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Cognitive Factors in the Maintenance of Chronic Fatigue Syndrome

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the degree of Doctor in Philosophy
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Abstract

Chronic Fatigue Syndrome (CFS) is an illness characterized by persistent debilitating fatigue of uncertain origin. Precipitating and perpetuating factors of this illness are thought to be distinct and the aim of this thesis was to gain greater insight into the role of cognitive factors which may maintain the condition. This work was guided by two central frameworks, the self-regulatory model of illness representations and the cognitive taxonomy of psychopathology. These were used to define the different cognitive constructs and to investigate the way they function as a system to maintain pathological schema and disability in CFS.

Three studies using different methodologies were conducted to test the hypotheses. The first employed a descriptive comparative design to ascertain whether CFS patients have unique cognitions which contribute to their disability over time. The sample was comprised of CFS patients without depression (n=39), CFS patients with a concurrent diagnosis of depression (n=14), patients with a primary diagnosis of depression (n=20); and healthy controls (n=38). The groups were matched in aggregate for age, gender, race, and education. Subjects completed the Cognitive Errors Questionnaire-Revised, which measures cognitive distortions relevant to both general and somatic events, and the Illness Perception Questionnaire, which measures the five dimensions of the illness representation in conjunction with other standard measures. Between-group analyses confirmed that the depressed group was distinguished by a low self-esteem, feelings of guilt and self-recriminations, the propensity to make cognitive distortions across all situations, and to attribute their illness to internal, stable and global factors. In contrast, the CFS patients were characterized by low ratings of their current health status, a strong illness identity, external attributions for their illness, and distortion in thinking that were specific to somatic experiences. CFS depressed patients had lower self-esteem than non-depressed patients and had the most pessimistic illness beliefs. A six month follow-up showed that CFS patients' cognitive structures and level of disability remained remarkably stable. Illness identity, serious consequences, somatic errors, and limiting coping accounted for a substantial proportion of the variance in CFS patients' disability scores over time. These results are discussed in terms of their support for both of the cognitive models. CFS patients appeared to have distinct cognitions which were associated with ongoing disability.

The subsequent two quasi-experimental studies were conducted in a single laboratory session. The first of these used standardized neuropsychological tests to determine whether psychological variables, particularly somatic focus, interfere with CFS patients' performance on high load attention tasks. The discrepancy between CFS patients' subjective reports of concentration and memory difficulties and objective evidence of these deficits was also investigated. The subjects included 25 CFS patients matched

for age, gender, and intelligence with two groups of healthy controls. One of these groups underwent a somatic induction procedure as part of the investigation of the effects of somatic preoccupation on attention tasks. The tests included the verbal memory subscales from the Wechsler Memory Scale-Revised and the Paced Auditory Serial Addition Task (PASAT), a measure of divided attention and speed of information processing. The analyses of the induction data failed to support the validity of this procedure resulting in the somatic control group being dropped from the analysis. Consistent with previous studies the principal deficit in the CFS group appeared to be on the PASAT. The CFS group appeared to be less accurate than healthy controls in their appraisal of their performance, which were related to negative mood rather than objective performance. Depression was also related to high performance expectations in the CFS group, but not the controls. The results did not support the original assumption that somatic preoccupation contributes to neuropsychological difficulties in CFS. However, mood factors were clearly shown to impact on both the objective and subjective experience of symptoms.

The aim of the final study was to investigate the concordance between the self-report data collected in study one and information processing biases in CFS. Comparisons of the CFS patients and healthy controls on a modified Stroop attention task and a self-schema memory task, found no evidence of an illness-related bias in CFS patients' processing of information. Rather, they demonstrated a significant tendency to be distracted by and remember depressed-relevant stimuli. The exception was their propensity to make somatic interpretations. These results are discussed in terms of the defensiveness hypothesis, which proposes that CFS patients' negative, external illness perceptions and somatic distortions may act as a defence against underlying feelings of low self-esteem. The complex nature of CFS patients' cognitive structures was revealed and the need to use measures which do not rely on self-reports was clearly demonstrated. These studies provided further support for the central role of cognitive factors and mood in perpetuating CFS.

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List of Abbreviations

ACTH	adrenocorticotrophic hormone
AVP	arginine vasopressin
ANOVA	analysis of variance
ANCOVA	analysis of covariance
BDI	Beck Depression Inventory
BDV	Borna disease virus
BP	blood pressure
CANTAB	Cambridge Automated Neuropsychological Test Battery
CATEGO	Computerized Diagnostic System for ICD-9 Diagnoses
CBT	cognitive behavioural therapy
CDC	Centers for Disease Control and Prevention
CEQ-R	Cognitive Error Questionnaire Revised
CF	chronic fatigue
CFIDS	chronic fatigue immune dysfunction syndrome
CFS	chronic fatigue syndrome
CIDI	Composite International Diagnostic Interview
CMV	cytomegalovirus
CNS	central nervous system
CRH	corticotrophin-releasing hormone
CVLT	California Verbal Learning Test
DBP	diastolic blood pressure
DTH	delayed-type hypersensitivity
DIS	Diagnostic Interview Schedule
DSM	Diagnostic and Statistical Manual of Mental Disorders
DTH	delayed-type hypersensitivity
DV	dependent variable
EBV	Epstein-Barr virus
ERPs	event-related potentials
GAD	generalized anxiety disorder
GP	general practitioner
HAD	The Hospital Anxiety and Depression Inventory
HHV6	human herpesvirus 6

HPA	hypothalamic-pituitary-adrenal
HR	Heart rate
IBQ	Illness Behaviour Questionnaire
ICD	International Classification of Diseases
IPQ	Illness Perception Questionnaire
IV	independent variable
MANOVA	multiple analysis of variance
MANCOVA	multiple analysis of covariance
MCS	multiple chemical sensitivities
ME	myalgic encephalomyelitis
MHI-5	Five Item Mental Health Scale
MI	myocardial infarction
MMPI	Minnesota Multiphasic Personality Inventory
MRI	nuclear magnetic resonance imaging
MS	multiple sclerosis
NA	negative affect
NART	National Adult Reading Test
NK	natural killer
PA	positive affect
PANAS	Positive and Negative Affect Schedule
PASAT	Paced Auditory Serial Addition Test
PSE	Present State Examination
PIFS	post-infectious fatigue syndrome
RA	rheumatoid arthritis
RCIS	Revised Clinical Interview Schedule
RDC	Research Diagnostic Criteria
SAD	seasonal affective disorder
SADS	Schedule for Affective Disorders and Schizophrenia
SAT	Verbal Scholastic Aptitude Test
SBP	systolic blood pressure
SCID-P	Structured Clinical Interview (psychiatric patient version)
SCAN	Schedules for Clinical Assessment of Neuropsychiatry
SIP	Sickness Impact Profile
SPECT	single-photon-emission-computed tomographic scanning

STAI	State-Trait Anxiety Inventory
Tukey HSD	Tukey honestly significant difference
US	United States
VPA	Verbal paired associates
WAIS	Wechsler adult intelligence scale
WAIS-R	Wechsler adult intelligence scale revised
WMS	Wechsler memory scale
WMS-R	Wechsler memory scale revised