

▲ The Role of Coping in the Relationship Between Depression and Illness Severity in Chronic Fatigue Syndrome

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The self-regulatory model (SRM) proposes that both cognitive and emotional illness representations influence the coping processes adopted in response to an illness. **Aim:** This study used the SRM to explore the role of coping in the relationship between depression and self-appraisals of illness severity in a population of patients with chronic fatigue syndrome (CFS). **Methods:** The sample comprised 156 participants, 34 men and 121 women, aged between 18 and 78 yrs, who had been medically diagnosed with CFS. Participants were asked to complete three questionnaires: the Cardiac Depression Scale, Ways of Coping Questionnaire, and Severity Subscale of the Illness Perceptions Questionnaire–Revised. **Results:** Analyses revealed that almost 70% of the participants were moderately or severely depressed. Additionally, two particular subscales, social support seeking and positive reappraisals, emerged as positively contributing to self-appraisals of illness severity ($\beta = 0.20$ [$p < 0.05$] and $\beta = 0.21$ [$p < 0.05$], respectively), thereby supporting the SRM. Furthermore, results indicated that a combination of depression and coping was a better predictor of illness severity than depression alone, accounting for 22% of the variance compared with 8%, respectively. **Conclusions:** The findings suggest that focusing on depression, and particularly coping styles, during treatment interventions could have important implications for therapeutic interventions. This could lead to better treatment strategies for health professionals who work with patients with CFS. *J Allied Health* 2009; 38:91–99.

I was diagnosed quite early, but had no advice on coping, so just kept pushing to carry on with my life as usual, and probably hindered my chance of recovery. I have now had to change the way I live my life, including giving up work, to keep within my limitations.—Participant 009

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CHRONIC FATIGUE SYNDROME (CFS) is an extremely debilitating chronic illness in which a diagnosis requires the presence of unexplained persistent fatigue for at least 6 mos.¹ Globally, CFS is referred to by a multitude of names, including myalgic encephalomyelitis, chronic fatigue and immune deficiency syndrome, and postviral, posttoxic, and postimmunization syndromes; however, for the sake of consistency, the term CFS is used throughout this report. Symptoms of CFS include both cognitive and behavioral symptoms, such as impairments to memory and concentration, sore throat, muscle pain, tiredness, unrefreshing sleep, and headaches.¹ Patients with CFS typically present to a variety of health care professionals, including doctors, nutritionists, psychologists, and rehabilitation specialists; therefore, information on factors related to CFS management is relevant to a wide range of clinicians. Additionally, it is noted that there is a substantial concurrence of depression with CFS, with 35% to 80% of patients with CFS reporting depression.^{2–5} The management of depression typically involves cognitive and behavioral coping strategies. However, the role of these coping strategies in outcomes, such as perceived chronic illness severity, has not been investigated widely. The aim of this study was to explore the role of coping strategies in the relationship between depression and self-appraisals of illness severity in a population of patients with CFS.

The Self-Regulatory Model (SRM) has been widely used to investigate the relationship between cognitive and emotional responses to illness, coping strategies, and appraisals of illness management.⁶ According to the SRM, illness representations consist of five identifiable dimensions: identity, cause, timeline, consequences, and curability/control.^{6,7} More recently, Moss-Morris et al.⁸ have identified several other important components of the model, including illness coherence, emotional representations, personal control, and treatment control.

Specifically, the SRM proposes that both cognitive and emotional responses to illness influence the coping processes adopted in response to an illness.^{9–11} The SRM is a dynamic model whereby the effectiveness of the adopted coping process is appraised and influences the perceived severity of illness symptomatology (Figure 1).^{12,13}

Coping, within the framework of the SRM, refers to the behavioral and cognitive efforts used by an individual to manage a stressful encounter.¹⁴ Coping addresses two major functions: it enables the individual to actively deal with the

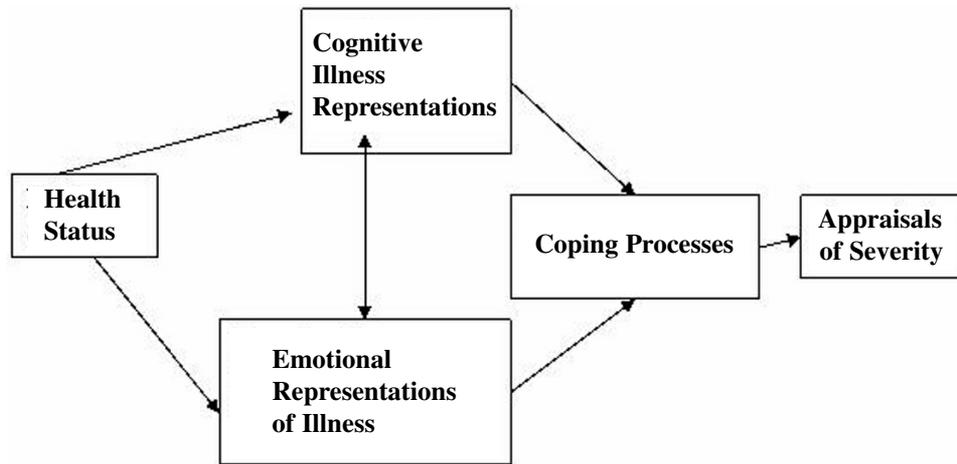


FIGURE 1. Leventhal's self-regulatory model. Sections in boldface represent the areas of focus in this study.

stressful situation (problem-focused coping) and allows for the adaptation of emotions generated by the stressful situation (emotion-focused coping).¹⁵

In the current study, the focus was on the emotional response, depression, and the mediatory role of coping processes on self-appraisals of illness severity, with a view to gaining a clearer understanding of the relationship between coping styles, depression, and appraisals of illness severity.

Depression and fatigue have been found to have a mutually exacerbating impact on one another in a healthy population.^{16,17} It has been noted that the depression experienced concurrently with CFS typically falls within the mild to moderate range and appears to be more of a reactive nature than clinical depression^{5,18,19}; nevertheless, patients with CFS and concurrent depression experience greater deficits in social functioning than patients with CFS without depression.²⁰ It has been proposed that lack of legitimization of their illness, by both the general and medical community, contributes to the psychological distress experienced by patients with CFS, particularly due to its stigmatization and the isolating factors associated with such.²¹⁻²³ Morriss et al.²⁰ found that treating depressed patients with CFS would not necessarily reduce the physiological symptoms of the illness but may in fact improve social functioning.

Past research has focused primarily on the cognitive representations of illness and has found support for their role in relation to coping processes and appraisals of illness severity. Heijmans²⁴ conducted a comprehensive study into cognitive representations of illness, coping processes, and outcome in which 98 medically diagnosed patients with CFS were asked to complete the cognitive dimensions of the Illness Perception Questionnaire, Utrecht Coping Questionnaire, and four scales from the 36-item Short-Form Health Survey. Interestingly, findings indicated that cognitive illness representations influence adopted coping processes and subsequent outcome. Nater et al.²⁵ examined coping processes in CFS, insufficient symptoms of fatigue, and nonill participants. They found that in patients with

CFS, the adoption of escape-avoidant coping processes was significantly associated with self-reports of bodily pain, low energy, and reduced activity. Nater et al.²⁵ speculated that the use of this coping process may in fact be as a consequence of illness-related variables, which may in effect contribute to the persistence of CFS.

There appears to be evidence of a relationship between specific cognitive illness representations, coping processes, and self-appraisals of illness severity in patients with CFS. However, the relationship between the emotional response to illness (depression), coping, and self-appraisals of illness severity has been neglected. As a consequence, little is known about how emotional responses to illness, such as depression, influence coping processes and how they may mediate the experience of illness severity in this population of chronically ill patients. Moreover, targeting of these factors may lead to better functional outcomes for patients with CFS. The present study focused on developing an understanding of the variation in self-reported severity of illness and the extent to which depression and coping processes are important in accounting for such variation in a community-based international group of patients with CFS.

The following preliminary hypothesis was offered: coping processes would significantly mediate the relationship between depression and perceived illness severity experienced by a community-based international sample of patients with CFS. Furthermore, it was expected that people with CFS would experience levels of depression significantly higher than that of other chronic patient populations.

Methods

PARTICIPANTS

The sample comprised 156 participants, 34 men (21.9%) and 121 women (78.1%), aged between 18 and 78 yrs

(mean, 43.5 yrs), who had been medically diagnosed with CFS. Participants were screened to ensure they did not have any other major chronic illnesses (e.g., cancer), which may have influenced their responses.

Participants were recruited through CFS support groups and general population media outlets; specifically, recruitment advertisements were placed in CFS newsletters across various English-speaking countries (i.e., Australia, United States, New Zealand, United Kingdom, and Canada) and university and metropolitan newspapers across Australia. The aim of the recruitment strategy was to have a diverse and representative sample of patients with CFS. Although there are different health care and illness classification systems throughout these countries, these differences were considered to not be related to the psychological factors of interest in this study. Furthermore, a review of the treatment literature essentially revealed consistencies in how scientific and medical communities across the sample locations view and treat CFS.

Initially, 262 potential participants contacted the researcher and 170 completed the questionnaire, resulting in a response rate of 65%. While 92 (59%) of participants completed the questionnaire online, 64 (41%) completed hard copies and returned them to the researcher via a provided reply-paid envelope. There was no significant difference between those participants who completed the questionnaire online or on hard copy. Insufficient data completion resulted in the exclusion of 14 questionnaires, leaving a total of 156 participants.

Participants were from Australia (69%), New Zealand (9%), the United States (5.2%), the United Kingdom (15.5%), and other (1.3%). The majority of participants were single, separated, divorced, or widowed (72.2%), while the remainder were married or in a de facto relationship (27.6%). Furthermore, 34.6% of the participants had achieved a secondary school education, with 64.1% obtaining a tertiary education. The majority of participants (27.6%) cited their employment status as "student," whereas 25% cited "other." This category included participants such as full-time mothers, home duties, and retirees. Part-time or casual working status was reported by 20.4% of the sample. The remainder of the sample comprised volunteers (9.9%), unemployed participants (9.2%), and only 7.9% employed on a full-time basis.

MATERIALS

The questionnaire package consisted of measures of demographic and medical characteristics as well as components of the SRM: emotional responses to illness, coping processes, and self-appraisals of illness severity.

Demographic and Medical Characteristics

The demographics section of the questionnaire measured the sex, age, marital status, country of residency, education level, and employment status of participants.

Emotional Responses to Illness (Depression)

Emotional responses to illness were assessed using the Cardiac Depression Scale (CDS) developed by Hare and Davis.²⁶ The CDS comprised 26 items, including 11 positive items, to avoid patient response sets. Hare and Davis²⁶ reported the α for this scale as 0.90.

The CDS was developed to overcome problems typically associated with other more commonly used depression scales, such as skewness inherent with the Beck Depression Inventory²⁷ as well as the Hospital and Anxiety Depression Scale, which routinely underestimates the prevalence of depression among patients with CFS.¹⁸ The CDS has been used extensively by psychologists with other chronic patient populations and has been found to be accurate and valid²⁷ (Greenwood K, Lindner H: manuscript in preparation). Furthermore, the CDS is more appropriate for measuring reactive subsyndromal depression, which is typically of that experienced by patients with CFS.²⁷

Coping Processes

Coping processes were assessed using the Ways of Coping Questionnaire (WOCQ).¹⁵ The WOCQ consists of 65 items that examine the coping processes typically used in relation to stressful situations, such as when illness-related symptoms are experienced. There are eight identifiable coping processes, including planful *problem-solving* coping processes, which involve thoughtful and purposeful efforts to solve the problem. *Confrontive* coping involves aggressive efforts to resolve the situation. *Seeking social support* involves looking for emotional, social, and educational support. Adopting a *positive reappraisals* coping process involves attempting to find a positive meaning within the situation. Cronbach α values have been reported as 0.68, 0.70, 0.76, and 0.79 for the previously mentioned subscales, respectively.²⁸ *Distancing* ($\alpha = 0.61$) occurs when the individual attempts to disengage from the stressful situation to reduce its effect. *Escape-avoidant* coping ($\alpha = 0.72$) involves making cognitive and behavioral efforts to evade the stressful situation. If an individual acknowledges his or her role in creating a stressful situation and attempts to rectify the problem, this is referred to as *accepting responsibility* ($\alpha = 0.66$). Finally, a *self-control* coping process ($\alpha = 0.70$) involves attempting to control thoughts, behaviors, and emotions generated by the stressful situation.

Coping process subscales were rated on a four-point Likert scale ranging from not used (0) to used a great deal (3). To score each subscale, the responses to the items for each scale were summed. Because the subscales do not have an even amount of questions, the sum of responses for each subscale was divided by the number of questions in the subscale, allowing for the calculation of an average score for each of the eight subscales. High scores on any particular subscale indicated that it was a strategy typically used by

the participant, usually in preference to scales that had lower scores.

Appraisals of Illness Severity

Appraisals of illness severity were assessed by one of the dimensions of the Illness Perceptions Questionnaire-Revised (IPQ-R).⁸ The IPQ-R has been found to be a reliable and valid tool for assessing appraisals of illness severity.⁸ Additionally, the authors have designed this measure so that it is easily adaptable to various illnesses and research settings. The 12-item illness severity component of the IPQ-R was extended to 28 items to incorporate symptoms commonly associated with CFS. These included impairment of short-term memory, sore throat, tender lymph glands, muscle discomfort, multi-joint pain, headaches, and unrefreshing sleep. Participants were required to select (yes = 1, no = 0) whether they have experienced the particular symptoms since diagnosis of their CFS, resulting in a score out of a possible 28 for illness severity.

PROCEDURE

Following ethics approval from La Trobe University, participants were requested to complete a hard copy of the research questionnaire package or a password-protected electronic version of the questionnaire package on a La Trobe University website. The data provided were not identifiable to any specific participant because the hard copy and electronic responses had no identifying codes. Information regarding the study and consent issues formed part of the information sheet, and submission of the completed questionnaire was considered to imply informed consent.

STATISTICAL ANALYSIS

To investigate the relationship between emotional responses to illness (depression), coping processes, and self-appraisals of illness severity, in line with the SRM, a hierarchical regression was performed using SPSS version 14 (SPSS Inc., Chicago, IL). Specifically, depression was entered into the regression model followed by coping measures to investigate the additional contribution of coping to illness severity. Preliminary statistical analyses were undertaken to review the structure of the subscales and to indicate the level of functioning in a CFS sample, comparing the means from the present sample with other samples.

DATA SCREENING

Data were checked for accuracy of entry and missing values and adjusted in accordance with the recommendations of Tabachnick and Fidell.²⁹ All variables met the assumptions of normality and homogeneity of variance other than the escape avoidance subscale of the WOCQ, which was positively skewed (skew = 3.5); therefore, a square root trans-

formation was completed to reduce the level of skewness to a more acceptable level (skew statistic = -1.71).

Results

PRELIMINARY ANALYSES

Reliability of Measures and Scale Descriptives

The mean (SD) scores, number of items per scale, internal reliability (Cronbach α) for the CDS, WOCQ subscales (untransformed), and self-appraisals of illness severity scale are presented in Table 1.

As shown in Table 1, the Cronbach α coefficients ranged from 0.53 (self-controlling) to 0.90 (CDS). The majority of the subscales used in the current study demonstrated good internal consistency, producing Cronbach α coefficients close to or greater than 0.70; however, the confrontive coping and self-controlling subscales of the WOCQ revealed low internal reliability. Folkman and Lazarus¹⁵ reported a Cronbach α of 0.70 for both these subscales in a community sample of 150 participants. Low internal reliability in this instance may be conceivably due to underlying differences between the two populations, that is, Folkman and Lazarus's sample was a community group whereas the sample in this study was a chronically ill patient group.

An independent *t* test was conducted to compare the means found by Di Benedetto et al.²⁷ and the current study. This analysis was undertaken to examine whether the levels of depression experienced by one chronic illness group, cardiac patients, was the same or different compared with the sample in this study. There was a significant difference in scores between cardiac patients (mean 76; SD 28.0) and patients with CFS (mean 108; SD 22.4) ($t [155] = 18.33, p = 0.000$). The findings of Di Benedetto et al.²⁷ indicated that scores less than 80 (10.3%) indicated no significant level of depression, scores between 80 and 99 (20.5%) specified a mild level of depression, scores between 100 and 119 (41.6%) were classed as moderately depressed, and scores greater than 120 (27.6%) indicated severe levels of depression. Therefore, it appears that more than two thirds (69.2%) of the CFS sample was moderately or severely depressed. Compared with the normative data obtained by Di Benedetto et al., the present sample of patients with CFS experienced significantly higher levels of depression than cardiac patients.

HIERARCHICAL REGRESSION ANALYSES

Main Analyses: Testing Mediation

To investigate the mediation of coping, the β values between illness severity and coping were calculated. Illness severity scores and the WOCQ subscale scores were as follows: 0.216 (confrontive), 0.171 (distancing), 0.201 (self-

TABLE 1. Scale Descriptives of the CDS, WOCQ, and Self-Appraisals of Illness Severity (n = 156)

Subscale	Items	Range	Mean (SD)	Cronbach α Coefficients
CDS	26	26–182	108 (22.4)	0.90
WOCQ				
Confrontive	6	0–18	5.81 (2.68)	0.58
Distancing	6	0–18	5.96 (3.13)	0.69
Self-controlling	7	0–21	10.17 (2.02)	0.53
Social support seeking	6	0–18	9.44 (3.91)	0.80
Accepting responsibility	4	0–12	4.43 (2.45)	0.67
Escape avoidance	8	0–24	7.74 (4.43)	0.72
Planful problem solving	6	0–18	9.14 (3.50)	0.78
Positive reappraisals	7	0–21	9.84 (4.76)	0.77
IPQ-R				
Identity severity	28	0–28	20.10 (5.29)	0.86

CDS, Cardiac Depression Scale; WOCQ, Ways of Coping Questionnaire; IPQ-R, Illness Perceptions Questionnaire–Revised.

controlling), 0.281 (seeking social support), 0.129 (accepting responsibility), 0.208 (planful problem solving), -0.276 (positive reappraisals), and 0.153 (escape avoidance).

Additionally, the relationship between depression (CDS) and coping subscales (WOCQ) was examined, and calculations emerged as follows: 0.100 (confrontive), 0.010 (distancing), 0.106 (self-controlling), -0.139 (seeking social support), 0.233 (accepting responsibility), -0.205 (planful problem solving), -0.195 (positive reappraisals), and 0.406 (escape avoidance). Furthermore, there was a significant relationship between depression and illness severity (0.299).

Results of the hierarchical regression analysis investigating the role of coping and depression in severity of CFS are shown in Table 2. The addition of all of the variables of interest revealed a significant prediction: $R = 0.518$, $F(9,146) = 5.944$, $p < 0.000$. At step 1 of the hierarchical analysis, the model revealed statistical significance for the relationship between depression and illness severity— $F(1,154) = 15.096$, $p < 0.000$ —with depression explaining 9% of the variance in perceived severity of illness in patients with CFS. The addition of all of the WOCQ subscales into the regression model at step 2 revealed a significant change in the regression model: $R^2_{change} = 0.179$. Combined, depression and coping explained 27% of the variance in self-appraisals of illness severity in this population.

Interestingly, depression was statistically significant at steps 1 and 2, thereby indicating that depression made a unique contribution to the model. The significant contributors to the variance in self-appraisals of illness severity included the coping styles seeking social support ($\beta = 0.198$, $t = 2.257$, $p = 0.025$) and positive reappraisals ($\beta = 0.209$, $t = 2.333$, $p = 0.021$).

Discussion

The primary focus of this study was to examine the utility of the SRM (Figure 1) as a model to explore the mediatory

role of coping in the relationship between depression and illness severity as reported by individuals who had been medically diagnosed with CFS. Empirical evidence for the roles of depression and coping was uncovered and is fully discussed in the following sections.

SRM

The SRM proposes that cognitive and emotional responses to illness influence coping processes, which in turn affect self-appraisals of illness. Previous research has focused predominantly on cognitive representations of illness on coping and appraisals, whereas the primary interest of this study was on the influence of emotional responses to illness, more specifically depression. The present findings indicate a relationship between depression, coping, and illness appraisal. The proposed hypothesis that coping would mediate the relationship between depression and self-appraisals of illness was not supported because each variable contributed independently to self-appraisals of illness severity. Depression accounted for 9% of the variance in perceptions of illness severity; however, it was found that the inclusion of coping styles significantly increased the amount of explained variance beyond that accounted for by depression alone, adding a further 18%. Consequently, the two factors combined explained 27% of the variance in perceived illness severity in this population of patients with CFS. This indicated that coping is important in the illness level for patients with CFS.

Two coping styles in particular emerged as significantly contributing to self-appraisals of illness severity: seeking social support and positive reappraisals.

Seeking Social Support

Seeking social support actively involves looking for emotional, social, and educational support from others.¹⁵ A person who scores highly on seeking social support will pos-

TABLE 2. Hierarchical Multiple Regression Analysis of Emotional Representations and Ways of Coping on Self-Appraisals of Illness Severity for Patients With CFS (*n* = 156)

Predictor Variable	B	SE B	β	R	R ²	Adjusted R ²	R ² change	F change	<i>p</i> value			
Step 1												
CDS	0.072	0.019	0.299*	0.299	0.089	0.083	0.089	15.096	0.000*			
Step 2												
Intercorrelations between variables												
				1	2	3	4	5	6	7	8	Severity
CDS	0.101	0.020	0.420*									0.299*
WOCQ												
1 Confrontive	0.098	0.157	0.050	1.0	0.175†	0.213*	0.204*	0.333*	0.239*	0.297*	0.218*	0.216*
2 Distancing	0.201	0.134	0.119		1.0	0.278*	0.347*	0.069	0.116	0.214*	0.161†	0.171†
3 Escape avoidant§	-0.620	0.539	-0.100			1.0	0.309*	0.114	0.353*	-0.043	0.111	0.153
4 Self-controlling	0.099	0.217	0.038				1.0	0.212*	0.312*	0.273*	0.261*	0.201†
5 Social support	0.268	0.119	0.198†					1.0	0.187	0.416*	0.502*	0.281*
6 Accept responsibility	-0.099	0.173	-0.046						1.0	0.042	0.170	0.129
7 Planful problem solving	0.087	0.134	0.057							1.0	0.484*	0.208*
8 Positive reappraisals	0.233	0.100	0.209†								1.0	0.276*
				0.518	0.268	0.223	0.179	4.460	0.000*			

CFS, chronic fatigue syndrome; CDS, Cardiac Depression Scale; WOCQ, Ways of Coping Questionnaire.

**p* < 0.01, †*p* < 0.05.

§Subscale transformed due to skewness.

itively respond to a statement such as “I talked to someone about how I was feeling.” Its emergence as a significant predictor of perceptions of illness severity demonstrated that people with CFS who acknowledged the use of this coping strategy were less likely to report a high level of illness severity. More importantly, the use of social support seeking is largely indicative of adaptive coping and has been associated with better functional outcomes in a variety of patient populations.^{30–32}

The seeking of support, whether it is educational, social, or emotional, would conceivably lead to greater knowledge of the illness and, more importantly, an increased ability to pace oneself and monitor changes that may be indicators of a potential relapse. This increased awareness may lead to behavioral changes that may in effect lessen perceived illness severity.

Positive Reappraisals

Positive reappraisals were found to be significantly associated with perceptions of illness severity; therefore, the use of such a coping process appears to have a protective mechanism against negative self-appraisals of illness severity. An individual adopting such a process will usually agree to a statement such as “I changed or grew as a person in a good way.”

Patients with CFS who adopt a style of coping where they positively appraise their situation may grow psychologically stronger from the experience. This may be as a consequence of having to assess what is really important to them in life. While they may experience feelings of loss for

the things they have had to relinquish, they may somehow find that from experiencing adversity they have grown.

The emergence of the use of positive reappraisals as a buffer against negative outcomes among people with CFS has not surfaced previously in research of people with CFS, such as that by Nater et al.²⁵ This is possibly due to differences between the two samples, including significantly different sample sizes, characteristics, and procedures.²⁵

The positive impact of these two coping strategies, seeking social support and positive reappraisals, could have important implications for therapeutic interventions. In practical terms, it means that health care providers should encourage and assist their patients with CFS in gathering as much information as possible regarding their illness. This, coupled with developing a good support system in terms of family and friends, may lead to more positive appraisals of illness severity. Additionally, health care providers could persuade their patients with CFS to focus on positively appraising their illness situation. For example, patients with CFS could be encouraged to engage in planning or reflective thinking on projects during the times when they are bed-bound due to exhaustion. Therefore, patients with CFS could begin to see these “downtimes” in a positive and productive manner instead of a negative way. Additionally, simple things such as assessing their level of impairment on a daily basis and noting improvements may enable patients to more positively appraise their illness severity. These strategies should also help patients to adopt more positive self-talk, rather than focusing on the negative aspects of their illness, which may

potentially lead to negative emotions and higher appraisals of illness severity.

Depression

In comparison with other patient groups, such as cardiac patients, it was found that patients with CFS in this sample experience higher levels of depression.²⁷ This supports past research that has reported significant levels of depression among patients with CFS.^{3,5} More importantly, this finding supports the adoption of a more pragmatic measure, such as the CDS, to identify depression in this and other chronic illness populations.

There were significant associations uncovered between depression and the coping strategies of accepting responsibility, planful problem solving, positive reappraisals, and escape avoidance, thereby indicating that an important relationship exists between these factors within the framework of the SRM.

Depression in CFS could be as a consequence of several factors, including the elusive etiology of the illness, there being no known effective treatment regimen, and the stigmatization many patients experience as a consequence of their illness. Thomas and Bosch²³ found that for people with CFS, lack of social support, skepticism of others, and perceived changes in identity all negatively impact upon them and often lead to maladaptive coping strategies such as suicidal thoughts, social withdrawal, and depression. Conversely, support from family, friends, and medical practitioners helped to create more adaptive coping strategies. These findings, along with those of this study, further highlight the importance of social support in facilitating more positive outcomes in terms of self-appraisals of illness severity and psychological functioning. Specifically, health professionals working with patients with CFS could promote the importance of patients maintaining, or indeed developing, social networks. Additionally, while there is no known treatment for CFS, it is important that the depression commonly associated with it be assessed and treated accordingly.

Treatment could take the form of cognitive-behavioral therapy, which has been found to be effective in the treatment of depression diagnosed concurrently with other chronic illnesses such as rheumatoid arthritis,³³ diabetes,³⁴ and human immunodeficiency virus.³⁵ Antidepressants have also been reported to be valuable in the treatment of CFS for some, but not all, patients.³⁶

METHODOLOGICAL LIMITATIONS

CFS is an extremely debilitating illness of a cyclical nature. Often people with CFS are bedridden and totally incapacitated for considerable periods of time. The patients with CFS who participated in this study were no doubt debilitated to a degree; however, they were still able to complete the lengthy questionnaire provided to them, thus implying

that at the time of questionnaire completion they were at a more functional level than they may have been during a relapse period. Additionally, a number of patients with CFS did not complete the questionnaire within the research time frame even though they requested an access code to the survey; this could indicate that the task was beyond their capacity at that particular time. The responses received during a relapse phase may have been different from those given during a nonrelapse period. For example, it would be expected that levels of perceived illness severity would be significantly higher when levels of physical, cognitive, and social functioning are appreciably decreased.

A further methodological limitation of this study involves the controversial nature of the etiology of CFS. Most people with CFS attribute their illness to physiological causes.³⁷ However, a definitive diagnostic test remains elusive; consequently, the physiological/psychological debate surrounding CFS continues. The current research was conducted from a psychological perspective, so while the research focus was not on the etiology of CFS, the mere association with psychology may have possibly caused some patients with CFS a degree of trepidation. They may have construed the research negatively and, as a consequence, elected not to participate. These two aforementioned methodological limitations could have resulted in the sample not being a true reflection of all patients with CFS, but rather a specific subgroup within the population.

The results of this study were based on subjective self-reports; therefore, the issue of social desirability is also worthy of consideration. This issue is possibly more noteworthy with this particular population due to the ongoing issues of lack of legitimization and stigmatization associated with CFS. Participants may have been eager to depict themselves, and their illness, in a particular manner and to avoid some of the stereotypes associated with CFS.

FUTURE RESEARCH

Future research needs to address the methodological limitations discussed in the previous section. To gain more accurate insight into the underlying cognitive factors associated with perceptions of illness severity in CFS, it is imperative that sample populations comprise people with varying degrees of functional impairment. This will allow future researchers to explore how, and indeed if, depression and coping processes alter with shifting levels of functionality and how this impacts on perceptions of illness severity.

The current study found evidence that depression and coping processes do significantly contribute to perceptions of illness severity in people diagnosed with CFS. However, it is important to note that these results simply imply that a relationship exists between these variables and does not demonstrate causation. To examine this relationship further, and to in fact explore whether this model can be seen to be causal, a controlled longitudinal study needs to be conducted. Cognitive-behavioral therapy has been

found to effectively improve functionality in some people with CFS.^{38,39} Therefore, it would be relevant to conduct such a study and include two groups of people diagnosed with CFS; one group would receive cognitive-behavioral therapy aimed at modifying maladaptive coping processes, while the other group would receive a placebo treatment. A comparison of pretreatment and posttreatment coping processes and perceptions of illness severity would plausibly offer empirical support for a causal relationship.

Conclusions

In conclusion, the current study clearly demonstrated support for the SRM with the finding of the significance of depression and coping process in predicting an individual's perception of illness severity. Specifically, depression and the coping processes of positive appraisals and seeking social support were important predictors of perceptions of illness severity. Therefore, it may emerge that the targeting of these particular coping processes by a wide range of health professionals during treatment interventions may effectively lead to lower levels of perceived illness severity and better psychological and social functional outcomes for this population of chronically ill people. One of the secondary findings of this study was the high incidence of depression uncovered in this patient population. Morriss et al.²⁰ found that patients with CFS with concurrent depression experience increased social deficits compared with nondepressed patients with CFS. If depression in this population is not recognized and treated, it can only be detrimental to long-term functional outcomes for patients with CFS. Therefore, it is important that all medical and allied health professionals recognize and address this possibility when they are treating someone diagnosed with CFS.

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