrointestinal symptoms, and the psychological profiles of patients with functional gastrointestinal disorders among the Chinese population are highly similar to those among Western populations. However, the study by Hsu and Folstein (73) revealed cultural differences in the form of somatic problems reported by patients. In their study, Chinese American patients tended to report more abnormal sensations, whereas white American patients tended to report more abnormal motor functions. Given the possible cultural influences on the presentation of somatic symptoms (66,

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73–75), the present study should be replicated in other cultural settings or preferably extended to a cross-cultural study to address the generalizability of results across cultures.

In summary, the present study examined differences between nonconsulters and consultants in some perceptual and behavioral characteristics. Seeking medical consultation may reflect 1) hypersensitivity to bodily conditions and 2) an attempt to solve one's health problems.

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