



Kent Academic Repository

Hamilton-West, Kate (2003) *Coping with stress and illness*. Doctor of Philosophy (PhD) thesis, University of Kent.

Downloaded from

<https://kar.kent.ac.uk/94394/> The University of Kent's Academic Repository KAR

The version of record is available from

<https://doi.org/10.22024/UniKent/01.02.94394>

This document version

UNSPECIFIED

DOI for this version

Licence for this version

CC BY-NC-ND (Attribution-NonCommercial-NoDerivatives)

Additional information

This thesis has been digitised by EThOS, the British Library digitisation service, for purposes of preservation and dissemination. It was uploaded to KAR on 25 April 2022 in order to hold its content and record within University of Kent systems. It is available Open Access using a Creative Commons Attribution, Non-commercial, No Derivatives (<https://creativecommons.org/licenses/by-nc-nd/4.0/>) licence so that the thesis and its author, can benefit from opportunities for increased readership and citation. This was done in line with University of Kent policies (<https://www.kent.ac.uk/is/strategy/docs/Kent%20Open%20Access%20policy.pdf>). If you ...

Versions of research works

Versions of Record

If this version is the version of record, it is the same as the published version available on the publisher's web site. Cite as the published version.

Author Accepted Manuscripts

If this document is identified as the Author Accepted Manuscript it is the version after peer review but before type setting, copy editing or publisher branding. Cite as Surname, Initial. (Year) 'Title of article'. To be published in **Title of Journal**, Volume and issue numbers [peer-reviewed accepted version]. Available at: DOI or URL (Accessed: date).

Enquiries

If you have questions about this document contact ResearchSupport@kent.ac.uk. Please include the URL of the record in KAR. If you believe that your, or a third party's rights have been compromised through this document please see our [Take Down policy](https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies) (available from <https://www.kent.ac.uk/guides/kar-the-kent-academic-repository#policies>).

Coping With Stress and Illness

Coping with Stress and Illness

Kate Hamilton-West

**Centre for Research in Health Behaviour
Department of Psychology
University of Kent at Canterbury**

**Thesis submitted in accordance with the requirements for the degree
of Doctor of Philosophy in the Faculty of Social Sciences at the
University of Kent at Canterbury**

March 2003

Abstract

Research evidence suggests that coping may intervene in the relationship between stress and illness. This research has important implications in the medical context, in that it necessitates a focus on the patient, rather than just the underlying illness and suggests that psychological interventions may be as important as medical interventions for attaining optimal health outcomes. The coping concept is also central to the biopsychosocial model of illness, in which it is recognised that health may be affected not only by biological factors (eg. a virus, genetic predisposition), but also by psychological factors (eg. personality and coping style) and social factors (eg. the social resources available to aid coping).

However, researchers have also noted that the concept of coping is lacking in conceptual clarity and in the availability of adequate methods of measurement. This thesis therefore aimed to address these limitations and to assess the effectiveness of a coping-based intervention for improving physical and psychological well-being in a sample of patients with a chronic illness. Five studies are presented. The first four are aimed at developing a valid method of coping assessment. Study I (N=51) examines descriptions of real-life coping episodes, in order to consider the types of phenomena that 'belong' to the coping concept. Study II (N=132) translates these descriptions into items for a situation-response scale, and examines interrelationships between coping responses. Relationships between coping scores, *psychological* and *social* variables are examined in Study III (N=102), and relationships between coping scores and *biological* variables explored in Study IV (N=21). The final study (N=68) represents a practical application of the coping measure developed in studies 1-4 using a patient population. Relationships between dispositional coping style and the strategies used on a daily basis to cope with the on-going effects of a chronic illness are examined. The implications of dispositional and daily coping for health outcomes in this group of patients are also investigated and a coping-based intervention applied. The theoretical and practical implications of this research are discussed.

Memorandum

The research for this dissertation was conducted whilst the author was a full-time postgraduate student at the University of Kent at Canterbury (Dec 1999-March 2003)

The theoretical and empirical work herein is the independent work of the author. The execution of the studies contained here did not require the physical assistance of any person other than the author, unless specified. Intellectual and practical debts are acknowledged.

The author has not been awarded a degree by this or any other university for work included in this thesis.

Study IV was conducted in collaboration with an MSc student, Matthew Staples. Although Matthew conducted the initial planning for this study, the author was fully involved in all subsequent stages. Matthew produced a separate report relating to this study in his MSc dissertation. The data presented here relating to coping processes were not included in this report and all analyses reported here are the independent work of the author.

Acknowledgements

There are many people to whom I am indebted for their support and assistance over the past three years. Firstly, I would like to thank all the people who took time to complete questionnaires for this research, in particular the members of NASS who wrote frankly about their experiences with ankylosing spondylitis. I received many letters and telephone calls from individuals who felt that the psychological aspects of their condition had never previously been addressed and that more work in this area is greatly needed. I hope that my research with NASS encourages others to examine coping processes within this group of patients in the future. I would also like to thank Fergus Rogers, Director of NASS for allowing me to promote the study via AS News. Peter, Ann and Rachel Hamilton and the members of the Taunton NASS Branch also provided valuable insights and advice relating to AS and were kind enough to welcome me into their group. The members of Olive Cottages, old and new, have been a great source of support and advice throughout my time at UKC. All have, in their own way, made Canterbury a positive place to study and I would like to extend thanks in particular to Brynja Bragadottir, Chris Bridle, Christina Chryssanthopoulou, Karen Jones, Georgina Randsley De Moura, Claire Rutter, Sue Sherman and Liz Steadman for invaluable practical advice and social support. I would also like to thank my supervisor, Lyn Quine for allowing me the freedom to pursue research within a field that is plagued by methodological and theoretical underspecification. Lyn has provided invaluable advice throughout my PhD, while allowing me to pursue my own ideas and interests. I feel that I have learnt a lot during the course of my PhD and have enjoyed this experience immensely. Finally, I would like to thank my husband Tim for always being there for me, even when I have my mind on regression analyses or endocrine processes, for bringing me coffee when I'm working late and for making me smile even in the midst of data-analyses. I can't think of a better form of social support for coping with 'writing up' and am more grateful than I could ever put into words.

Contents

Abstract	i
Memorandum	ii
Acknowledgements	iii
Contents	iv
Index to tables	vi
Index to figures	viii

THEORETICAL CHAPTERS

Chapter I: Introduction & Research History	P1-8
Chapter II: Stress	P9-25
Chapter III: Coping	P26-43
Chapter IV: Discussion and Aims of Current Research	P44-53

EMPIRICAL CHAPTERS

Chapter V: Development of a Coping Questionnaire	P54-123
○ Study I: Identifying Situation and Response Categories for the Development of a Coping Questionnaire	P60-71
• Method	P60
• Results	P63
• Study I Conclusions and Implications for Study II and III	P68
○ Study II: Development of a Coping Questionnaire and Identification Of Coping Dimensions	P72-88
• Method	P72
• Results	P76
• Study II Conclusions and Implications for Study III	P86
○ Study III: Relationship between Coping Scores and Person Variables	P89-127
• Method	P91
• Results	P95
• Study III Conclusions and Implications for Study IV	P106

Contents Continued

○ Study IV: Relationship between Coping Style and Cortisol Response to an Acute Experimental Stressor	P110-124
• Method	P113
• Results	P118
• Conclusions and Implications for Future Research	P121
○ General Discussion to Chapter V	P125-127
Chapter VI: Coping with a Chronic Illness, Study V	P128-166
• Method	P134
• Results	P144
• Discussion	P160

DISCUSSION & CONCLUSIONS

Appendices

App 1:	Stressful Situations Questionnaire
App 2:	Coping with Stressful Situations Questionnaire: Version 1
App 3:	Information Sheets Distributed to Adult Education Centres
App 4:	Participant Information Sheets for Study II
App 5:	Coping with Stressful Situations Questionnaire: Version 2
App 6:	Advertisement placed in NASS Newsletter
App 7:	Information-sheet and consent form
App 8:	Participant Information Booklet
App 9:	Daily Diary – Control Condition
App 10:	Daily Diary – Experimental Condition Instructions
App 11:	One month follow-up
App 12:	Three-month follow-up

Index to Tables

Chapter V: Study I

Table 1: Situation Category Frequencies	P63
Table 2: Perceived Stressfulness, Controllability and Coping Effectiveness	P64
Table 3: Response Category Frequencies	P65
Table 4: Response Category Labels and Descriptions	P66

Chapter V: Study II

Table 1: Imaginability Ratings and Proportion of Respondents Indicating That They Had Experienced Situations of the Type Described	P77
Table 2: Means and Standard Deviations for Stressfulness, Controllability and Coping Effectiveness	P78
Table 3: Comparison of Means for Time 1 vs Time 2	P79
Table 4: Correlations Between the Coping Items and Coping Factors for Time 1	P81
Table 5: Component Correlation Matrix	P81
Table 6: Correlations Between the Coping Items and Coping Factors for Time 2	P83
Table 7: Component Correlation Matrix	P83
Table 8: Correlations Between the Coping Items and Coping Factors Revised Scale	P85

Chapter V: Study III

Table 1: Cross-situational Consistency of Factor Scores	P96
Table 2: Correlations Between Time 1 Coping and Person Variables	P98
Table 3: Correlations Between Time 2 Coping and Person Variables	P99
Table 4: Hierarchical Regression Analysis Predicting Confrontation Scores (Time 1) From Person Variables and Appraisals	P102
Table 5: Hierarchical Regression Analysis Predicting Confrontation Scores (Time 2) From Person Variables and Appraisals	P102
Table 6: Hierarchical Regression Analysis Predicting Emotional Response Scores (Time 1) From Person Variables and Appraisals	P103
Table 7: Hierarchical Regression Analysis Predicting Emotional Response Scores (Time 2) from Person Variables and Appraisals	P104

Table 8: Hierarchical Regression Analysis Predicting Avoidance Scores (Time 1) from Person Variables	P104
Table 9: Hierarchical Regression Analysis Predicting Avoidance Scores (Time 2) from Person Variables	P105
Chapter V: Study IV	
Table 1: Standardized change scores for cortisol and anxiety	P121
Chapter VI: Study V	
Table 1: Scale Reliability and Summary Statistics For Measures Used	P139
Table 2: Negative Impacts of AS on Participants' Lives	P146
Table 3: Positive Impacts of AS on Participants' Lives	P147
Table 4: Summary Statistics for Health Behaviours	P148
Table 5: Point-biserial Correlations Between Health Behaviours Coping Style and Health Outcomes	P148
Table 6: Bivariate Correlations between Health Behaviours and Coping Style	P149
Table 7: Hierarchical Regression Analysis Predicting BASDAI Scores at 1-Month Follow-up from Baseline Disease Activity, Age and Coping	P151
Table 8: Hierarchical Regression Analysis Predicting BASFI Scores at 1-Month Follow-up from Baseline Functional Status and Coping	P152
Table 9: Hierarchical Regression Analysis Predicting BASFI Scores at 3-Month Follow-up from Baseline Functional Status and Coping	P153
Table 10: Summary Statistics for the Daily Measures and Associations with Coping Style	P154
Table 11: Summary of Multilevel Random Effects Analyses Predicting Coping Efficacy from Coping	P155
Table 12: Summary of Within-Persons Relations Associations of Coping and Coping Efficacy, With Same-Day Pain, Negative Mood and Positive Mood	P156
Table 13: Summary of Within-Persons Relations Associations of Coping and Coping Efficacy, With Next Day Negative Mood and Positive Mood	P157
Table 14: Sample-Characteristics by Group Assignment	P158

Index to Figures

Chapter IV

Fig 1: Diagram Representing Factors Influencing Outcomes of Stressful Encounters P48

Chapter V: Study II

Fig 1: Plot of Eigenvalues Against Components for Time 1 Coping Responses P80

Fig 2: Plot of Eigenvalues Against Components for Time 2 Coping Responses P82

Fig 3: Plot of Eigenvalues Against Components for Time 1 Coping Responses
- Revised Scale P84

Fig 4: Plot of Eigenvalues Against Components for Time 2 Coping Responses
- Revised Scale P84

Chapter V: Study IV

Fig 1: Mean Salivary Cortisol Levels at Time 1 to Time 6 P119

Fig 2: Plot of Cortisol Levels for Each Participant P119

Chapter VI: Study V

Fig 1: Mean BAS-G Scores for Intervention vs Control Participants P158

CHAPTER I: INTRODUCTION & RESEARCH HISTORY

Coping Perspectives in the 20th Century

Since the beginning of the 20th Century, researchers have attempted to understand the ways in which individuals deal with stressful situations and the links between stress, coping and illness. Psychology in the early part of the century was dominated by Freud's notion of the 'ego' and attempts to deal with aversive thoughts or feelings were referred to as 'defence mechanisms' (e.g. Freud, 1926). Early research also viewed coping from a largely biological perspective. For example, in 1932 Cannon described a 'fight or flight response', involving sympathetic nervous system (SNS) and endocrine responses to perceived threat that mobilise the organism to either attack the threat, or to flee. Cannon viewed these biological changes as a positive adaptive response of the body to stress, but did not yet make the link between such biological changes and potentially damaging effects of stress on the body. Cannon's work paved the way for another influential theorist, Hans Selye, who in 1956 introduced the notion of a 'generalized anxiety syndrome' involving activation of the hypothalamic-pituitary-adrenal (HPA) axis, which connects the central nervous system (CNS) with the endocrine system. From observations of the effects of laboratory-induced stress in rats, Selye (1956) concluded that the body responds in the same way to a broad range of stressors, and that these biological responses can lead to illness. Selye's (1956) generalised adaptation syndrome comprises three stages; the first a mobilisation effort on recognition of a stressor, the second an effort to resist or adapt to the stressor and the third, depletion of resources (resulting in exhaustion) if the stressor can not be overcome. It is this third stage that Selye proposed links stress to illness, we become ill because stress depletes our resources.

Parker and Endler (1996) point out that it was not until 1967 that the category for 'coping' was included in the Psychological Abstracts (see Popplestone & McPherson, 1988). Following this, the 1970's and 80's saw a shift in research focus away from an emphasis on ego psychology and unconscious defence mechanisms and towards an emphasis on conscious coping efforts (De Ridder, 1996). Definitions proposed during this era reflect a conceptualisation of coping as something purposeful that involves some form of action or effort. For example, Pearlin and Schooler (1978) define coping as 'things that people do to avoid being harmed by life strains' (p2), whilst

Cohen and Lazarus (1979) see coping as 'any efforts at stress management' (p220). This shift necessitated a change in the measurement of coping. De Ridder (1997) explains that whereas defence mechanisms were generally measured using clinical observation, projective tests and open-ended response formats (Haan, 1977; Vaillant, 1977; Cohen, 1987), coping questionnaires take a more explicit approach (see chapter III for a detailed discussion of coping measures).

In addition to the shift in focus from unconscious to conscious attempts to deal with stressful situations, the research literature has seen a move away from the purely biological perspective towards a biopsychosocial approach. It is becoming increasingly evident that the extent to which situations are perceived to be stressful may not be wholly dependent on biological factors such as autonomic or sympathetic nervous system reactions. Psychological factors (e.g. personality variables and individual differences in information-processing in stressful situations) and environmental factors (e.g. social resources, ongoing life events) may also play an important role.

Implications for the Medical Context

The biopsychosocial approach has important implications in the medical context in that it necessitates treating the 'whole person' rather than just the biological changes that have taken place (Ogden, 1996). Around the same time that researchers began to recognise individuals as active 'copers' rather than passive recipients of stress, the attention of General Practitioners shifted away from a focus on the illness and towards a focus on the patient (see Balint et al., 1970). The ways in which doctors interacted with their patients became an important subject of research and a voluminous literature emerged, reporting relationships between consultational style and a range of outcomes. This research revealed some surprising results. Not only did the nature of the interaction between patients and doctors have important implications for 'soft' outcomes such as satisfaction, understanding, and compliance (e.g. Karsh et al., 1968; Francis et al., 1969; Ley, 1972), but it also significantly impacted on a range of 'hard' outcomes, that previously would not have been considered amenable to change by psychological means, such as length of stay in hospital after an operation and the need

for analgesics (reviewed by Johnson, 1984). This research therefore highlighted the crucial importance of psychological variables in understanding and treating illness, an understanding that has paved the way for coping research.

The biopsychosocial model is particularly important in the treatment of chronic conditions, as responsibility for management tends to lie largely in the hands of the patient rather than the medical professional (Assal, 1999). A 1997 report by the World Health Organisation revealed that more than 80% of medical consultations are for chronic conditions, however when medical advice is sought this may bring little comfort. Devins and Binik (1996) explain that chronic conditions are often difficult to diagnose, treatments may not always be available and if they are available the associated side-effects may add an additional strain on the patient. Chronic conditions present a diverse set of challenges to the patient and impact on all areas of life. For example, ambiguity regarding diagnosis and treatment may leave the individual with a sense of uncertainty and fear for the future, the condition may also lead to pain and disability and may interfere with lifestyles by preventing involvement in valued activities, the individual may find it difficult to maintain hope, self-esteem and feelings of control and may also have to deal with negative social stereotypes and stigma (Devins & Binik, 1996). These challenges are likely to be of great significance to the patient, although they are largely ignored by the traditional biomedical approach.

The failure of traditional medicine to provide a 'cure' for chronic conditions has meant that patients often turn to alternative forms of treatment. One approach that has been particularly influential since the beginning of the 20th Century is the tradition of self-help. This movement influenced the establishment of patient support groups such as Alcoholics Anonymous and led to the publication of numerous books and articles claiming that patients could 'cure themselves' by focusing on positive thoughts and feelings (see <http://www.nlm.nih.gov>). This philosophy is evident in the writings of Norman Cousins, who was diagnosed in the 1960s with the chronic pain condition ankylosing spondylitis. Cousins first reported his experiences of disease in the New England Journal of Medicine in 1976, Cousins found that traditional medicine could offer little to help him and was faced with a choice to become resigned to his fate or to take an active role in promoting his own recovery. Influenced by the writings of

Cannon (1932) and Selye (1976), Cousins reasoned that if negative emotions produce negative changes in the body then positive emotions should have the opposite effect. He therefore began to integrate humour (eg. amusing films, humour books) into his daily routine. Cousins reported that '10 minutes of genuine belly laughter had an anaesthetic effect and would give me at least two hours of pain free sleep' (p.1461). It is not possible to determine conclusively whether Cousins' experience represents anything more than a placebo effect. However, more recent research has suggested that many interventions aimed at enhancing positive thoughts and feelings do have demonstrable important benefits for chronically ill individuals (eg. Vickers & Cassileth, 2001). Recent research also suggests that the occurrence of positive emotions during periods of adversity may perform an important adaptive function by loosening the hold that negative emotions gain on an individual's mind and body, undoing the narrowed psychological and physiological preparations for specific action and allowing the individual to engage in active coping efforts (see Folkman, 1997; Fredrickson, 2000). The influence of negative emotions on psychological and physiological processes will be considered further in chapter II.

Person-Environment Interactions

This biopsychosocial approach is also dependent on the recognition of stress as resulting from an interaction between the individual and the environment. That is to say, the recognition that stressfulness is not something intrinsic to the situation, but depends on the individual's *appraisal* of the situation. The role of appraisal processes in determining individuals' reactions to potential stressors has long been recognised. Power and Dalgleish (1998) for example, highlight Thomas Aquinas' suggestion that emotions such as fear or sorrow arise from an initial impulse to approach or avoid an object, followed by an evaluation of the object (Summa Theological, 1266-1273). They explain that these ideas have been influential in more recent conceptualisations of the relationship between cognition and emotion. For example, in 1960, Magda Arnold wrote that "Emotion seems to include not only the appraisal of how this thing or person will affect me, but also a definite pull toward it or away from it" (p172; See Power & Dalgleish, 1998 for a more detailed discussion of relationships between emotion and cognition).

The work of Lazarus in the 1970's (e.g. Lazarus, 1975; Cohen & Lazarus, 1979) suggested that appraisal processes are important not only for determining the ways in which individuals *experience* stress, but also the methods selected to *cope* with stress. Lazarus defines two types of appraisal: primary and secondary. The former involves an assessment of the situation as positive, neutral, or negative in its consequences and a further appraisal of negative consequences in terms of their possible harm, threat or challenge to the individual. The latter involves an appraisal of resources as either sufficient or insufficient to meet this harm, threat, or challenge. The concept of appraisal is important in understanding coping in that it acknowledges a role of resources and coping strategies in mediating between a stressful experience and an outcome. Lazarus and Folkman (1984) define resources as what an individual 'draws on to cope' and argue that resources 'precede and influence coping' (p.158). Resources may either be social (eg. Money, social support, distance from professional help) or personal (eg. Energy, physical strength, personality characteristics) (see Moos & Schaefer, 1993; Maes, Leventhal & De Ridder, 1996). The influence of personal and social resources on coping will be considered further in chapter III.

This change in the conceptualisation of stress is also reflected in coping definitions. For example, Lazarus and Launier's (1978) description of coping as 'efforts, both action-oriented and intrapsychic, to manage (i.e. master, tolerate, reduce, minimise) environmental and interpersonal demands and conflicts among them' (p311) demonstrates a perception of stress as something external to the individual. In 1984 however, Lazarus and Folkman proposed that coping involves 'constantly changing cognitive and behavioural efforts to manage the specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person' (p. 114). Fleishman's (1984) definition of coping as 'overt and covert behaviours that are taken to reduce or eliminate psychological distress or stressful conditions' (p229) also acknowledges the role of both psychological and environmental factors.

Coping Research for the 21st Century.

Despite the changes in conceptualisations of coping over the 20th century, many early ideas remain influential. The notion that our bodies are designed to respond to stress with a ‘fight or flight response’ (Cannon, 1932) may explain why individuals do not necessarily select the most appropriate methods of dealing with stressful situations. Such responses may have been useful in our evolutionary past when faced with a dangerous predator, but seem unlikely to be well suited to the types of stressors encountered in modern life, such as facing the threat of redundancy, or taking an important exam. The idea that we have a tendency to fight or flee when faced with stress also has parallels with the focus of some recent research on approach and avoidance as important dimensions of coping (see chapter III).

Although Selye’s ‘General Adaptation Syndrome’ (1956) underestimated the role of psychological factors, the notion that prolonged stress could deplete resources and have detrimental effects on the body has led the way for research into links between physical illness and stress. The work of Cannon and Selye also highlighted the role of neuroendocrine processes in the relationship between stress and illness. Research interest in these processes over the past two decades has spurred the development of a new and growing discipline, ‘psychoneuroimmunology’. Research findings within this field will be discussed in chapter II.

In addition to the contributions of Cannon and Selye to modern day coping research, Parker and Endler (1996) highlight the influence of Anna Freud’s notion that only a restricted range of the available defence mechanisms would be used by an individual faced with a stressful situation, and that each person has a preferred method of dealing with stressful situations (A. Freud, 1946). The idea that individuals have characteristic styles of coping with stressful situations has been the subject of considerable debate over the past few decades. Two opposing perspectives have emerged in the research literature. While Lazarus and Folkman’s 1984 definition (above) reflects the view that coping is a dynamic process that changes according to the situation, others have argued that coping is a relatively stable personality disposition or individual style. For example Bolger (1990) proposed that ‘coping is

personality in action under stress' (p525). These opposing perspectives will be discussed further in chapter III.

At the beginning of the 21st century, coping remains a topic of considerable research interest. This thesis aims to consider what conclusions can be drawn from over a century of research, and how these findings can be translated into practical interventions to aid coping in the medical context.

CHAPTER II: STRESS

SECTION I

Why is Stress Stressful?

As discussed in chapter I, it is now recognised that stress is not only dependent on the situation, but also on the individual's appraisal of the situation. Appraisals of stressful events may however, not always be formulated as a result of rational problem-solving processes. In fact, a wide body of research has suggested that stress interferes with information processing and influences processes such as attention, memory and interpretation. These alterations may explain why we sometimes feel flustered or unable to think clearly in stressful situations. For example, Tuckett et al (1985) found that one reason patients give for failing to ask questions in medical consultations is an inability to formulate thoughts in the 'heat of the moment'.

These effects, may be due, at least in part, to the biological changes that occur in the body when stress is experienced. As discussed in Chapter I, Cannon (1932) described a 'fight-or-flight' response to perceived threat, characterised by alterations in sympathetic nervous system (SNS) and endocrine activity to a perceived threat. According to this model, we feel aroused because our body's resources are redirected toward dealing with stress; our heart rate increases, our muscles tense to fight or flee, our breathing becomes shallower, blood is redirected to the organs, and so the peripheries such as our hands and feet may become cold, we may sweat as our body attempts to cool down, and we may feel the need to defecate, as our body attempts to shed any excess weight. More recent research in the field of psychoneuroimmunology has supported the role of the SNS and endocrine systems in responding to stress.

This chapter will review research focusing on the cognitive and biological changes associated with stress and will consider how these processes may interact in shaping our experience of stress.

Alterations in Cognitive Processes

Cognitive theories of emotion (eg. Beck, 1976; Bower, 1981; Williams, Watts, MacLeod & Mathews, 1997) suggest that anxiety leads to an attentional bias for threat-related cues. Eysenck (1992) suggested that the main function of anxiety is to facilitate detection of environmental threat and further proposed that anxious individuals will differ from non-anxious individuals in that they will attend *selectively* to threat-related stimuli, will be more easily *distracted*, and will display an attentional *narrowing*. Much of the research to test these theories has focused on patients with post-traumatic stress disorder (PTSD). This disorder emerges in some individuals following a psychologically distressing traumatic event and is characterised by recurrent thoughts of the trauma, an exaggerated startle response, hypervigilance and a feeling of emotional numbness. PTSD is only diagnosed if symptoms persist for at least one month, prior to this the collection of symptoms are termed an acute stress disorder (DSM-IV).

The most widely used paradigm is the emotional Stroop test, in which participants are required to name the colour of words that are emotionally negative or neutral and which may be relevant or non-relevant to the patient's trauma. Studies using this paradigm have generally revealed longer response times to negative and trauma relevant words compared to neutral words. Longer response times are thought to indicate an attentional bias towards the word, resulting in an inability to ignore the meaning of the word when naming its colour. This effect is present in patients with PTSD following a range of traumatic experience, including war (McNally, Kaspi, Riemann & Zeitlin, 1990; McNally, English & Lipke, 1993; Kaspi, McNally & Amir, 1995; McNally, Amir & Lipke, 1996; Vrana, Roodman & Beckham, 1995), rape (Foa, Rothbaum, Riggs & Murdock, 1991; Cassiday, McNally & Zeitlin, 1992), and motor vehicle accidents (Bryant & Harvey, 1995; Harvey, Bryant & Rapee, 1996).

The effect also appears to be present in non-PTSD high-anxious individuals although it may be more difficult to demonstrate. A number of researchers (MacLeod & Hagen, 1992; MacLeod & Rutherford, 1992; Mogg, Kentish & Bradley, 1993; Van Honk, Tuiten, van den Hout, Putman, Haan, & Stam, 2001) have demonstrated an attentional bias for threatening words in high trait anxiety individuals using a masked

Stroop test, in which the target word is quickly replaced by a mask of the same colour, although the effect was not present with the unmasked version of the test. Mathews and McLeod (1994) have suggested that these findings may indicate the use of a consciously mediated mood-controlling strategy in the unmasked Stroop test that is not possible in the masked version as quick replacement of the target with a coloured mask prevents conscious recognition of the word. This would suggest that the relationship between anxiety and attention may be moderated (at least for individuals without PTSD) by the use of coping strategies. Increased distractibility and narrowing of attention have also been investigated in high vs low trait anxious individuals. Eysenck (1982) reviewed a number of studies in which individuals were required to perform a main and a secondary task simultaneously. Although there were no differences in performance on the main task, high trait anxious individuals performed significantly worse on the secondary task. Such findings are consistent with the notion of attentional narrowing. Eysenck (1992) reviewed a number of studies in which participants were required to perform a task in the presence or absence of distracting stimuli. In these tasks, high anxious individuals were more distractible than low anxious individuals.

Not only are highly anxious individuals more likely to selectively attend to threat-relevant information, they are also more likely to *interpret* ambiguous information as threatening. For example, Eysenck, MacLeod and Mathews (1987) asked participants to write down the spelling of auditorily presented homophones that could have either a neutral (eg. 'dye', 'pane') or negative ('die', 'pain') meaning. Eysenck et al (1987) reported a significant correlation between trait anxiety and the number of threatening homophone interpretations. Similar findings have also been reported by Bryne and Eysenck (1993) and Dagleish (1994), using the same paradigm.

In addition to this negative attentional and interpretive bias, high anxious individuals have been demonstrated to have a *memory* bias for threat. For example, Reidy and Richards (1997) presented high and low trait-anxious individuals with words that were either positive, threatening or negative non-threatening. High trait-anxious participants recalled significantly more of the threatening words, whereas low trait anxious participants recalled equal numbers of threatening and non-threatening words. Interestingly, Kverno (2000) found that individuals high in trait anxiety claimed to

recall greater frequencies of threatening than non-threatening words in a recognition task even when the negative words were not previously presented. High anxious individuals' preferential (and sometimes false) recall of stress-related information may indicate differences in the way such information is structured in memory. For example, Butler and Mathews (1987) suggest that high trait anxious individuals have more extensive and elaborated threat-related schemata than low trait anxious individuals and that they are more likely to automatically activate related concepts in memory. Therefore if related concepts are activated, the individual may believe that he/ she recalls a threat-related word, even if it was not seen before.

Research focusing on PTSD patients has also highlighted some interesting memory phenomena. As mentioned above, one of the key features of the disorder is an involuntary re-experiencing of thoughts of the trauma. Memories that are accessed involuntarily are however, not likely to represent a clear complete picture of the event, recall is often fragmented, with details missing and the order of events may be confused (Foa & Riggs, 1993; Foa, Molnar & Cashman, 1995; van der Kolk & Fisler, 1995; Koss, Figuerdo, Bell, Tharan & Tromp, 1996; Amir, Stafford, Freshman & Foa, 1998). These memories are also more likely to be sensory (particularly visual) as if the individual is re-experiencing the event in the present rather than recalling from the past (eg. Ehlers & Steil, 1995; van der Kolk & Fisler, 1995; Brewin et al., 1996; Foa & Rothbaum, 1998). Rauch, van der Kolk, Fisler & Alpert (1996) report that during provocation of traumatic memories there is a decrease in activation of Broca's area (the part of the brain involved in transduction of subjective experience into speech and language), whilst there is an increase in activation of areas of the right hemisphere thought to process intense emotions and visual images.

Despite experiencing intrusive recollections of trauma however, patients often have difficulties *intentionally* retrieving a complete memory of the event. Ehlers and Clark (2000) therefore suggest that persistent post-traumatic stress disorder may result from poorly elaborated memories that are not well integrated into their context in time and place, or well related to subsequent or previous memories. These traumatic memories are characterised by particularly strong S-S and S-R associations. Triggering of memories by associated stimuli is therefore highly likely, whilst the semantic route to retrieval is weakened.

As with the association between stress and attention, the association between stress and memory may be moderated by the use of coping strategies. It would appear that individuals with PTSD/ ASD engage in more suppression of trauma-related thoughts than those without the disorder (Harvey & Bryant, 1998), and that this suppression is paradoxically associated with an *increase* in intrusive thoughts (Salkovskis & Campbell, 1994; Trinder & Salvovskis, 1994; McNally & Ricciardi, 1996). Therefore it is possible that the relationship between PTSD/ ASD and thought intrusions may, at least in part, be due to the use of cognitive avoidance strategies (see Bryant & Harvey, 1995). It should be noted however, that intrusive imagery is not only experienced by individuals with PTSD, but also frequently occurs in trauma survivors who do not fit the profile for PTSD diagnosis (eg. Blank, 1993; Foa, Riggs, & Gershuny, 1995).

Biological Sequelae of Psychological Stress: The SNS and HPA-axis

A large body of research has provided support for the role of both the SNS and the HPA axis in responding to stress (eg. see Ader, 2000). The mobilising autonomic reactions characterising the fight-or-flight response are triggered by the release of norepinephrine (NE; Thierry, Javoy, Glowinski & Kety, 1968; Korf, Aghajanian & Roth 1973; Cassens, Roffman, Kuruc, Orsulak & Schildkraut, 1980). Axons from the locus coeruleus (LC) release NE throughout the hippocampus, cerebral cortex, and hypothalamus. Activation of the hypothalamus triggers the release of adrenocorticotrophic hormone (ACTH) from the pituitary, which in turn provokes the secretion of cortisol from the adrenal glands (Kudielka, Hellhammer & Kirschbaum, 2000). Whilst NE is released within seconds, cortisol release has a long latency, taking minutes to be released and hours before its effects emerge.

Whilst the role of the SNS is probably one of biologically preparing the individual to deal with a perceived threat, the role of the HPA axis appears to be regulatory, maintaining balance within the body, a process known as allostasis (Sterling & Eyer, 1988). Cortisol is the main hormone responsible for allostatic stress response, without cortisol, the organism would not be able to maintain normal functioning during periods of change (Kirschbaum & Hellhammer, 2000). Cortisol is involved in a range of vital functions such as facilitating fat metabolism, downregulating

inflammatory responses, modulating immune function, and maintaining glucose production from protein (Sowers, 1980; Baxter, Frohman & Felig, 1995). Corticosteroids also control excitability of neuronal networks underlying memory and learning. These hormones promote the interpretation and storage of novel information while facilitating extinction of behaviour that is no-longer relevant (De Kloet, Oitzl, & Joels, 1999). Endocrine processes therefore come into play when a stressor can not be simply overcome by fighting or fleeing, or by implementing previously learnt coping strategies. The endocrine system is thus primarily associated with experience of stressors that are perceived to be novel, unpredictable, and uncontrollable, likely to result in negative consequences, and have some element of ego-involvement (Mason, 1968). Consequently, elevated cortisol levels have been associated with stressors such as bereavement (Jacobs et al., 1987), unemployment (Bremner & Levi, 1987; Arnetz et al., 1991) undergoing surgery (Brooks et al., 1986), being held in captivity (Rahe, Karson, Howard, Rubin & Poland, 1990) and having a chronic illness (Lechin et al., 1994). In addition, a group of researchers in Trier, Germany, have designed a laboratory-based protocol, that meets the situational characteristics described by Mason (1968). This protocol, known as the 'Trier Social Stress Test' (TSST), requires participants to take on the role of a job applicant and, after 10 minutes preparation, to give a presentation to a panel of 'interviewers' explaining why they are the best person for the job. Following this, the participant is required to undertake a 5-minute verbal serial-subtraction task, again standing in front of a panel. In both stages participants are also informed that they are being recorded on video-camera and audio-cassette. A number of studies have supported the effectiveness of this procedure for producing significant elevations in cortisol levels (see Kirschbaum, Wust & Hellhammer, 1992; Kirschbaum, Pirke & Hellhammer, 1995).

It would appear therefore that the stress response is not as *generalised* as Selye proposed, activation of the HPA-axis in particular appears to be dependent on the individual's perception of the situation, and on the range of coping strategies that they have at their disposal. Individual differences in activation of stress-response systems will be considered later in this chapter.

The Relationship Between SNS, HPA-axis and Cognitive Processes

The cognitive research reviewed in this chapter suggests that stress can result in alterations in memory and attention processes, and that the relationship between stress and cognition may be moderated/ mediated by the use of coping strategies and by the individual's existing attitudes and beliefs. In addition, particularly traumatic events may result in post-traumatic stress disorder (PTSD) characterised by recurrent thoughts of the trauma, an exaggerated startle response, hypervigilance and a feeling of emotional numbness, lasting for more than one month. Can these cognitive changes be explained by neurochemical and neurohormonal responses to stress?

Several studies have in fact implicated a role of NE or cortisol in memory and attention processes. McEwen & Sapolsky (1995) found that acute stress can enhance memory formation while chronic stress can attenuate it, and that this effect is conditional on the release of cortisol and the differential occupation of Type I vs Type II receptors in the hippocampus. Several cross-sectional studies have demonstrated that both hyperactivity and hypoactivity of the HPA axis in humans is associated with hippocampal atrophy and cognitive impairments (Gurvits et al., 1996; Lupien et al., 1998). As the hippocampus is believed to be involved in declarative rather than procedural memory (Eichenbaum, Otto & Cohen, 1992; Squire, 1992), alterations in HPA functioning would be expected to interfere specifically with the former type of memory. Kirschbaum, Wolf, May, Wippich and Hellhammer (1996) reported findings that support this hypothesis. Cortisol levels following administration of the TSST were negatively associated with performance on a subsequent declarative memory task. They also found that administration of oral cortisol impaired performance on a task of declarative memory and spatial thinking, but not on a procedural memory task.

Skosnik, Chatterton, Swisher and Park (2000) examined the effects of a stressful video-game on selective attention using a negative priming paradigm. Negative priming scores and reaction time both increased after the stressor, indicating a reduction in the ability to filter out irrelevant information after stress. Alpha-amylase levels (a correlate of NE) also increased after the stressful task. Although cortisol levels did not increase significantly after the task, cortisol levels after stress correlated

significantly with both negative priming scores and reaction time after the stressor. The authors conclude that these findings indicate not only that selective attention may be affected by stress, but also that these effects may be modulated by neurochemical/neurohormonal stress response systems, although as the findings were purely correlational it is not possible to determine conclusively the direction of relationship between these systems and attentional processes.

There is also evidence that the stress-response may be influenced by individuals' appraisals of the stressful event, and by their pre-existing attitudes and expectations. Heuther (1996) suggests that if a stressor is perceived to be controllable, arousal will be funnelled into a specific activation of those neuronal pathways and circuits which are involved in the behavioural response to that stressor. Therefore, the individual can terminate the stress process before the HPA-axis is activated, by utilizing active coping strategies. In order to do so however, the individual must not only have a repertoire of effective coping strategies, but must also believe in their own ability to implement such strategies. A number of studies have reported links between HPA-axis activity and coping. For example, denial, rationalisation, and emotional inhibition have been associated with prolonged plasma cortisol elevation (Biondi et al. 1985; Teodori, Biondi, Marino & Pancheri, 1989) and slow muscular relaxation (Kaiser, Hinton, Krohne, Stewart & Burton, 1994) after experimentally induced stressors, suggesting that attempts to suppress emotional responses to stress may delay a return to normal functioning following cessation of the stressor. A number of researchers have reported that attempts to suppress thoughts paradoxically result in increased thoughts of the target after the suppression period (Wegner, Schneider, Carter & White, 1987; eg. Clark, Ball & Pape, 1991; Zeitlin, Netten & Hodder, 1995). The delayed return to normal functioning may therefore indicate a prolonged focus, or rumination over the stressful event. This hypothesis gains support from Davidson and Baum's (1986) findings that heightened distress and a ruminative coping style are often associated with elevated cortisol levels. Ruminative coping has also been reported to contribute to depression (eg. Nolen-Hoeksema, Parker & Larson, 1994).

Beliefs in the effectiveness of one's coping efforts have also been linked to HPA-axis activity. Biondi and Picardi (1999) for example, point out that the 'effectiveness of defence' construct (Wolff, Hofer & Mason, 1964) has consistently been related to

psychoendocrine activity under stress. Kirschbaum et al. (1995) found that individuals with high cortisol response to the TSST, completed on a number of days had lower self esteem, more depression and viewed themselves as less attractive than cortisol low responders. Preussner et al. (1997) reported correlations between personality variables and cortisol responses to the TSST completed on a number of days; in this study significant associations were reported for social dominance and locus of control.

Appraisals of the adequacy of one's coping responses are related to Lazarus' (e.g. Lazarus, 1975; Lazarus & Cohen, 1973) notion of secondary appraisal, ie. the evaluation of personal and social resources as sufficient or insufficient to overcome the stressor. Turner-Cobb, Sephton, Koopman, Blake-Mortimer and Spiegel (2000) have presented evidence that social resources play an important role in HPA-axis activation. These researchers reported an association between greater quality of social support and lower concentrations of cortisol in women with metastatic cancer. Reviewing animal and human studies conducted since the 1960's Seeman and McEwen (1996) reported that supportive social relationships are associated with attenuated patterns of SNS and HPA activation, whilst non-supportive social interactions are associated with enhanced reactivity.

Overall, research evidence suggests that the first stage of the stress response (characterised by the release of NE and activation of the SNS) is triggered if the situation is perceived as negative and likely to have undesired consequences (primary appraisal). The second stage (involving activation of the HPA-axis) may then be triggered if the individual appraises his or her personal and social resources as insufficient to overcome the stressor (secondary appraisal). If the secondary appraisal is positive, however (ie. resources are appraised as sufficient to meet the stressor), the individual is able to engage in coping efforts and the stress response may be terminated.

Finally, Cohen et al (2000) have presented findings linking sympathetic nervous system functioning to post-traumatic stress disorder. Both PTSD and panic disorder (PD) patients had higher baseline heart-rate variability (HRV) compared to controls. HRV was also measured following recall of a stressful life event (PD patients recalled a typical panic attack, and PTSD patients recalled the trauma that led to their

disorder). PTSD patients, unlike controls or PD patients however did not evidence increases in HRV following recall. The authors suggest that the lack of response to trauma recall in PTSD patients may indicate that a 'state of chronic autonomic overstimulation prevents or obtunds the ability of the autonomic nervous systems to respond further' (p9). Cohen et al (2000) also suggest that their results bear a resemblance to the combination of numbed emotionality and exaggerated startle response in PTSD patients, although they acknowledge that it would be premature to link these results with particular PTSD symptoms. The possibility that chronic stimulation of 'stress systems' reduces the ability of these systems to respond to new stressors is supported by Friedman, Mason and Hamburg's (1963) findings that parents experiencing chronic stress due to their child's fatal illness, had reduced corticosteroid reactivity to their child's acute stressful medical events.

Summary

We experience stress due to an interplay of biological and cognitive processes; the stress response is triggered when we appraise a situation in a negative way. In response to this appraisal, the body produces alterations in the functioning of various organs and glands, which alert us to possible danger, and redirect our resources toward dealing with the stressor. These changes may influence the way we think and feel under stress: we may for example experience alterations in body-temperature, heart rate and breathing, we may also become more distractible and find our attention drawn towards threat-relevant cues. The stress response may be terminated by active coping efforts. However, this is only likely to happen if the individual has a repertoire of effective coping strategies, and feels confident in his or her ability to take control. Researchers have suggested that both the biological and cognitive alterations associated with the experience of stress are essentially adaptive. However, evidence of long-term alterations in biological systems is beginning to emerge. These alterations may explain why for some individuals disruptions in cognitive functions persist even when the threat is no-longer present.

SECTION II

Why Can Stress Make Us Ill?

Research reviewed in the previous section suggests that the experience of stress is associated with a range of cognitive and biological changes aimed at redirecting our resources towards dealing with a potential threat. Whilst such changes are essentially adaptive, the research evidence indicates that for some individuals, the cognitive changes associated with stress can be long-lasting, resulting in a persisting sense of anxiety, and symptoms such as thought-intrusions, difficulty intentionally accessing traumatic memories, and emotional numbness. In addition, a wide body of research has indicated links between stress and physical illness. This chapter will review such evidence and consider why changes that are designed to protect us, can also make us ill. The research reviewed in the previous sections suggests that appraisal processes and coping strategies may be important mediators in the relationship between stress and psychological health. In particular, individuals who appraise the causes and consequences of events in an overly negative manner and who attempt to avoid thoughts of the stressor may be most at risk. Factors which may intervene in the relationship between stress and physical health will be considered in this section.

Allostatic Load

As discussed in chapter I, Selye (1956) proposed that illness results from a depletion of coping resources. More recent research, has however suggested that the problem is not that the stress response 'runs out' but that if prolonged, or frequently repeated, the allostatic stress response can produce wear and tear on the body, referred to as 'allostatic load' (McEwen & Stellar, 1993; McEwen, 1998). Repeated, or prolonged SNS activation can be problematic because, in order to direct resources toward dealing with the stressor, these resources must also be redirected away from their normal function. Converting energy into a useable form, therefore occurs at a cost, in particular inhibition of growth and repair functions (Mason, 1975; Baum, 1990). In addition, the elevated blood pressure and heart rate associated with the fight or flight response, if prolonged may begin to damage the heart and blood vessels. Baum and Poluszny (1999) explain that stress appears to predispose towards cardiovascular

disease or precipitate ischemic episodes, heart attacks, or other pathological states (Niedhammer et al., 1998; Carney et al., 1998), and that this probably occurs through the effects of stress on the heart, vasculature, blood flow and shear stress, and on the constituents of blood, such as platelets (Patterson et al., 1994; Niebauer & Cooke, 1995; 1996; Ku, 1997).

CNS and the Immune System

A wide body of research suggests that the CNS regulates immune system activity (see Moynihan & Ader, 1996). Suppression of the immune system under stress may increase vulnerability to infectious disease. A number of studies have reported positive associations between stress and both the onset and progression of infectious illness such as upper respiratory infections, colds and flu (Graham, Douglas & Ryan, 1986; Clover et al., 1989; Cohen, Tyrell & Smith, 1991; 1993; Stone et al., 1992), oral herpes (Katcher, Brightman, Luborsky & Ship, 1973; Luborsky, Mitz, Brightman, & Katcher, 1976; Friedman, Katcher & Brightman., 1977), and genital herpes (Goldmeier & Johnson, 1982; McLarnon & Kaloupek, 1988). Cortisol is also thought to have anti-inflammatory properties, and as such disturbances in HPA functioning have been linked to rheumatoid arthritis (Harkness et al., 1982; Catley, Kaell, Kirshbaum & Stone, 2000), and fibromyalgia (Catley et al., 2000).

Elenkov and Chrousos (1999) however, point out that the relationship between stress hormones, inflammatory processes and immunity is not straight-forward. Whilst chronic stress may suppress cellular immunity, it can boost humoral immunity. Also, acute stress may induce pro-inflammatory activity in some tissues. They suggest that in the case of autoimmune diseases, severe stress may play an important role in development of the disease, but at a later stage may ameliorate disease activity. The complexity of action of stress hormones at different stages of disease may explain some unexpected research findings. Whilst laboratory studies have reported positive associations between denial, cortisol elevation, and thought intrusions after stress (see previous section), Antoni et al. (1990) found that denial coping was associated with reduced intrusive thoughts, lower cortisol, and greater lymphocyte proliferation to PHA in seronegative gay men awaiting HIV serostatus notification. Kino, Kopp and Chrousos (2000) have also reported a protective effect of glucocorticoids in HIV

patients. Similarly, increased levels of cortisol in the third trimester of pregnancy, have been associated with remission of autoimmune diseases such as rheumatoid arthritis, multiple sclerosis, type 1 diabetes, and autoimmune thyroid disease (Wilder, 1995; Elenkov, Hoffman & Wilder, 1997).

Moderators/ Mediators of the Relationship Between Stress and Illness

In addition to the direct effects of stress response systems on illness, stress may also influence health via the practice of health-behaviours. People who are experiencing negative affect may be more likely to smoke, have a poor diet and have poor sleeping habits (Cohen & Williamson, 1991), and these health behaviours may influence stress hormones. For example, Kirschbaum, Strasburger and Langkrar (1993) found that smokers evidenced a smaller increase in cortisol following stress than did non-smokers. Vgontzas et al (1997) reported a positive relationship between level of sleep disturbance and indicators of both SNS and HPA-axis functioning among young insomniacs. It is not possible to determine however, whether alterations in functioning of the stress response system result in poorer health behaviours, or vice versa, or alternatively if the relationship results from a third variable (eg. personality variables). The findings of Lovallo et al's (1993) study of the effects of caffeine on cortisol levels indicate that the relationship between health behaviours and stress-response systems may not be the same for everyone. In this study caffeine intake increased cortisol levels in individuals at high risk for hypertension, but not in individuals at low risk for hypertension.

Individual differences such as gender, age and personality may also intervene in the relationship between stress and illness. Steptoe, Cropley, Griffith & Kirschbaum (2000) reported differences between salivary cortisol levels of male and female teachers during the working day, although the direction of this gender difference depended on the time of day. Females evidenced higher cortisol levels early in the day, whereas males evidenced higher levels during the central hours of the working day. This pattern may indicate gender differences in reactivity of endocrine systems to stress. Several studies have reported greater epinephrine and norepinephrine responses to stress in males compared to females (eg. Frankenhauser et al., 1978; Collins & Frankenhauser, 1978; Davidson et al., 1984; Van Doornier & Van Blokland,

1987). Kudielka, Hellhammer and Kischbaum (2000) have pointed out that women suffer more from autoimmune diseases such as lupus erythematosus, multiple sclerosis or neurodermatitis, whereas men are more prone to infectious diseases and coronary heart disease. This evidence is also suggestive of greater stress-response system activity in males compared to females, as autoimmune processes are often associated with a hyporeactive HPA-axis, whereas susceptibility to infectious diseases, and cardiovascular problems are more often associated with a hyperactive HPA (Kudielka et al., 2000). Gender differences may also become more apparent with increasing age. Younger women have been reported to evidence greater cortisol increases to laboratory stress tasks than older women (Dell Chaiae, De Cesare, Biondi & Pancheri, 1990; Lindheim et al., 1992). Older men, have been reported to evidence greater urinary catecholamine responses to stress than younger men (Faucheuz, Bourliere, Baulon & Dupuis, 1981).

Optimism, positive mood and generalised positive expectancies may protect against ill health. Segerstrom, Taylor, Kemeny and Fahey (1998) for example, demonstrated that optimism was associated with better mood, higher numbers of helper T cell and higher natural killer cell cytotoxicity. Avoidance coping partially accounted for the relationship between optimism and mood. Mood partially accounted for the relationship between optimism and helper-T cells, whilst perceived stress partially accounted for the relationship between optimism and cytotoxicity. Cohen et al (1995) have also presented evidence linking mood to illness susceptibility. Individuals who experienced a greater negative mood when exposed to a respiratory virus, developed a more severe illness than those with a more positive mood. Both positive expectancies and optimism have also been associated with better coronary health (Scheier et al., 1989; 1999; Kubzansky, Sparrow, Vokonas & Kawachi, 2001).

Pessimism and a sense of hopelessness on the other hand, have been associated with poorer coronary health (Dykema, Bergbower & Peterson, 1995; Everson et al., 1996) and a greater risk of depression after stressful events (e.g. Nolen-Hoeksema, Girgus & Seligman, 1986, 1992; Metalsky, Halberstadt, & Abramson, 1987; Metalsky & Joiner, 1992; Metalsky, Joiner, Hardin & Abramson, 1993; Alloy, Just & Panzarella, 1997b; Alloy & Clements, 1998). Catastrophizing (a tendency to expect extreme negative outcomes) has been linked to increased pain, physical dysfunction and psychosocial

problems in chronic pain patients (Keefe et al., 1987; Keefe, Brown, Wallson & Caldwell, 1989; Jensen, Turner & Romano, 1992; Geisser, Robinson, Keefe & Weiner, 1994; Hill, Niven & Knussen, 1995; Martin et al., 1996).

Optimism may influence health outcomes via physiological mechanisms (eg. Segerstrom et al, 1998) or via health behaviour. For example, optimists are reported to have a greater tendency to seek out information and agree to medical tests, to set goals for their own recovery, and engage in actions that are likely to aid recovery such as increasing exercise levels, sticking to a healthy diet, and enrolling in rehabilitation programs (Scheier et al., 1989; Scheier & Carver, 1992; Goodman, Chesney & Tipton, 1995; Shepperd, Maroto & Pbert, 1996). Optimists are also more likely to find benefits resulting from adversity (Tennen, Affleck, Urrows, Higgins, & Mendola, 1992) and benefit-finding has been linked to a range of positive health outcomes. For example less negative affect in cancer patients (Park, Cohen & Murch, 1996), better psychological adjustment in women with breast cancer (Taylor, Lichtman & Wood, 1984), and less psychological distress in infertile women (Tennen, Affleck & Mendola, 1991b).

The concept of hardiness, characterised by commitment, control and challenge has also been associated with good physical and mental health (eg. Kobasa, 1979; Kobasa, Maddi & Courington, 1981; Kobasa & Puccetti, 1983; Wiebe & McCallum, 1986; Nowack, 1989). Hardy individuals have been reported to evidence reduced cardiovascular responsivity to stress (Contrada, 1989) and to engage in better health practices (Allred & Smith, 1989; Wiebe & McCallum, 1986). However, there is some evidence to suggest that hardiness may be beneficial only for men (Williams et al., 1992). High self-esteem has also been associated with lower levels of distress in stressful situations, although the benefits may be limited to relatively low levels of stress (Whisman & Kwon, 1993). Highly traumatic events may shatter self-esteem and result in feelings of helplessness and depression (eg. see Evans, 1993; Higgins & Leibowitz, 1999). The Type A Behaviour Pattern (TABP) of competitive achievement strivings, hostility, impatience and accelerated pace of activities (Friedman & Rosenman, 1959) appears to represent a risk factor for ill health. TABP has been associated with greater increases in cortisol as a result of experimentally induced stress (Williams et al, 1982; 1991), higher blood pressure in response to daily

stressors (Van Egeren & Sparrow, 1990) and laboratory stressors (Contrada, 1989) with chronic emotional distress (Suls & Wan, 1989), and increased risk for coronary heart disease (Friedman & Rosenman, 1959; Rosenman, Brand, Sholts & Friedman, 1976; Haynes, Feinleib & Kannel, 1980). Recent research has suggested that links between TABP and coronary heart disease (CAD) may be largely due to the effects of hostility (eg. Miller et al., 1996) and specifically that hostility may influence CAD risk via altered autonomic control (Sloan et al., 2001).

Summary

It is evident that traumatic events, and prolonged or repeated stressful experiences can have negative implications for both psychological and physical health in the long-term, and may be a risk factor for potentially fatal events such as heart-attacks. Stress hormones are associated with susceptibility to infectious illness, and to the onset and progression of autoimmune diseases. The relationship between stress and illness however, is far from straightforward, with some researchers suggesting potential salutary effects of stress hormones. This relationship may also be mediated by a number of interrelated factors including age, gender, personality, beliefs and expectations, appraisal processes, coping, and health behaviours. Further research will be needed to clarify the complex relations between these processes and develop interventions to aid coping with the memory of a traumatic event or the effects of on-going stressors such as chronic illness.

CHAPTER III: COPING

Introduction

The research reviewed in the previous chapter suggests that coping is an important determinant of the outcomes of stressful encounters. Understanding the factors that determine choice of coping strategy may therefore lead to the development of interventions for individuals dealing with the memory of a traumatic event or the effects of on-going stressors such as chronic illness. Providing an adequate theoretical conceptualisation of coping for research purposes however does not seem to be straightforward. A number of researchers have argued that the concept of coping is lacking in conceptual clarity and in the availability of adequate methods of assessment. Stone and Neale (1984) for example stated that 'despite the frequency with which coping has been used in the literature, neither an agreed typology of coping strategies nor an adequate method of assessing coping is currently available' (p.892). Little progress has been made to rectify this problem since the 1980's. In 1997 De Ridder stated that 'despite the apparent popularity of the coping concept, little attention has been paid to assessment issues' (p.417). As recently as 2001 Bijttebier, Vertommen and Steene reviewed available methods of coping style assessment and concluded that 'considerable conceptual and empirical efforts are needed to bring clarity in this area' (p102).

Over the past three decades, the coping research literature has been divided between researchers who favour process-orientated accounts of coping, and those who favour structural accounts. The former perspective views coping as an intra-individual variable and determined primarily by the situation, whilst the latter views coping as an inter-individual variable and determined primarily by dispositional styles of responding to stress. This chapter will present a discussion of these two approaches to coping and review the most widely used coping measures.

SECTION I

Situational Coping Measures

The Ways of Coping Questionnaire and the Transactional Model of Coping

A number of self-report measures have been designed to assess situational coping. That is, responses to a specific situation or during a specific time period. Such situational coping scales arise from the transactional model of coping, which sees the individual in a dynamic interaction with an ever-changing environment (e.g. Lazarus, 1975; 1993a,b, 1999). According to this model, the method of coping depends on the individual's primary appraisal of the situation in terms of likely consequences, and a secondary appraisal of resources available to cope with the situation (see chapter I). The relationship between appraisal and coping is not unidirectional however, as Lazarus (1993) has suggested that coping itself alters 'the person-environment relationship and how it is appraised' (p16). Lazarus (1999) explains that 'the premise of appraisal theory is that people (and nonhuman animals too) are constantly evaluating their relationships with the environment with respect to their implications for well-being' (p.75). This conceptualisation of coping as a dynamic process necessitates the use of coping scales that tap a very wide range of possible responses. Lazarus (1999) suggests that 'we should not place our reliance on a single overbroad dimension, but on a variety of styles that could describe and integrate the myriad coping thoughts and acts used for real-life harms, threats, and challenges, and the relational meanings on which they are based' (p110).

Situational coping scales typically ask respondents to recall a situation from their own experience and indicate whether or not they used particular coping strategies. De Ridder (1997) suggests that the Ways of Coping Questionnaire (WCQ; Folkman & Lazarus, 1988) is the best known and widely used coping measure, and that some subsequent measures are merely versions of the WCQ under a different name (the Coping Strategy Indicator [CSI], Amirkhan, 1990), or are very similar in format but differ in the number of strategies (the COPE, Carver, Scheier & Weintraub, 1989). The WCQ was developed from modification of an earlier version entitled the Ways of Coping Checklist (WCCL;

Folkman & Lazarus, 1980). WCCL items were assigned a priori to two dimensions; problem-focused (ie attempts to change the situation) and emotion-focused (attempts to change one's perceptions of the situation or to deal with the emotional consequences of the event) coping. These dimensions were then tested empirically adding some items and removing others during each revision (eg. Aldwin, Folkman, Schafer, Coyne & Lazarus, 1980; Folkman & Lazarus, 1985; Folkman, Lazarus, Dunkel-Schetter, DeLongis & Gruen, 1986). The resulting 50-item scale is proposed to tap eight coping factors; confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem-solving and positive reappraisal (Folkman et al., 1986).

Research evidence

A number of studies have reported evidence that appraisal processes influence choice of coping strategy and that choice of coping strategy influences outcome. For example, Folkman et al. (1986b) found that participants were more likely to use confrontive coping, self control, and escape-avoidance when the situation represented a significant threat to self-esteem. Uncontrollable situations were related to more use of distancing and escape-avoidance than controllable situations. A high proportion of problem-focused coping has been associated with reduced depression (Mitchell, Cronkite & Moos, 1983), whereas emotion-focused coping often correlates with more depression (Endler & Parker, 1990). However, this correlational evidence may provide an oversimplified picture as the effectiveness of problem- vs emotion- focused coping is likely to depend on the nature of the situation and the stage at which such strategies are employed. For example, Vitaliano, De Wolfe, Maiaro, Russo and Katon (1990) have presented evidence that problem-focused coping may be more effective than emotion-focused coping in controllable, but not in uncontrollable situations. Scheier, Weintraub and Carver (1986) suggest that whilst disengagement may interfere with coping in the long term, in the early stages this strategy may provide a 'breather' that allows the individual to use more effective problem-focused coping later on.

Consistent with the situational approach, a number of situational variables have been reported to influence coping, including controllability/ changeability (Feifel, Strack & Nagy, 1987b; Vitaliano et al., 1990; Andersson & Ekdahl, 1992; Schussler, 1992), ambiguity (Heim, 1988), the valence of the stressor (Dunkel-Schetter, Feinstein, Taylor & Falke, 1992) and the likelihood of recurrence (Warren, Warren & Cockerill, 1991). According to the transactional model however, the individual's appraisal of the situation should be a more important predictor of coping than the nature of the event. Terry (1994) tested this hypothesis by asking participants to describe situations that they had experienced and to rate these situations in terms of stressfulness, controllability and effectiveness of coping efforts. The described situations were then coded by the author and a second rater as either 'work/ study problems', 'interpersonal problems', 'health problems' or 'other types of problems'. Situation type was a more important predictor of some methods of coping (measured using the WCQ) than appraisals, whilst for other methods of coping appraisals were more important. Therefore it appears that although appraisals are important determinants of coping, in some situations the nature of the event itself may over-ride individual differences in appraisal processes.

Sweet, Savoie and Lemyre (1999) have presented evidence in support of the notion that appraisals may both precede and arise from coping. Focusing on a sample of women undergoing breast cancer screening, they tested two models; the first that coping influences stress through appraisal, and the second, that appraisals impact on stress via coping. Support was found for both models. The notion that coping is influenced by personal and social resources has also been well supported. Numerous studies have revealed relationships between personality and coping. For example, trait anxiety has been associated with less use of problem-focused coping (Smith, Pope, Rhodewalt & Poulton, 1989), whilst optimism and an internal locus of control have been associated with greater use of problem-focused coping (see Scheier, Weintraub & Carver, 1986; Compas, Banez, Malcarne & Worsham, 1991). Extraversion is negatively associated with avoidance coping (McCrae & Costa, 1986; Parkes, 1986; Rim, 1987; Bolger, 1990). Relationships between personality and coping may be influenced by situational variables. For example, Scheier, Weintraub and Carver (1986) reported a relationship between

optimism and acceptance/ resignation only when the stressor was perceived as uncontrollable. Several researchers have reported that individuals with supportive families are more likely to use problem-focused forms of coping (eg. Billings & Moos, 1982; Cronkite & Moos, 1984; Manne & Zautra, 1989). Affluence and level of education have also been associated with greater use of problem-focused coping (eg. Pearlin & Schooler, 1978; Billings and Moos, 1981).

Limitations

A number of researchers have highlighted problems with the format of situational coping scales. One problem with asking participants to describe situations from real life is that there is often considerable variability in terms of the recency of the described situations. For example Porter and Stone (1996) state that whilst some respondents report an event from the previous week (eg. Folkman et al., 1986), others report events that occurred any time in the last year and a half (eg. McCrae, 1984). This time frame is important because the more time has elapsed since the event, the more the individual will tend towards a dispositional account of their behaviour (Moore, Sherrod, Liu & Underwood, 1979), that is they are more likely to indicate how they typically respond to stressful situations, rather than how they responded to that particular situation.

The use of situational coping measures to compare between-subjects is also problematic in that even if respondents are asked to describe how they coped with a specific type of stressor, the implications of the stressor are likely to vary due to ongoing life events and changes in the availability of resources (see Maes, Leventhal & DeRidder, 1996). In addition, the factor structure proposed by Folkman et al. (1986) has not always been supported. This may be due to the specific nature of the WCQ items, as suggested by Stone Greenberg, Kennedy-Moore and Newman (1991) who discovered that many of the items were not considered applicable to particular kinds of stressful situations. Parker, Endler and Bagby (1993) recommend that the structure should be examined within the population under study. DeRidder (1997) however, writes that this recommendation 'has generated more confusion as many researchers have adopted the habit of adding,

dropping or changing WCQ items' (p419). Sorlie and Sexton (2001) further point out that the majority of studies of the WCQ which lead to the conclusion that coping styles are situationally determined have been of patients undergoing mild transient stress, such as examinations. They state that 'studies of patients undergoing serious stress over time have been nearly lacking' (p. 963).

Schwarzer and Schwarzer (1996) argue that a further problem with scales such as the WCQ that are based on many factors is that relationships between scales are not considered. For example, whilst mobilising social support is seen as a distinct strategy it may actually serve a number of purposes such as solving a problem, calming oneself, or obtaining information. Not all the strategies appear to be of the same theoretical level, some may represent higher-order factors accounting for a large proportion of the variance, whilst others represent specific coping acts accounting for relatively little variance. They suggest that the measurement of coping can only be fruitful if one assumes that individuals generalise across situations to a certain degree and apply a limited set of strategies at different occasions. DeRidder (1997) suggests that due to such limitations, the transactional model 'functions more as a general frame of reference than a theory' (p.418).

Summary

The transactional model proposed by Lazarus and colleagues has been highly influential in the field of coping research, due to its recognition of the role of appraisal processes in coping. Individual differences in appraisal processes may explain why people respond in different ways to the same situation. Placing the individual in dynamic interaction with the environment allows the examination of coping as a process that unfolds over time. However, the methods of measurement associated with the situational approach are not well suited to between-subjects comparisons of coping, or even to coping with a wide range of different stressors, due to unstable factor-structures and situation-specific coping items. In addition the relationship between scales requires further examination, and

research comparing situational and dispositional influences on coping with chronic stressors is greatly needed.

SECTION II

Dispositional Coping Measures

In contrast to situational scales that attempt a fine-grained analysis of the strategies actually used by individuals faced with stressful situations, dispositional coping scales classify individuals according to broad dimensions representing general tendencies to respond to stress in particular ways. Bijttebier, Vertommen and Steene (2001) write that 'cognitive coping style approaches establish two concepts central to the understanding of people's responses to a stressful situation: "attention", which is to be alert for and sensitised by the threat-related aspects of information, versus "avoidance", which is to cognitively avoid or transform threat-relevant information or to seek distraction' (p. 85). Several cognitive coping style approaches have been proposed over the years, and a number of measures have been developed. Probably the earliest measure of dispositional coping is Byrne's (1961) Repression-Sensitization Scale (R-S). The notion of repression-sensitization was developed as a result of findings that some people report more symptoms than others in stressful situations. Those who do not acknowledge their symptoms are described as 'repressors' whilst those who acknowledge their symptoms are referred to as 'sensitizers'. The original R-S scale is no longer widely used however, due to poor discriminant validity with respect to trait-anxiety (reviewed by Bell & Byrne, 1978). More recent frameworks corresponding to the attention-avoidance distinction are the Monitoring-Blunting framework (Miller, 1980) and the Vigilance-Avoidance framework (Krohne, 1986). Both approaches advocate the use of situation-response inventories in which the individual is presented with a hypothetical situation and asked to indicate how they would respond. An alternative to this approach is to use scales derived from situational measures in which the individual is asked to indicate how they generally respond to stressful situations. The strengths and limitations of these approaches to the measurement of dispositional coping are considered further below.

The Monitoring-blunting Framework

The Monitoring-Blunting Framework (Miller, 1980) was developed to explain individual differences in information-seeking behaviour under stress and has mainly been applied to coping in the medical context. Since the publication of Balint's highly influential paper 'The Doctor, his Patient and the Illness' in 1955, the amount of information provided to patients in medical consultations, and the effectiveness with which this information is communicated has become a focus of considerable research interest. In the UK, doctors are instructed to 'give patients information in a way they can understand' and 'respect the rights of patients to be fully involved in decisions about their care' (General Medical Council, 1998). Research evidence has however not always supported the notion that patients desire information and involvement in medical consultations. For example, it has been reported in some studies that patients prefer a directive style where the doctor makes the decisions (eg. Beisecker, 1988; Savage & Armstrong, 1990). When patients seek out information prior to undergoing surgery, this does not always reduce arousal or improve recovery from surgery (Egbert, Battit, Welsh & Bartlett, 1964; Vernon, 1971; Vernon & Bigelow, 1974) and in some cases may even increase arousal and have detrimental effects on recovery (Langer, Janis & Wolfer, 1975).

The Monitoring-Blunting framework offers an explanation for such apparently inconsistent findings, by suggesting that information should be matched to the patient's informational coping style (ICS). Individuals may have a monitoring style (preference for high levels of information) or a blunting style (preference for distraction/ avoidance of information). ICS is assessed using the Miller Behavioural Style Scale (MBSS; Miller, 1979; 1980). This scale presents participants with four hypothetical stressful situations including a visit to the dentist (imagining that the respondent is afraid of the dentist), a hostage situation, the possibility of being laid off from work, and experiencing high levels of turbulence during an aeroplane journey. These scenarios are followed by eight statements, four of which are monitoring (eg. I would ask the dentist exactly what he was going to do) and four blunting (eg. I would push all thought of being laid off out of my mind). Participants are requested to tick all of the statements that apply to them.

Research Evidence

The monitoring-blunting distinction has generally been well-supported and has led to the development of effective patient interventions. Miller and Mangan (1983) for example, demonstrated that the level of arousal experienced by patients undergoing an aversive gynaecological procedure (colposcopy) could be predicted by the interacting effects of their individual preferences for information about threat (MBSS scores) and the level of information provided, in that monitors experienced lowest arousal with high levels of information and blunters experienced lowest arousal with low levels of information. Matching information to the individual's coping style has proved effective as a method of reducing anxiety in patients undergoing a range of gynaecological procedures ranging from hysterectomy to dilation and curettage (Steptoe & O'Sullivan, 1986), primary care populations (Miller, Summerton & Brody, 1988), cancer patients (Gard, Edwards, Harriz & McCormack, 1988; Lerman et al., 1990, Miller et al., 1995; Schwartz et al., 1995; Miller, Shoda & Hurley, 1996), patients undergoing tests for HIV (Miller et al., 1995, Warburton et al., 1997), pregnant women undergoing amniocentesis (Phipps & Zinn, 1986) and women in labour (Shiloh, Mahlev, Dar & Ben-Rafael, 1998).

In addition to anxiety, ICS has been related to patients' experience of physical effects of treatment. Monitors have been demonstrated to experience more side-effects (Gard et al., 1988), physical discomfort and pain (Miller et al., 1995; Shiloh et al., 1998; Bruehl, Carson, Wilson and Norton, 1996) than blunters and to have longer recovery periods after medical procedures (Miller & Mangan, 1983). There is also evidence to suggest that the effectiveness of monitoring versus blunting is dependent on the *stage* of stressful encounter. For example, Muris, VanZuuren and Merckelbach (1993) found that monitoring-blunting was related to skin conductivity whilst preparing for and during a frightening picture such that monitoring was more effective during anticipation and blunting more effective at the moment of confrontation.

Limitations

Although the monitoring-blunting framework has provided some useful findings with direct applications to the medical context, the MBSS has been criticised on a number of points. Ross and Maguire (1995) interviewed participants regarding their responses to the MBSS. Participants indicated that they would use blunting strategies other than distraction and that their response to such stressful situations would depend on a range of factors. For example, in the dentist situation one respondent indicated that whether or not she would ask the dentist about the procedures depended on who the dentist was and another participant indicated that her response to the dismissal situation would depend on the availability of other jobs. Ross and Maguire (1995) also reported a weak negative correlation between monitoring and blunting scores and lower internal consistency on the blunting subscale compared to the monitoring subscale. The relative weakness of the blunting scale may be due to the way in which the MBSS is scored. For example, in the hostage situation, one participant may chose the blunting response 'I would try to sleep as much as possible', whereas another may employ a range of blunting strategies. The participant who selects a range of strategies would score higher on blunting but actually may be a less effective blunter than an individual who is able to block out the situation to such an extent that they are able to sleep through the whole experience.

In addition to problems with scoring, the scenarios described by the MBSS may be problematic. Schwarzer and Schwarzer (1996) point out that the scale is limited in that only threat situations are described and it is not clear that responses can be generalised to other types of situations (eg. challenge, or harm/loss). Steptoe (1989) has revealed that the hostage situation is too far removed from respondents' daily experience to be effectively imagined. Also, as the scenarios are not highly controllable, it is not clear what function information-seeking behaviour would perform. It may be that information seeking in such situations reflects an intolerance of uncertainty rather than an attempt to take control of the situation (eg. Krohne, 1986; 1989). Research evidence suggests that monitoring is associated with a preference for a less active role in medical settings (eg. Miller, Summerton & Brody, 1988). It is possible that monitors may become

incapacitated in stressful situations due to inability to control negative thoughts. For example, it has been suggested that monitors experience more intrusive ideation than blunters as a result of ruminating about and cognitively rehearsing bad news (Van Zuuren & Muris, 1993; Miller et al., 1995; Schwartz et al., 1995). Monitoring has also been reported to correlate positively with the frequency and believability of negative thoughts about dental treatment and negatively with the ability to control such thoughts (Muris et al., 1996), the reverse pattern was observed for blunters. Van Zuuren and Muris (1993) reported that high monitors, as compared to low monitors (moderate monitors excluded) elaborated a stressful experience in a more diffuse and extended way. Bar-Tal and Spitzer (1999) have suggested that monitoring is only useful to the extent that individuals are able to increase certainty, by integrating new information into existing cognitive structures. In-active monitors may therefore represent a sub-group of individuals who seek information but are not able to structure this information in such a way as to guide behaviour.

Vigilance-avoidance and the Mainz Coping Inventory

The Mainz Coping Inventory (MCI; Krohne, Schuhmacher & Egloff, 1992) was developed in order to overcome some of these limitations. Like the MBSS, this scale presents respondents with hypothetical stressful situations followed by a number of response options. These responses are classified as vigilant (strategies employed to reduce uncertainty) or avoidant (strategies aimed at shielding the organism from distressing stimuli). Eight situations are described which vary with respect to controllability. Krohne (1986, 1989, 1993) suggests that preferences for vigilant or avoidant strategies can be explained in terms of levels of tolerance of uncertainty and arousal. Krohne suggests that uncertainty in stressful situations manifests itself in questions such as 'what does this mean?' and can lead to a complex anxiety reaction due to estimating the imminence of danger, degree of predictability and other situational parameters. According to this model of coping, individuals high in intolerance of uncertainty should tend to employ vigilant coping strategies aimed at addressing these questions. The emotional arousal associated with confronting a stressor however, is best

reduced by ignoring threat-relevant cues. Individuals high in intolerance of anxiety should therefore tend to employ avoidance coping strategies. Krohne (1993, p.21) defines vigilance as 'those strategies which are characterised by intensified intake and processing of threatening information', whereas avoidance 'is marked by a turning away from the threat-related cues'. Krohne (1986, 1989) conceptualises repression as a combination of low intolerance of uncertainty and high intolerance of arousal, resulting in consistent avoidance. Sensitization is conceptualised as a combination of high intolerance of uncertainty and low intolerance of arousal, resulting in consistent monitoring. Individuals high in both intolerance of arousal and intolerance of anxiety are faced with a conflict, which Krohne (1986, 1989) suggests will lead to coping actions of short duration only and consequently fluctuating coping. Individuals low in intolerance of both arousal and anxiety will be able to pursue a strategy for long enough to determine whether it is successful or not. These individuals should therefore be able to adapt their behaviour flexibly to the demands of the situation.

Research Evidence

There is some research evidence in favour of the vigilance-avoidance distinction, and relevance of this model for the medical context. For example, Krohne, Slangen and Kleeman (1996) demonstrated that patients characterised by high vigilance reported higher anxiety and received higher doses of anaesthetic than low vigilant patients. However, the findings of two studies by Scheier et al. (1989) call into question the validity of Krohne's four combinations of vigilance and avoidance. These two studies focused on adjustment in patients undergoing surgery. It emerged that both vigilance and avoidance were positively associated with distress and there was no evidence of any meaningful interaction between the two dimensions (see Carver & Scheier, 1993). The authors admit however, that the question they asked their participants – how much they had been thinking about a specific aspect of their experience – could introduce a complication in that subjects may be reporting undesired thought intrusions rather than conscious attempts to be vigilant and watchful.

Limitations

Ladouceur, Gosselin and Dugas (2000) have also pointed out that, as Krohne's model is purely hypothetical, it does not specify how researchers may identify individuals who are either intolerant of anxiety or intolerant of uncertainty. Ladouceur et al. (2000) demonstrated that intolerance of uncertainty in a gambling study could be manipulated by providing participants with information that led them to evaluate their chances of winning as either low (in relation to more favourable odds) or high (in relation to less favourable odds). Participants in the increased intolerance of uncertainty group reported a greater level of worry compared to participants in the decreased intolerance group. Further research could build on this method of manipulating uncertainty in order to examine the validity of Krohne's proposed relationships between intolerance, repression-sensitization and coping strategies. Alternatively Bar-Tal (1994) suggests that intolerance of ambiguity or the need for certainty can be measured by examining individuals' self-reported preference for stable, familiar environments (cf. Frenkel-Brunswik, 1949; Smock, 1955). In addition to problems of theoretical underspecification, Schwarzer and Schwarzer (1996) have highlighted that, like the MBSS, the MCI assesses threat situations only. It is not clear therefore whether scores would be expected to generalise to other types of situations.

The Dispositional COPE and Three-fold Classifications

In addition to scales that are designed specifically for measuring dispositional coping, the COPE can be used to measure typical responses to stressors. Respondents are asked to indicate 'what you generally do and feel when you experience stressful events' (Carver, Scheier & Weintraub, 1989, p. 13) by rating a number of possible coping responses. The original COPE (Carver, Scheier & Weintraub, 1989) is a 53-item measure, comprising 13 subscales. More recently, Carver (1997) also produced a shortened version of the scale, the 'Brief COPE'. The COPE is proposed to tap two higher-order factors; problem solving and emotional coping. In a recent reassessment of the COPE however, Lyne and Roger (2000) argued for three dimensions; 'Rational or Active Coping', 'Emotion

Coping' and 'Avoidance Coping or Helplessness'. This structure is similar to that proposed by Endler and Parker (1990) for their Coping Inventory for Stressful Situations (CISS). This scale also asks respondents to indicate the extent to which they use particular strategies when they encounter stressful or upsetting situations. The authors extracted three factors; task oriented, emotion-oriented and avoidance-oriented. Cosway, Endler, Sadler & Deary (2000) have stated that 'there is more striking evidence for three basic dimensions than for two basic dimensions' (p. 138). However, as the dispositional COPE and the CISS both assess how individuals *generally* cope it is not possible to determine how stable these factors are across different situations.

Summary

There is considerable research evidence in support of individual differences in the tendency to approach or avoid stressful situations. The use of coping scales with a hypothetical situation format is well-suited to the examination of individual differences, since it is possible to ensure that all participants are responding to the same situation. However, careful consideration must be paid to the nature of described scenarios. In particular it is important to ensure that scenarios are imaginable and are not limited to threat situations only. The Monitoring-Blunting framework has been particularly influential in terms of developing effective patient interventions. However, these interventions appear to be limited to matching information to the patient's style of coping. Other non-informational aspects of the framework, for example findings relating ICS to pain and side-effects of treatment, have not been translated into interventions. Whilst the dispositional approach provides a useful conceptualisation of the structure of coping, little attention is paid to coping processes. Consequently, it is not evident why these individual differences exist. Krohne's notion of intolerance of uncertainty and anxiety provides an interesting interpretation of the processes underlying approach/avoidance tendencies. However, further research is necessary to test the validity of this model. Further research will also be necessary to determine whether the recently proposed three-factor solution generalises to different types of situations.

Section III

Alternative Approaches

Oakland and Ostell (1996) have called for researchers to 'rethink well-established constructs and use alternative methodologies' (p. 153). They argue that the complex dynamic nature of coping can only truly be measured using qualitative data. From a study of stress, coping and health among head teachers, they demonstrated that qualitative data can provide a richer image of the coping process, highlighting the use of coping actions reiteratively, often on a trial-and-error basis according to an ever-changing interaction of personal and situational factors. Folkman (1997) has also demonstrated that combining qualitative with quantitative data may provide a clearer image of coping processes. In order to highlight associations between coping and mood in carers of HIV patients, Folkman (1997) reported participants' descriptions of their daily experiences. These descriptions often displayed a determination to look on the bright side, or to find a deeper meaning. Several cross-sectional studies have revealed that the ability to find benefits or a sense of meaning from one's experiences is associated with positive adaptation (eg. Tennen, Affleck & Mendola, 1991; Thompson, 1991; Park, Cohen & Murch, 1996). Affleck, Tennen, Croog and Levine (1987) have presented evidence that benefit finding predicts coping outcomes. In this study men who had construed benefits from a heart attack were in significantly better cardiac health eight years later and were also less likely to have suffered a heart attack. These associations remained significant controlling for age, socio-economic status, and severity of initial attack. In order to understand why individuals differ with respect to coping outcomes it is therefore necessary to consider not only the methods used to cope, but also the person's beliefs regarding the meaning of the stressful event. Such considerations may be revealed most clearly through the use of qualitative data.

An alternative method for examining the dynamic nature of coping is the ideographic approach. Tennen and Afleck (1996) suggest that this approach allows investigators to measure closer to real time outcomes that are linked to coping. For example, mood, pain

and somatic complaints. The measurement of daily coping rather than dispositional or situational coping necessitates a different type of coping scale. Stone and Neale's (1984) Daily Coping Assessment (DCA) for example, requires participants to indicate the extent to which they use a range of strategies to cope with problems encountered during the day. Measures are also available to track stressful experiences over the past week or month (eg. The Hassles Scale; Kanner, Coyne, Schaefer & Lazarus, 1981). Several studies have reported associations between daily stress, mood, pain and coping in patient samples. For example, Porter et al. (2000) used daily diaries to assess pain, stress and mood in a sample of fifteen sickle cell disease (SCD) patients attending outpatient clinics. They reported significant relationships between stress and same-day pain, and between mood and same-day pain. Painful episodes were preceded by increases in stress two days previously. Keefe et al. (1997) asked 53 RA patients to record levels of pain, coping strategies used, perceived coping efficacy and positive and negative mood, each day for a period of 30 days. They reported that coping efficacy, pain reduction efforts, distraction, and seeking spiritual support were negatively associated with pain on the following day. Seeking spiritual support was also positively associated with next day negative mood. Pain reduction efforts, relaxation and seeking emotional support were positively associated with next-day positive mood.

Tennen and Afleck (1996) advocate combining the ideographic method with the nomothetic approach, which examines relations among variables across individuals, thereby allowing investigation of coping at the intra- and inter-individual level simultaneously. This approach was recently used by Grant, Long and Willms (2002) to investigate relationships between daily appraisals, coping responses, individual differences, mood and pain in chronic low back pain. They found that control appraisals, distraction and ignoring pain coping strategies were associated with reductions in negative mood and pain from morning to evening. Catastrophizing appraisals, praying and hoping coping strategies were however associated with increases in negative mood or pain during the day. Perceived control and spousal responses to pain were important determinants of between-person variation in depression, anxiety and pain intensity.

Summary

A number of different methods are available for the measurement of coping. It is possible to assess the strategies used by individuals to deal with a stressful experience recalled from real-life, the methods used on a daily basis to cope with on-going stressors, and individuals' preferred modes of coping. Quantitative analyses can provide a useful method of classifying a broad range of possible coping responses, in order to allow the examination of relationships between coping dimensions, coping outcomes, and situational characteristics. However, at present there appears little agreement concerning the nature and number of important dimensions of coping, and it is not clear that the dimensions proposed by either situational or dispositional coping researchers generalise across different types of stressful situation. In addition, some researchers have argued that questionnaire scores can not adequately represent the complex nature of coping. Further research will be necessary to overcome the limitations of currently available coping scales and to identify relationships between coping dimensions and the methods used to cope on a daily basis.

**CHAPTER IV: DISCUSSION & AIMS OF CURRENT
RESEARCH**

Summary and Conclusions

The research reviewed so far in this thesis suggests that the experience of stress is associated with a range of biological and cognitive alterations that are designed to protect us and enhance our ability to cope with future stressful events. Stressful experiences can also however result in a range of negative outcomes. Inability to terminate activation of the body's stress response systems may produce strains on the cardiovascular and immune systems and increase susceptibility to a range of illnesses including infectious illness, inflammatory diseases such as rheumatoid arthritis and fibromyalgia, cardiovascular diseases and heart-attacks. A prolonged stress response can also result in damage to self-esteem, and impairment of cognitive functions such as memory, attention, and interpretation processes, thereby predisposing the individual to development of depression and anxiety disorders. Understanding the factors that may determine outcomes of stressful encounters is therefore extremely important.

Coping is an important determinant of the outcomes of stressful encounters. Although some researchers have argued against stable individual differences in coping, the research evidence suggests that people do have preferred methods of dealing with stressful situations. Whilst the dimensions of coping differ somewhat between theories, there is a general agreement that individuals can be divided into two groups depending on their tendency to cognitively avoid or attend to stress-relevant information. It is possible that a third 'emotion-focused' dimension may be significant, although further research will be necessary in order to determine whether this three factor structure proposed by researchers such as Endler and Parker (1990a) and Lyne and Roger (2000) generalises across different types of stressful situations. It will also be necessary to specify the nature of the vigilance or monitoring dimension. According to the Monitoring-Blunting framework, information-seeking tendencies are associated with preferences for a less active role in stressful situations. The problem vs emotion-focused distinction however, sees information-seeking behaviour as part of a constellation of behaviours aimed at changing the situation. Such differences are likely to be associated with the method of assessment; it may be that in general information-seeking is associated with active coping attempts, but that in the

relatively uncontrollable situations presented in the MBSS, information-seeking represents a desire for certainty.

The research reviewed in the previous chapters also suggests that coping is an extremely complex process. The outcome of a stressful encounter is likely to depend on a wide range of influences including the nature of the stressor, the personality and preferred coping strategies of the individual encountering the stressor, perceptions of control, availability of social support, expectations and beliefs and many possible interactions between such variables. Although it is possible to separate such variables conceptually, in reality these factors are tightly interwoven; recognition of an event as stressful depends on a discord between the individual's expectations and current state, and such expectations are likely to depend on past experience and on personality variables. Once the event is perceived as stressful, the body's stress response systems will be activated. The level of activation may however be dependent not only on the stressfulness of the situation but also on factors such as gender, age, and health. Continued stress-response system activity results from a perception of continued threat. The continued threat may be due to situational constraints outside the person's control. However, failure to overcome the stressor may result from a lack of active coping attempts. Whether or not the individual takes steps to confront the stressor may depend on variables such as personality, previous experience and social support. Further, perceptions of continued threat may persist even when the stressor is no longer present, due to thought intrusions or ruminations, or due to expectations of catastrophic outcomes from the stressful event.

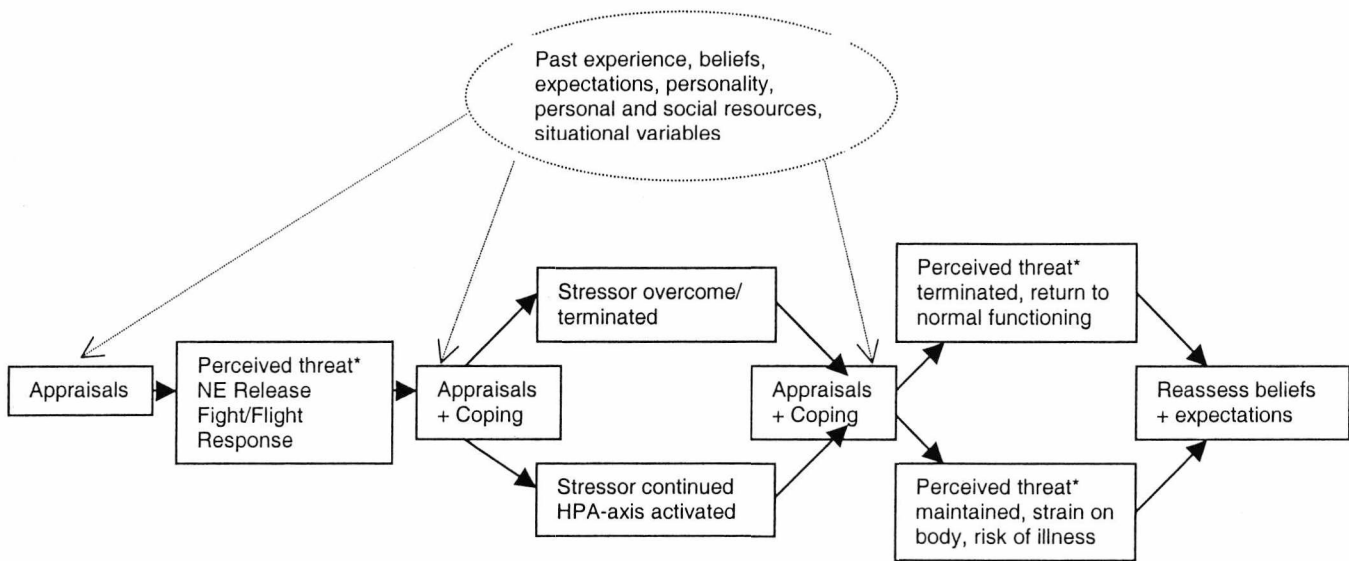
There is evidence not only that people can perceive continued threat where there is none, but also that individuals faced with long-term adversity, such as chronic illness may engage in processes aimed at reducing the perceived negativity of the situation. As discussed in chapters II and III, benefit finding has been found to aid in coping with a wide range of illnesses. As Higgins and Leibowitz (1999) have pointed out in their chapter on *The Social Construction of Adaptive Outcomes*, the evidence therefore suggests that it is the *perception* of continued threat, rather than the situation itself that determines the outcome of stressful encounters. Drawing from the writings of the Greek stoic philosopher Epictetus (c. 60-c. 120 AD) these authors state that

‘men are disturbed by their views of things rather than by the things themselves.’ (Higgins & Leibowitz, 1999, p35).

The notion that it is the individual’s perception of continued threat that determines outcomes of stressful encounters highlights the crucial importance of appraisals. Appraisal processes may be implicated at a number of stages in the process of dealing with a stressor; in addition to appraising the stressor itself, the individual may appraise their response to the stressor and attempts to deal with it. The increased heart-rate associated with the fight-or-flight response may for example, be appraised as a natural reaction to stress, or as a potential heart-attack. An individual who is unable to think clearly in the face of stress may feel that it is natural to become flustered in such circumstances, or may assume that such difficulties are due to stupidity or personal incompetence. Similarly, an individual who experiences thought intrusions after termination of a stressor may assume that the thoughts will pass in time, or that they are a symptom of madness. The nature of the individual’s appraisals at each stage will have important implications for coping.

Figure 1 (below) provides a diagrammatic representation of factors influencing outcomes of stressful encounters. This is not intended to represent a complete model of coping with stress and illness, but to summarise the findings of research reported in this thesis and provide a general framework within which the influence of various factors may be considered.

Figure 1: Diagram Representing Factors Influencing Outcomes of A Stressful Encounter



* 'threat' here is used to refer to all types of stressful event

This diagram depicts a single stressful encounter. Over repeated encounters it is evident that some of the influences on appraisals and coping may change (ie. situational variables) whilst others will remain relatively stable (eg. personality, beliefs, expectations, resources). Therefore it is likely that coping will be stable to some extent across a range of stressful encounters. Evidence of stability however, is likely to depend on the level at which coping is assessed. As discussed in the previous chapter, coping may be measured at a number of levels. The transactional approach typically adopts a fine grained analysis of the multitude of methods that may be used to cope with stressful situations, whilst the dispositional approach focuses on broad tendencies to respond to stress in a particular manner. Focusing on stress at the lowest level may obscure cross-situational consistency. For example, a strategy such as 'seeking information' may be utilised in a range of stressful situations, whilst individual methods of information-seeking (eg. asking an expert, visiting a library) may only be appropriate in very specific types of situations. The level of analysis will depend on the purpose of investigation. For example, in order to develop interventions that may be applied to groups of patients it may be useful to consider individual differences in styles of coping with stress. When working with an individual patient, it may be more useful to focus on the specific methods they are using on a daily basis to cope with the effects of their illness, or with other on-going stressors.

The challenge of developing a conceptualisation of coping that spans the distance between specific coping ‘instances’ and adaptive processes that may intervene between stress and physical/ psychological outcomes is discussed in a recent paper by Skinner, Edge, Altman and Sherwood (2003). These authors suggest that ‘to provide a full account of coping a category system must accommodate all relevant instances and lower order ways of coping; at the same time, to meaningfully link these actions with longer-term processes of adaptation and development, the categories must be organised with respect to their functions’ (Skinner et al., 2003, p 217). It seems unlikely however, that all levels of coping may be adequately assessed using a single coping measure, as this would necessitate the inclusion of a very wide range of coping methods at the lowest level, many of which will be relevant only to very specific types of situations (see discussion above, and in chapter III). Therefore, this thesis suggests that a more useful approach is to combine coping style questionnaires with the use of situation-specific coping scales that allow examination of changes in coping across time with a particular type of stressor (eg Affleck et al.’s daily pain coping scale). This approach allows coping to be investigated at the inter- and intra-individual level simultaneously and ensures that low-level coping strategies are relevant to the type of stressor under investigation.

In order to adequately assess styles of coping it will be necessary to develop measures that overcome the limitations of existing scales. Such limitations include low imaginability of described situations, poor internal reliability and scoring complications. When assessing coping it is important to consider not only the methods the individual uses to cope but also what they are coping with. The use of hypothetical scenarios ensures that coping is assessed between-subjects in relation to the same situation. This method is probably therefore best suited to the assessment of coping styles. However, it is important to ensure that such questionnaires also include a measure of the individual’s appraisal of the stressful event as perceptions of controllability and stressfulness may vary between subjects. Some researchers have also argued that coping dimensions may indicate groupings of strategies used at different stages of stressful encounters, for example avoidant methods of coping may be used in order to take a breather before implementing more active problem-focused coping. It will also therefore be necessary to consider the stage at which strategies are applied when designing questionnaires. In the past researchers have not attempted to

assess individual differences in coping at different stages of stressful encounters due to a theoretical commitment to *either* a purely situational *or* a purely dispositional approach. If coping changes over time it is considered to be a process, if it remains stable it must be a disposition. However, this thesis argues that coping is a more complex phenomenon than this simple dichotomy implies, that an individual may use a range of strategies to cope with a stressful encounter, but that in general (ie. averaged across a number of different situations) coping will be relatively stable. Whether styles of coping with everyday stressful encounters generalise to extreme or life threatening events is yet to be adequately demonstrated and future research will be necessary to address this issue.

Turning back to the question ‘what is the individual coping with?’ it is suggested that quantitative analyses of coping with real-life stressors should also be supplemented with qualitative data. As demonstrated in a number of studies (see chapter III), such data may provide a richer depiction of coping episodes and highlight the individual’s personal construction of their situation. As discussed previously, such constructions may differ from the observer’s perspective due to biases towards explanations of adversity that preserve a sense of control or meaning in life. It should not be assumed that events deemed aversive by the researcher are also perceived as such by those directly affected.

According to the research reviewed in this thesis and summarised in figure 1, in order to cope effectively with life’s challenges the individual needs to be able to put the event in perspective, avoid overly negative interpretations regarding the causes and likely effects of the event, take active steps to confront the stressor where possible, and draw on the help of others when he or she lacks the experience, or ability to deal with the situation directly. When stressors can not be overcome it is necessary to accept the situation, adapt to it and focus on any ways in which the experience has enhanced one’s life – for example by fostering closer relationships with friends and family, providing useful experience that can be drawn upon in future stressful encounters.

The research reviewed in the previous chapters however, also suggests that individuals are not always able to deal with stressful encounters in such a logical

manner. The stress response itself interferes with logical thought processes and can lead the individual to appraise ambiguous stimuli in an overly negative manner. Also, as discussed above, coping is not only influenced by the situation but also by a range of person variables. Further research will be needed to elucidate the complex inter-relationships between such influences on coping and to examine the relative importance of person and situation variables on coping behaviour. As discussed above, the influence of such variables may explain why individuals do not necessarily adapt their coping behaviour to the demands of the situation, and may instead tend towards preferred modes or styles of coping. Future research should aim to link specific influences to specific styles of coping. Holahan and Moos (1987) for example have suggested that avoidance coping is a response to threatening situations when personal and contextual resources are scarce. Therefore some people may not feel able to engage in active coping, even when the situation demands such an approach because they lack the resources to do so. People may also tend to engage in avoidance coping if they believe that the event is outside their control or that their coping efforts will be ineffective. Individual differences in sympathetic-adrenal and pituitary-adrenal activity may also be associated with specific patterns of coping. For example, Frankenhaeuser (eg. Frankenhaeuser, 1982; 1986; Lundberg & Frankenhaeuser, 1980) proposes that cognitive behavioural processes in stressful situations are composed of two components: effort and distress. Effort is a state of high personal control and active coping and is associated with adrenalin excretion. Distress is a state of low personal control with avoidant coping and is associated with cortisol excretion. Responses involving both effort and distress are associated with both cortisol and adrenalin excretion. Recent research focusing on the effort-distress model has revealed that changes in physiological responses to stress can be produced by manipulating coping processes (see Suzuki, Kumano & Sakano, 2003). Individuals who vary with respect to levels of distress and effort coping would therefore be expected to exhibit different physiological responses to stressful situations.

When considering the future direction of coping research we should consider not only how coping should be investigated but also why it should be investigated. It is of course interesting to advance our understanding of coping but what is the point of understanding coping if we are not able to use this knowledge in order to design effective interventions? Future research must overcome the limitations of previous

investigations, such as relying on inadequate coping measures, or focusing on one type of factor (eg. situation/ person variables) only. The past few decades have provided useful insights into numerous factors that may intervene between the experience of stress and a range of health outcomes. It is time now to integrate these findings in order to create a model of coping within which potential barriers can be identified and addressed. The research reported in this thesis is drawn from such areas as health psychology, social psychology, personality and individual differences, psychoneuroimmunology and cognitive psychology. In order to form a complete conceptualisation of the coping process it may be necessary to combine the different approaches. For example, comparing questionnaire data with physiological measures, considering cognitive barriers to coping as well as social barriers. As stated at the beginning of this chapter, stress has been linked to a wide range of illnesses. The seriousness of such illnesses ranges from the inconvenient (eg. the common cold) to the fatal (eg. heart-attacks). By identifying barriers to effective coping, and designing appropriate interventions, future research may therefore contribute to improved quality of life, or even length of life for those at risk.

Aims of Current Research

The current research aims to address the issues raised in this thesis. The structure of the following chapters will be as detailed below:

Chapter V will address issues of coping conceptualisation and measurement. Four studies will be presented starting with a qualitative examination of real-life coping episodes, and progressing on to the development of scenarios and items for a coping questionnaire. This scale will be developed in order to allow measurement of dispositional coping styles across a range of situations, whilst taking into account past-experience, appraisals of stressfulness, controllability and coping effectiveness. Ecological validity of stressful scenarios, and internal consistency of response options will also be addressed.

The factor structure of this measure will be examined and compared with previous conceptualisations of the important dimensions of coping. Scores on these coping dimensions will then be compared with measures of personality, social support, cognitive and demographic variables, and cortisol-response to a laboratory stressor.

Chapter VI will then examine relationships between scores on the coping style questionnaire developed in Chapter V, and the strategies used on a daily basis by patients with a chronic pain condition. Further analyses will examine the effects of coping on health outcomes. Finally, the findings of the research presented in this thesis will be translated into a coping intervention. The effectiveness of this intervention for improving physical and psychological functioning among chronic pain patients will be evaluated.

**CHAPTER V: DEVELOPMENT OF A COPING
QUESTIONNAIRE**

Studies I, II, III & IV

Introduction

In the following chapters we document the development of a valid, reliable measure of coping that allows assessment of dispositional coping styles across a range of situations, taking into account past-experience and appraisals of stressfulness, controllability and coping effectiveness. In order to allow between-subjects comparisons of coping style, this measure will adopt a hypothetical scenario format. This research will follow the stages described below:

Stage 1: Examination of Real-life Coping Episodes

According to Benson and Hagtvet (1996) 'researchers in the field of coping seem to have invested much time and effort in relating supposed measures of constructs to each other....whereas too little attention has been given to defining and clarifying the domain of observables that encompasses the construct of coping...' (p84). In order to address this issue, the current research will begin with an examination of individuals' descriptions of real-life coping episodes (*Study I*). By allowing individuals to describe stressful situations in their own words and to explain how they coped with these situations, it will be possible to determine the types of responses that 'belong' to the coping concept.

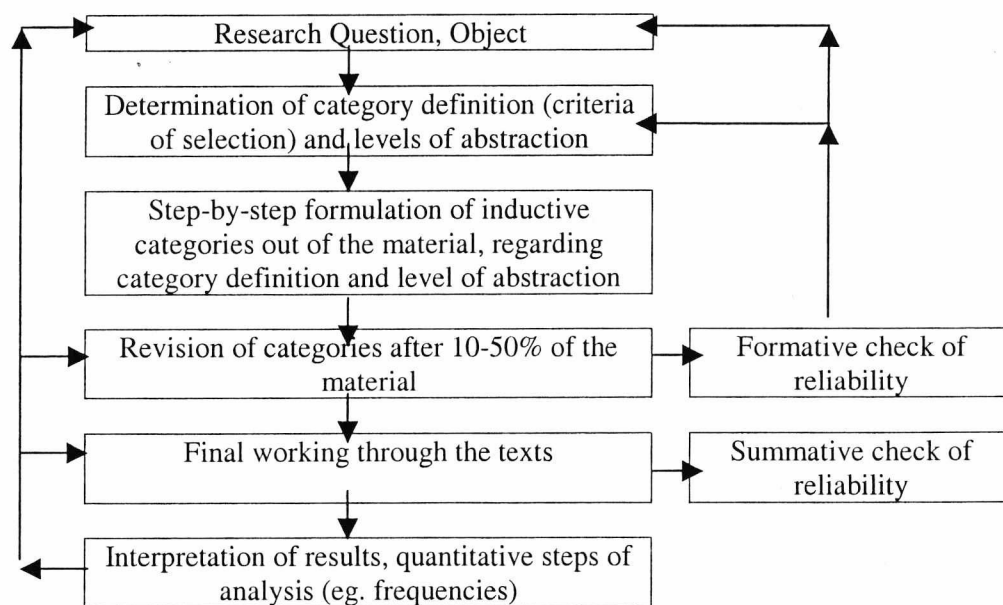
Stage 2: Deriving Questionnaire Items from Qualitative Data

In order to draw inferences from qualitative data, such as descriptions of real-life coping episodes, a formal method of analysis - *content analysis* will be employed. Content analysis can be defined as a 'replicable and valid method for making specific inferences from text to other states or properties of its source (Krippendorff 1969, p.103). This method allows qualitative data to be coded into categories. In this case these categories will represent types of situations described by participants and types of coping responses described. Text may be coded according to previously formulated categories: '*deductive category application*' or alternatively categories may be developed from the data itself: '*inductive category development*' (Mayring, 2000). The latter approach may be particularly useful for analysing descriptions of coping episodes as there is currently little agreement regarding the number and nature

of coping strategies (see Chapter III for discussion). Skinner et al (2003) write that ‘inductive bottom-up approaches...have the potential to extract instances of coping which are virtually limitless, a finite set of clearly defined and empirically verifiable lower order categories’ (p. 22). The bottom-up approach however, is not without limitations. Skinner et al. (2003) highlight a number of potential problems of this approach, the majority of which relate to the methods of classifying items (eg. factor analysis, rational sorting). These will be discussed further below. In addition to limitations relating to methods of classifying coping strategies, Skinner et al (2003) explain that bottom-up approaches can be problematic in that an item-pool that is specific to any age, stressor or context is not likely to be comprehensive. This limitation will be addressed in the current research by ensuring that the scale is developed with participants of various ages, and that different types of stressful situation are examined.

Category development will follow the stages depicted in figure 2. The situation and response categories derived will form the basis of the hypothetical scenarios and response options described in the coping questionnaire.

Fig. 2: Step model of inductive category development (from MAYRING 2000)



Stage 3: Ecological Validity and Internal Consistency of the Scale

An initial version of the questionnaire will be pilot-tested with a new sample of respondents (*Study II*). Participants will be requested to indicate whether they have previous experience of the types of situations described, and to rate the scenarios in terms of imaginability, stressfulness and controllability.

Data will be subjected to item analysis and the alpha coefficient (Cronbach, 1951) will be calculated. This statistic represents the internal consistency of the scale. High levels of internal consistency indicate that the items measure the same underlying construct. For a scale to demonstrate adequate internal consistency Cronbach's alpha should be at least 0.7 (Nunnally, 1978) although, as alpha is a function of the number of items, scales with few items may be reliable at lower values of alpha. Alpha can be increased by deleting items with low item-total correlations (usually below 0.3).

After initial item analyses, the scale will be refined by deleting/ retaining items on the basis of factor-loadings. Kline (1999) writes that 'factor analysis is the ideal method of test construction.....by administering items and subjecting their intercorrelations to factor analysis it is possible to select items which load onto one factor only' (p125). There are several different approaches to factor analysis. Klein (1999) explains that in general the different methods yield very similar results, although one method; *principal components analysis* has a number of unique characteristics which make it particularly useful for analysis of data in the social sciences. Principal components are uncorrelated linear combinations of actual scores that emerge ordered by the proportion of variance for which they account. No other method of factor analysis extracts factors that explain more variance than principal components.

The number of factors to be extracted can be determined by the number of eigen-values greater than one (the eigen-value denotes the relative proportion of variance accounted for by each factor), or the number of factors falling to the left of an 'elbow' in the scree-plot (plot of eigen-values against factors). Kline (1999) argues that the latter approach is 'just about the best solution to selecting the correct number of factors' (p.75) as the former tends to extract far too many factors (see Cattell, 1978). Following extraction, it is necessary to rotate the factors, in order to achieve an

interpretable solution. Again, there are a number of methods available. These can be classified as orthogonal or oblique. Orthogonal rotation methods are applied if it is assumed that variables are uncorrelated, whereas oblique rotation should be used for correlated variables. As it is not evident whether coping dimensions should be correlated or uncorrelated, both orthogonal and oblique rotations will be requested and the results compared.

Despite the advantages of factor analysis, Skinner et al. (2003) point out that the recovery of conceptually clear coping factors is dependent on the clarity of each item, items which tap more than one coping category will not load cleanly onto a single factor. They further point out that EFA cannot uncover more complex hierarchical coping structures and may therefore provide a simplified conceptualisation of coping. As discussed in chapter III, such issues are particularly problematic for situational coping measures such as the WCQ in which multiple strategies are assessed, and inter-relations between such strategies are overlooked (see Schwarzer & Schwarzer, 1996). These issues are less problematic when designing scales on the basis of broad strategies that may be used in a wide range of stressful situations. However, bearing such potential pit-falls in mind, the current research aims to develop scale items that represent identifiable coping strategies that are unambiguous with respect to intention. These strategies are intended to exist at the same theoretical level. As the current research is primarily concerned with identifying styles of coping, more complex hierarchical structures are not investigated. However, future research testing the factor structure obtained from exploratory factor analysis against alternative explanations of associations between coping dimensions and coping strategies may be beneficial.

Stage 4: Validation of the Scale

Benson and Hagtvet (1996) write that 'validity is the most important psychometric concept as it is the process by which test scores take on meaning' (p83). Validity refers to the extent to which a procedure measures what it purports to, and involves 'testing the scale of interest in the context of a set of hypothesized interrelations of the intended construct with other constructs' (Spector, 1992, p46). As discussed in Chapter III, scores on coping scales have been reported to demonstrate significant relationships with personality variables (such as extraversion, optimism, trait-anxiety

and self-efficacy) cognitive variables (such as appraisal processes, and ability to form meaningful representations of stressful events) environmental variables (such as the availability of adequate social support) and demographic variables (such as gender). Hypotheses regarding anticipated relationships between these variables and coping scores will be formulated on the basis of factor-analysis results, and tested using a separate sample of respondents (*Study III*).

For a scale to be considered valid, it must also be reliable. One form of reliability, internal consistency has already been discussed above. In addition to internal consistency, scales are required to demonstrate test-retest reliability. This statistic represents consistency over time, or 'how well a scale correlates with itself, across repeated administrations to the same respondents' (Spector, 1992, p65). Some authors have argued that coping is not a stable trait, but a dynamic process which alters over time, and consequently suggested that test-retest reliability is not an appropriate statistic for coping scale development (eg. see Lazarus, 1999). The coping scale developed in this chapter however, is intended to tap *dispositional* coping and as such scores should demonstrate consistency over time.

Finally, in addition to relationships with personality, cognitive and environmental variables, the research reviewed in Chapter II also suggests that coping style is associated with reactivity of the body's stress-response systems. Relationships between scores on the coping questionnaire under development and cortisol response to an experimental stressor will therefore be investigated in *Study IV*.

Study I: Identifying Situation and Response Categories for the Development of a Coping Questionnaire

This study aims to examine individuals' descriptions of real-life coping episodes and to identify categories of stressful situations/ coping responses that will form the basis of a coping questionnaire.

Method

Participants

Twenty-five males and 26 females were selected using opportunity sampling. Participants ranged in age from 17 years to 53 years (mean age 27). Sixty-seven percent of the participants were students. The remainder represented a wide range of occupations.

Materials

Participants were asked to complete a 'Stressful Situations Questionnaire' (see appendix 1). This contained measurements of the following variables:

Demographic variables: demographic variables included age, gender and occupation.

Stressful situations: in order to investigate the types of situations individuals experience in everyday life, participants were asked to describe in their own words a stressful situation they had experienced in the past. After responding to a series of questions (see below) participants were given the opportunity to describe up to four further situations on the following pages. An open-ended question format allowed respondents to describe any type of situation and no restrictions were placed on the time scale, or content of the situations described.

Coping Responses: Participants were asked to describe in their own words how they coped with the situation. An open-ended question format was used. This variable will be referred to as *actual coping response*.

Appraisals: Participants appraised the described situations in terms of stressfulness and controllability, on likert scales ranging from one to six. These two variables will be referred to as *perceived stressfulness* and *perceived controllability*. Participants also rated their ability to cope effectively with the situation on a six-point Likert scale. This variable will be referred to as *perceived coping effectiveness*.

Additional Coping Responses: Participants were also asked to describe how they could have coped more effectively with the stressful situation and how others might cope in this sort of situation. These items were included in the questionnaire for three reasons; firstly to gain a wide range of possible coping responses to each situation, secondly to investigate the extent to which individuals are aware of alternative methods that could be used to deal with the situation described, and thirdly to encourage participants to describe not only 'successful' coping acts, but also coping responses which may not have been effective in altering the situation. An open-ended question format was used. These variables will be referred to as *effective coping response*, and *alternative coping responses*.

Design and Procedure

Staff and students within the psychology department of the University of Kent at Canterbury were approached individually and asked if they would be willing to complete a questionnaire. The experimenter explained that the purpose of the study was to investigate how people cope with stressful situations. In order to obtain a more heterogeneous sample, participants were asked to refer a friend or relative from outside the University to complete a questionnaire. Participants were allowed to complete the questionnaires in their own time and to return them to a pigeonhole in the psychology department. Participants completed the questionnaires anonymously and were informed that responses would be completely confidential.

Identification of Situation and Response Categories

The situations and responses described in the 'Stressful Situations Questionnaire' were analysed using qualitative content analysis, with situation/ response categories derived from 'inductive category development' (Mayring, 2000). Qualitative content analysis can be conducted at a number of different levels (see Becker & Lissman, 1973). In the current study, the *themes* represented by participants' descriptions were of primary interest. When descriptions contained more than one theme, the text was divided into sections, and each section assigned a category label. Following this process, completed questionnaires were provided to a second rater together with a definition of each category label. The second rater coded each description, or section of text according to the category labels. Inter-rater reliability was calculated using Cohen's Kappa.

Results

Stressful Situation Categories

Participants described a very wide range of stressful experiences, from everyday challenges such as ‘exams’ (participant 32, Student) and ‘trying to get to the airport on time’ (participant 46, Teacher) to events such as being ‘arrested in an African country for being a mercenary and being imprisoned for 12 hours – passport and possessions confiscated and no water allowed’ (participant 31, Shipping Consultant). Participants not only described situations involving potential threat to themselves, but also situations where the threat was to another individual, eg. ‘I had to deal with a girl with terminal illness. She often confided in me, but she was threatening to commit suicide.’ (participant 30, Student). A number of participants also described the loss of a friend or relative, eg. ‘the death of both parents within 7 weeks of each other’, (participant 14, Business Proprietor).

Ten situation categories were identified and situations were coded with high inter-rater agreement (Cohen’s Kappa = 0.84). Situation category labels and frequencies are shown in table 1 together with examples for each category.

Table 1. Situation Category Frequencies

<u>SITUATION CATEGORY</u>	<u>EXAMPLES</u>	<u>N</u>
Assessment	‘Exams’ (participant 32, student)	31
Time pressure/ delay	‘train was cancelled on my first day at a new job’ (participant 34, student)	16
Conflict/ Unreasonable behaviour of others	‘a very heated argument between my son and my husband’ (participant 13, lab technician)	16
Facing an unfamiliar or unknown situation	‘making a price in a product I was not experienced in for an important client’ (participant 35, foreign exchange trader)	9
Relationship break-up (Self/ other)	‘relationship breakdown after living with partner for 6 years’ (participant 28, student)	7
Illness (Self/ other)	‘being told by a medical specialist that he could offer nothing to help me, he said “You were born with it, you shall die with it”’ (participant 51, computer software tester)	5
Bereavement	‘death of both parents within 7 weeks of each other’ (participant 14, business proprietor)	4
Making a Mistake	‘locking myself out of my house when my partner was away and no-one else had a key’ (participant 19, student)	4
Threat to Health/ Safety (Self/ Other)	‘weird man on train, trying to talk to me, but he seemed quite mad – muttering his thoughts about me, was quite threatening’ (participant 2, student)	4
Moving House	‘buying my house’ (participant 46, Teacher)	3

Means and standard deviations for stressfulness, controllability and coping effectiveness are shown in Table 2. The mean for stressfulness is towards the top end of the six-point scale, reflecting the fact that participants were requested to describe a *stressful* situation. The lower mean for controllability however, indicates that not all stressful situations are necessarily also uncontrollable. In fact perceptions of controllability vary more widely than perceptions of stressfulness or coping effectiveness (see standard deviations). The mean for coping effectiveness is also above the mid-point of the scale indicating that in general respondents perceived their coping efforts to be effective.

Table 2. Perceived Stressfulness, Controllability and Coping Effectiveness

	MEAN	SD	N
Perceived Stressfulness	4.88	1.02	109
Perceived Controllability	3.34	1.61	109
Perceived Coping Effectiveness	4.17	1.41	109

Response Categories

Participants' responses indicated a fairly broad interpretation of 'coping'. Respondents described not only attempts to deal with the situation (eg. 'worked all night', participant 5, Student), but also attempts to regulate one's emotions (eg. 'just trying to keep calm', participant 35, FX Trader), or to change the way the situation was perceived (eg. 'getting it into perspective and realising it is not the end of the world', participant 47, Student). In addition, participants described emotional reactions (eg. 'freaking out', participant 2, Student).

Participants often indicated that they used different strategies at different stages of the stressful encounter, or suggested that others would do so. For example, participant 5 explained that she initially coped with 'a serious argument with long term partner' with 'anger and upset. But later considered issues and reconciled'. Participant 33 described 'getting into a fight' and explained that he 'tried briefly to avoid it. When that didn't work had to just try and win!' Participant 43 described a 'row with my

girlfriend about where I was going to live next year' and suggested that others might cope with the situation by 'ignoring it until she came round to the idea' and participant 44, a customs officer, suggested that others might cope with 'being abused by angry tourists' by 'asking the punter to wait while you walk away and take a breather'. Similar methods were also used by different participants for very different purposes. For example, when faced with the stress of exams participants 22 and 42 both chose to talk to friends. However, the intention for participant 22 was apparently to gain information or advice; 'talking to friends about revision strategies', whereas the intention for participant 42 was relaxation; 'relax by chatting to friends'.

Thirteen response categories were identified (Cohen's Kappa = 0.82). In the majority of cases, respondents were able to describe not only how they coped with the situations, but also how they could have coped more effectively, and were further able to suggest ways in which others might cope if faced with a similar situation. In 12 situations, however participants were not able to suggest ways in which others would cope and in one situation, the respondent was unable to suggest alternative coping responses. Response category labels and frequencies are shown in Table 3. Response category descriptions and examples are shown in Table 4.

Table 3: Response Category Frequencies

RESPONSE CATEGORY	ACTUAL COPING RESPONSE	EFFECTIVE COPING RESPONSE	ALTERNATIVE COPING RESPONSE
Confronting the problem	26	35	28
Seek advice/ support	19	8	30
Try to relax/ calm oneself	8	12	19
Panic/become angry/ upset	11	2	22
Remove oneself from the situation	5	3	20
Ignore the situation/ denial	1	1	21
Positive thinking	8	6	6
Rationalising/ putting things in perspective	6	4	9
Distraction	9	1	7
Provide support to others	5	2	3
Accept or become resigned to the situation	8	0	1
Worry/ fear	3	0	4
Hoping/ wishful thinking	3	0	0
Don't know/ could not have coped more effectively	N/A	12	1

Table 4: Response Category Labels and Descriptions

RESPONSE CATEGORY LABEL AND DESCRIPTION	EXAMPLES
Confrontive coping – responses that involve actively taking control of a stressful situation (eg. By focusing on/prioritising activities that are necessary to avoid an undesired outcome or to overcome the effects of an aversive event that has already taken place)	‘I put myself between the two of them hoping that neither of them would punch me’ (heated argument between husband and son)
Seek advice/ support – responses such as ‘I would talk to someone’, or more specific responses indicating requirement for emotional, practical or informational support.	‘called engineer’ (PC not working)
Try to relax/ calm oneself – any responses that indicate explicitly that the aim is to relax or keep calm, or behaviours that are usually associated with relaxation (eg. Yoga, meditation etc.)	‘just trying to keep calm’ (waking up late for work)
Panic/become angry/ upset – participant states explicitly that they would panic, become angry or upset, or refers to a negative emotional response when confronted with a stressor.	‘I became flustered, got myself confused, I didn’t think very clearly’ (interview)
Remove oneself from the situation – participant removes self from the situation either mentally (by using drugs/ alcohol) or physically (by avoiding places or people that are associated with the stressor).	‘Took some time off work’ (stressful work situation)
Ignore the situation/ denial – participant ignores the situation or imagines that the stressful situation does not exist.	‘Ignored it’ (Thinking I was pregnant)
Positive thinking – responses that indicate that the aim is to maintain a positive frame of mind, or to recall past positive events.	‘by always being positive’ (lack of help for dyspraxic son)
Rationalising/ putting things in perspective – participant uses rational thought processes in order to cope more effectively with the situation (eg. By comparing the situation with more negative events/ outcomes, or by only focusing on aspects of the situation that can be changed).	‘I told myself that this was beyond my control and that everyone must understand that London Transport is unreliable’ (train was cancelled on my first day at a new job)
Distraction – responses such as ‘trying not to think about it’ or keeping busy with other activities in order to avoid thinking about the stressful situation’	‘kept reading’ (threatening man on the train)
Provide support to others – focusing on the concerns/ needs of other people who are affected by the stressful situation.	‘after the death of my father I was able to support my mother in practical ways to offset my own grief’
Accept or become resigned to the situation – the participant realises that the situation can not be changed and ceases attempts to overcome the situation.	‘accepted it as one of those bad times that come and go’(lost my keys, spectacles and bought a brand new but faulty computer in one week)
Worry/ fear – participant states explicitly that they worried or experienced fear, or refers to a negative emotional response when anticipating an aversive event/ outcome.	‘I ended up so stressed that I felt very ill by the time he came to watch me’ (being observed for teaching practice)
Hoping/ wishful thinking – participant states that they hoped or wished for a positive outcome.	‘hoped’ (threatening man on the train)

Comparison of Actual, Effective and Alternative Coping Responses

Considering that the majority of respondents were able to suggest more effective means of coping, the question remains as to why the most effective method was not used in the first place. In some cases participants' responses indicated that they had consciously chosen to reject alternative coping methods. For example, participant 15 suggested that she could have coped with a lack of support from the school for her son's dyspraxia by changing his school, but explained that she felt this would be 'running away from the root of the problem'. In other cases however, respondents indicated that the range of coping options open to them was limited by their emotional reactions, or by the availability of adequate resources. For example in response to the question 'how could you have coped more effectively?' participant 51 wrote 'I was unable to control my feelings, so not sure how I could have coped more effectively'. Similarly, participant 3 described coping with an interview 'not very well. I became flustered, I got myself confused, I didn't think clearly', but felt that others would have coped 'a lot better' and listed several alternative coping responses including 'calm', 'relaxed', 'confident', 'positive'. Participant 6 described 'driving home from work, car made a strange grinding noise' and explained that he had to 'detour to the garage'. When asked how he could have coped more effectively, he suggested 'if I had the knowledge, tools etc. and fixed it myself, instantly at no cost, and it would last forever'.

Study I Conclusions and Implications for Studies II, III & IV

In order to identify categories of stressful situations and coping responses, the current study adopted a bottom-up inductive approach in which categories were derived from the data, rather than determined a-priori. This approach was taken in order to identify the types of stressful situations individuals encounter in everyday life and to determine the types of responses that 'belong' to the coping construct. From qualitative content analysis of participants' descriptions of real life coping episodes, ten situation categories and 13 response categories were identified with high inter-rater agreement. Participants' responses to the question 'How did you cope?' indicated a fairly broad conceptualization of coping including behaviours, cognitions and emotions. These findings suggest that in order to measure the full-range of possible responses to stressful scenarios, coping scales should not be limited to one class of response only.

In the current study, participants described not only apparently constructive responses to stressful situations such as working hard to meet a deadline, but also responses that seemed unlikely to be adaptive, such as ignoring a potential threat or becoming flustered. In the majority of cases, participants were able to suggest ways in which they could have coped more effectively and were able to describe ways in which other people might cope. These results suggest that individuals are consciously aware of the thoughts, feelings and actions they experience during stressful periods, they are aware that their responses may not always be effective and that others may respond differently to the same event. Despite the fact that participants were able to suggest ways in which they could have coped more effectively, ratings of the effectiveness of actual coping methods were above the mid-point of the scale. This finding is consistent with previous reports that people's self-evaluations reflect a belief that they are above average (see Taylor, 1990; Taylor & Brown, 1988) and that individuals see themselves as 'the type of person who engages in the right behaviours' (Janoff-Bulman, 1999, p.309). Comparison of responses to the question 'how did you cope' and the alternative coping responses indicated that the range of coping options available might be restricted by factors such as inability to control negative emotions, or inadequate resources. Therefore subjective reports of coping actions appear

consistent with the theoretical construct of coping as arising from a combination of emotional arousal and cognitive appraisal (see chapters I to IV for discussion).

It could be argued that emotional responses are automatic reactions to stress, rather than conscious coping efforts. However, it is also possible that such emotions are an integral part of coping. Anger for example, may play an important role in stressful situations, motivating the individual to do something to change the situation or signaling to others that support is needed. Lazarus (1999) has argued that 'we should view stress, emotion and coping as existing in a part-whole relationship. Separating them is justified only for convenience of analysis because the separation distorts the phenomena as they appear in nature' (p37). More recently, Taylor (2003) has suggested that a number of goals or tasks of coping can be identified. These tasks include not only attempts to reduce harmful environmental conditions, but also to maintain emotional equilibrium. It is not clear therefore on theoretical grounds that emotional responses should be separated from behavioural or cognitive responses. The following study will investigate whether empirical evidence suggests that such responses should be treated as an integral part of coping.

As discussed in the introduction to this chapter, the current research aims to develop a questionnaire in which the scenarios described are sufficiently close to participants' everyday experiences to be effectively imagined. In order to ensure a high degree of ecological validity therefore the scenarios described in this questionnaire will represent the situation categories identified in the current study. However, although these types of situations are typical of the experience of the current sample, it is not clear to what extent results would generalise to other samples of respondents, or the extent to which ecological validity may depend factors such as the age or gender of respondents. The following study will examine these issues using a larger sample of respondents. The questionnaire developed in this thesis also aims to include responses that are designed to represent distinct coping strategies that are unambiguous with respect to intention. The content analysis method adopted here successfully assigned behavioural and cognitive responses to a number of clearly defined coping categories. Categorising emotional responses however, was more problematic as it was not always possible to identify the underlying emotion. Although some participants indicated that they 'panicked' or became 'angry', others wrote that they became

'flustered', 'shook' or 'could not think clearly'. Such emotional responses were therefore coded in a general category 'panic, become angry or upset'. It is possible however that panicking may have different implications from becoming angry or becoming upset. In addition, it was not always possible to determine the intention behind support seeking. Results indicated that talking to others could be a means of gaining information and advice or a means of relaxing. These findings echo Schwarzer and Schwarzer's (1996) statement that social support may serve purposes such as solving a problem, obtaining information, or calming oneself. The COPE (Carver et al., 1989) addresses this issue by including intention within the wording of the social support items. For example, 'I try to get emotional support from friends and relatives', 'I try to get advice from someone about what to do', 'I talk to someone who could do something concrete'. In order to separate intention from behaviour, the questionnaire developed in this thesis will take a similar approach, dividing the categories 'seek advice or support' and 'provide support to others' into three items; seeking/providing informational support, ii. seeking/ providing emotional support, and iii. seeking/ providing practical support. In order to develop response items for the coping scale the category 'panic, become angry or upset' will also be divided into its three constituent emotions.

The results of the current study also suggested that individuals might use different strategies at different stages of stressful encounters. In the examples discussed participants explained that they responded initially by avoiding the situation or by becoming upset, but were later able to accept the situation, or take steps to change it. When considering how people typically respond to stress it may therefore be important to assess both their immediate reactions to the event, and the methods they use to cope with situations that have been ongoing for a significant period of time. It could be argued that if people change their coping across the stages of a stressful encounter that coping must be seen as a process rather than a style. However, as discussed previously, this thesis argues that coping is more complex than the simply dichotomy between process and style would imply. Individuals may use different methods to cope with situations in the early vs later stages. However, if this pattern of response is consistent across a range of situations it is evident that the individual does have a characteristic style of coping. The following study will examine the extent to which individuals use the same methods to cope in the early vs later stages of stressful

encounters, and determine the extent to which responses generalize across a range of situations.

One of the questions used in the 'Stressful Situations Questionnaire' may have been problematic. Participants were asked to 'indicate on the scale below how controllable you felt the situation was'. The purpose of this question was to identify the extent to which the situation could be controlled by the individual. However, it is possible that participants could have interpreted this question in terms of the extent to which the situation could be controlled by outside agents. For example, one respondent described a situation in which a train was cancelled. Although this situation could not be controlled by the individual, it could be controlled by the train company. It is not possible to rule out the possibility that participants' ratings in some cases at least may indicate the extent to which individuals in a position of power could have controlled the situation. The wording of this item will therefore be altered in study II.

Study II: Development of A Coping Questionnaire & Identification of Coping Dimensions

This study describes the development of a coping questionnaire based on the categories described in Study I and examines the factor structure of coping responses.

Method

Participants

One hundred females and 32 males were selected using opportunity sampling. Participants ranged in age from 17 to 75 (mean age 39). Thirty-four percent of participants were in the under-30 age group, 37 percent in the 30-50 age group and 29% in the over-50 age group. Respondents represented a wide-range of occupational groups. Of the 126 participants who gave details regarding their occupation, 58% were employed, 30% were students, and 13% unemployed. Of the 102 participants who provided information about their level of education, 5% had no academic qualifications, 17% were educated to GCSE level or equivalent, 14% to A-Level or equivalent, and 57% to degree-level or equivalent, whilst the remainder (8%) indicated that they had 'other' qualifications. Of the 100 participants who provided information about their marital status, 47 were married.

Materials

Participants were asked to respond to ten hypothetical stressful situations presented as a 'Coping with Stressful Situations Questionnaire' (see Appendix 2). The situations and response options were created to represent the categories identified in study I. In order to separate intention from behaviour, the social support items were split into three categories; i. Seeking/providing informational support, ii. Seeking/ providing emotional support, and iii. Seeking/ providing practical support. The item panic/become angry/become upset was also separated into its three constituent

emotions. This increased the number of response categories from 13 (in Study I) to 19 (in the current study).

In order to measure coping at different stages of a stressful event, respondents indicated how likely they would be to use the coping strategies described (using a six-point scale) either immediately (*time 1*) or if the situation had not changed after a significant period of time (*time 2*). As in Study I, the questionnaire also contained measurements of situational appraisals (perceived stressfulness, perceived controllability) and perceived coping effectiveness. The wording of these items was altered to ensure that respondents indicated how controllable/ stressful the situation was *for them*. The questionnaire also contained measurements of the following variables:

Experience: respondents were asked to indicate whether they had experienced this type of situation in the past, on a four-point scale ranging from 'never' to 'several times'.

Imaginability: respondents were asked to indicate how clearly they were able to imagine the situation on a six-point likert scale ranging from 'I can not imagine it at all', to 'I can imagine it very clearly'.

Demographic variables: demographic variables included age, gender, level of education, occupation, and marital status.

Design and Procedure

Information sheets giving details of the current study and a contact telephone number were distributed to the organisers of adult education courses held at a number of centres in Kent (see appendix 3). These courses included academic disciplines, sports, exercise and relaxation, arts, and skills training. Fifteen course-leaders contacted the author for further information and all agreed to distribute questionnaires to their group-members. Participant information sheets (see Appendix 4) were enclosed with the questionnaires, and postage-paid envelopes were supplied.

Participants completed the questionnaires anonymously and were informed that responses would be completely confidential. A number of analyses were conducted in order to explore the validity and reliability of the coping scale. These are described below.

Ecological Validity of Hypothetical Situations

Ratings of stressfulness, controllability, coping effectiveness, imaginability and experience for each situation were entered into SPSS (v. 9.0). In order to ensure that scenarios could be effectively imagined by males and females of different ages, ratings of imaginability were examined separately for the following groups; males, females, people aged under 30, people aged 30-50, people aged 50+. As mean scores may be heavily influenced by outliers when the sample is broken down into smaller groups, the median was selected as the most appropriate indicator of central tendency. Any scenarios with a median imaginability rating of less than 4 out of 5 (ie 80% imaginability) by participants in each demographic group were excluded from the scale.

Experience ratings were also examined for each demographic group. It is likely that experience of particular types of stressful situations will vary with age and gender and this is not considered problematic provided that participants in each group are able to imagine the situation effectively. However, any situations that had not been experienced by at least 20% of participants in each demographic group were considered too far removed from everyday life to be included in the scale.

Item Analyses and Reliability

After excluding any scenarios that did not meet the criteria above, mean scores were obtained for each participant on all 19 coping responses both at Time 1 and at Time 2. These scores were entered into the Statistical Package for the Social Sciences (SPSS, v. 9.0). In order to determine whether responses differed across the two time points (indicating that the two time points should be analysed separately) a multivariate analysis of variance (MANOVA) was conducted. In order to determine whether all responses were measuring the same underlying construct, item analyses were

conducted and Cronbach's alpha calculated. Item-total correlations greater than .30 and an alpha coefficient greater than .70 were required to demonstrate adequate internal reliability of the scale.

Identification of Coping Dimensions

The correlation matrix of the 19 response items was assessed using Bartlett's test of sphericity (Bartlett, 1950) and the Kaiser-Meyer-Olkin measure of sampling adequacy (Kaiser, 1970). Scores were then subjected to Principal Components Analysis. Separate analyses were conducted for responses to situations at Time 1 and at Time 2. As it is not evident whether coping dimensions would be expected to be independent or correlated, both orthogonal (varimax) and oblique (direct oblimin) rotations were requested. Items were retained if they loaded significantly ($>.30$) on one factor only.

Cross-situational Consistency of Factor Scores

Factor scores for each scenario were saved into SPSS (v 9.0). Item analyses were then conducted separately for each factor treating the scenarios as scale items. Cronbach's alpha was calculated separately for each factor in order to assess consistency of factor scores across all retained scenarios.

Results

Ecological Validity of Stressful Situations

Median ratings of imaginability were calculated for males and females and for participants in each of the three age groups. Results indicated that participants in the under-30 age group could not imagine the illness or moving house scenarios effectively (median rating < 80%, see table 1). Further analyses were conducted to determine the proportion of respondents in each demographic group that had experienced situations of the type described. Results indicated that the scenarios 'illness', 'moving house' and 'relationship breakup' had been experienced by less than 20% of respondents in the under 30 age group. Less than 20% of females indicated that they had experienced a situation similar to that described in the relationship breakup scenario. Results are shown in table 1.

Appraisals of Stressfulness, Controllability and Coping Effectiveness

Table 2 shows means and standard deviations for perceived stressfulness, controllability and coping effectiveness for each of the ten situations. All means for stressfulness are greater than the mid-point of the 6-point scale (mid-point = 2.5) indicating that the scenarios described were perceived as stressful. For eight of the ten situations however, controllability ratings are above the mid-point of the scale indicating that stressful situations are not necessarily also perceived as uncontrollable. The means for coping effectiveness are also above 2.5 for all situations, indicating that on average respondents felt that they could cope effectively with the situations described.

Table 1: Median ratings for imaginability and proportion of people with previous experience of this type of situation

		<u>SITUATION NUMBER</u>										
		1	2	3	4	5	6	7	8	9	10	Total
Imaginability (median)	Male	100.00	100.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
	Female	100.00	100.00	100.00	80.00	100.00	100.00	80.00	80.00	80.00	80.00	100.00
	Under 30	80.00	100.00	80.00	60.00	80.00	80.00	40.00	80.00	80.00	80.00	80.00
	30-50	100.00	100.00	100.00	80.00	90.00	100.00	100.00	80.00	90.00	100.00	100.00
	Over 50	100.00	100.00	100.00	100.00	100.00	80.00	90.00	80.00	100.00	100.00	100.00
% Experienced	Male	71	68	56	22	94	84	22	75	34	56	58
	Female	58	72	67	21	82	82	49	54	18	55	56
	Under 30	60	84	40	11	96	84	02	77	16	53	52
	30-50	62	71	69	22	81	88	65	55	27	63	60
	Over 50	61	55	87	32	76	74	61	42	24	47	56

Situation 1 = time pressure/ delay, 2 = assesment, 3 = bereavement, 4 = illness, 5 = conflict, 6 = making a mistake, 7 = moving house, 8 = threat to health and safety, 9 = relationship breakup, 10 = unfamiliar/ unknown situation

Table 2: Means and Standard Deviations for Stressfulness, Controllability and Coping Effectiveness

	STRESSFULNESS	CONTROLLABILITY	COPING
	MEAN (SD)	MEAN (SD)	EFFECTIVENESS MEAN (SD)
Time Pressure/ Delay	2.98 (1.15)	2.80 (1.37)	3.72 (.87)
Assessment	2.98 (1.29)	3.51 (1.04)	3.71 (.78)
Bereavement	3.76 (1.09)	2.62 (1.45)	3.45 (.99)
Illness	4.36 (.83)	2.54 (1.25)	2.99 (1.10)
Conflict	2.81 (1.16)	2.95 (1.25)	3.80 (.97)
Mistake	3.94 (.90)	2.26 (.83)	3.47 (.88)
Moving House	3.37 (.95)	2.95 (1.08)	3.5 (.90)
Threat to Health and Safety	3.58 (.10)	2.72 (.98)	3.39 (.84)
Relationship Break-up	3.39 (.79)	2.49 (1.36)	2.82 (1.30)
Unfamiliar Situation	3.78 (1.03)	3.25 (.91)	3.57 (.97)

Item Analyses and Reliability

The scenarios 'illness', 'relationship breakup' and 'moving house' were excluded from further analysis, as they did not meet the criteria for ecological validity (see above). Mean scores (averaging across the seven remaining scenarios) were calculated for each coping response at Time 1 and at Time 2. A multivariate analysis of variance (MANOVA) was conducted to determine whether there is a significant difference between Time 1 and Time 2 scores for each of the coping responses. Multivariate analyses indicated a significant difference between the two time points in overall coping response ($F_{(19,244)} = 1024.889, p < .001$). Subsequent univariate analyses revealed that time 1 scores were significantly different from time 2 scores for the following items; seek practical help, become upset, provide information, provide emotional support, provide practical help, accept or become resigned to the situation, worry, and rationalising/ putting things in perspective. Participants indicated that they were more likely to become upset, accept the situation, or worry in the early stages, whilst they were more likely to seek practical help, provide support to others, or try to put the situation into perspective in the later stages (see table 3 below).

Table 3: Comparison of Means for Time 1 vs Time 2

RESPONSE CATEGORY	<i>M(SD)</i> <i>time 1</i>	<i>M(SD)</i> <i>Time2</i>	Sig (2-tailed)
Try to relax/ calm oneself	1.79 (1.22)	2.05 (1.24)	n.s
Seek information	4.13 (.60)	4.06 (.52)	n.s
Seek emotional support	3.31 (.92)	3.41 (.84)	n.s
Seek practical help	3.18 (.78)	3.45 (.61)	.002
Distraction	2.14 (.97)	2.25 (.94)	n.s
Positive thinking	2.93 (.90)	2.90 (.82)	n.s
Hoping/ wishful thinking	3.55 (.90)	3.54 (.87)	n.s
Panic	1.79 (1.06)	1.59 (.99)	n.s
Become angry	1.80 (.92)	1.67 (.83)	n.s
Become upset	2.49 (.89)	2.24 (.90)	.023
Confronting the problem	3.43 (.59)	3.55 (.51)	n.s
Ignore the situation/ denial	1.27 (.85)	1.27 (.83)	n.s
Remove oneself from the situation	1.32 (.72)	1.38 (.70)	n.s
Provide information to others	3.13 (.80)	3.42 (.71)	.002
Provide emotional support to others	3.11 (.93)	3.35 (.88)	.031
Provide practical help to others	3.13 (.93)	3.38 (.80)	.013
Accept or become resigned to the situation	2.83 (.76)	3.19 (.75)	<.001
Worry/ fear	3.26 (.82)	3.05 (.78)	.040
Rationalising/ putting things into perspective	2.93 (.82)	3.36 (.68)	<.001

In order to assess the reliability of the resulting seven-scenario measure, item analyses were conducted on the 19 responses hypothesised to assess coping at time 1 and at time 2. Initially scores for each of the 19 response-options were correlated with the total coping score. All the correlations were greater than .30, apart from acceptance at time 2 ($r=.22$). Coefficient alpha for the coping scale was .84 at time 1 and .83 at time 2.

Coping Dimensions

Measures of sampling adequacy indicated that the correlation matrix for the 19-item scale was highly suitable for factor analysis both at time 1 (KMO = .767, Bartlett's test of sphericity $X^2 = 1335.712$, $p < .0001$) and time 2 (KMO = .760, Bartlett's test of sphericity $X^2 = 1073.121$, $p < .0001$). The dimensionality of the 19 coping response items was analysed using principle components analysis. The scree-test was used to

determine the number of factors to extract. Factors were subsequently rotated using varimax rotation and using direct oblimin rotation.

Time 1 Coping Responses

The scree-test (see fig 1) indicated a three-factor solution. Very similar solutions were obtained using the varimax and direct oblimin procedures. The three factors, accounting for 57% of the variance, were labelled 'active coping', 'avoidance' and 'emotional response'. Factor loadings are shown in table 4 below. Correlations between the three factors obtained using direct oblimin rotation are shown in Table 5.

The similarity between orthogonal and oblique solutions shown in Table 4, and the small correlation coefficients in Table 5 suggest that the three coping dimensions are highly independent. This three-factor solution generally conforms well to the principles of simple structure, although four of the 19 coping responses have significant loadings on more than one factor, as indicated by both the varimax and direct oblimin rotations. These are 'rationalising/ putting things in perspective', 'acceptance', 'seeking emotional help' and 'hoping/ wishful thinking'. In order to obtain 'pure' dimensions, these responses should be omitted from the scale.

Figure 1: Plot of Eigenvalues Against Components for Time 1 Coping Responses

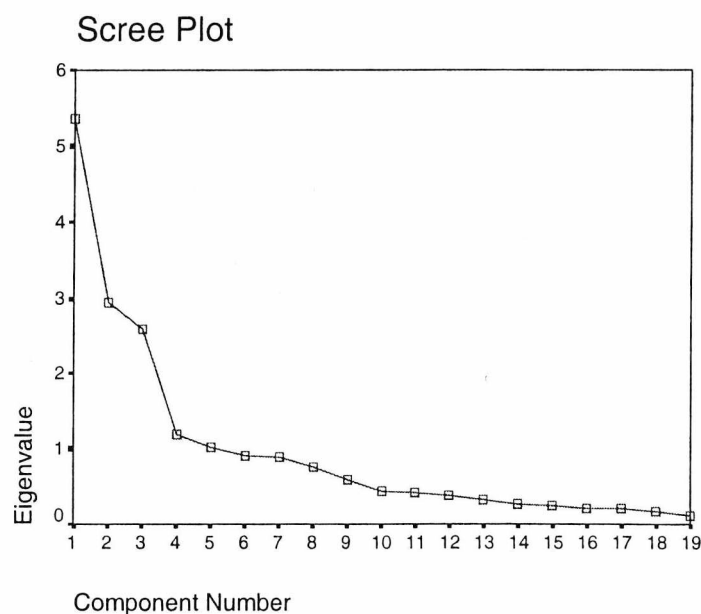


Table 4: Correlations Between the Coping Items and Coping Factors for Time 1

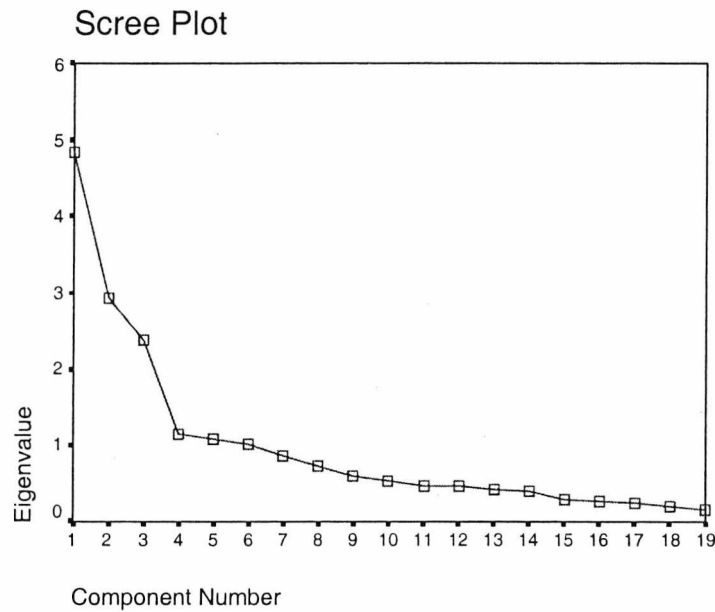
	ACTIVE COPING		AVOIDANCE		EMOTIONAL RESPONSE	
	Varimax	D.Oblimin	Varimax	D.Oblimin	Varimax	D.Oblimin
Provide Information	.853	.860	.086	-.014	.107	.062
Provide Practical Help	.839	.857	.005	-.091	.013	-.027
Provide Emotional Support	.796	.802	.076	-.018	.137	.096
Confronting the problem	.732	.742	.069	-.012	-.044	-.087
Seek Practical Help	.697	.690	.189	.113	.019	-.024
Seek Information	.665	.681	-.038	-.121	.145	.116
Rationalise/ Perspective	.524	.485	.479	.439	-.244	-.297
Seek Emotional Help	.492	.474	.177	.111	.399	.367
Distraction	-.105	-.199	.782	.812	.019	-.020
Ignore Situation/ Denial	-.187	-.281	.764	.802	.044	.009
Think Positive	.289	.212	.718	.703	-.036	-.091
Remove Self from Situation	.040	-.043	.667	.668	.292	.254
Try to Relax/ Calm Oneself	.231	.169	.558	.542	.092	.050
Hope	.178	.111	.553	.534	.347	.308
Accept Situation	.423	.375	.523	.493	-.188	-.238
Become Upset	.088	.074	-.012	.051	.868	.868
Panic	-.064	-.090	.056	.036	.857	.860
Become Angry	-.002	-.031	.118	.097	.713	.709
Worry	.171	.153	.067	.025	.708	.699

Table 5: Component Correlation Matrix

COMPONENT	1	2	3
1	1.00	.229	.081
2	.229	1.00	.100
3	.081	.100	1.00

Time 2 Coping Responses

The scree-test (see fig 2) indicated a three-factor solution, accounting for 53% of the variance. As before, the factors were labelled 'active coping', 'emotional response' and 'avoidance'. Again, very similar solutions were obtained using the varimax and direct oblimin procedures, although for the emotional response dimension factor loadings are negative using the direct oblimin procedure, so strictly speaking this dimension should be labelled 'lack of emotional response' according to this solution. Factor loadings are shown in Table 6 below. Correlations between the three factors obtained using direct oblimin rotation are shown in Table 7.

Figure 2: Plot of Eigenvalues Against Components for Time 2 Coping Responses

Again, the factors appear highly independent. The largest correlation is between the avoidance and emotional response dimensions ($r=.19$). Six of the 19 responses have significant loadings on more than one factor as indicated by both varimax and direct oblimin solutions. The same responses as before have similar loadings on two factors and so should be removed. Although 'remove self from the situation' and 'worry' have significant loadings on two factors, there is a clear difference between these two loadings (primary loading is above .6, whilst secondary loading only just exceeds .3). It is suggested at this stage therefore that these items should be retained.

Table 6: Correlations Between the Coping Items and Coping Factors for Time 2

	ACTIVE COPING		AVOIDANCE		EMOTIONAL RESPONSE	
	Varimax	D.Oblimin	Varimax	D.Oblimin	Varimax	D.Oblimin
Provide Information	.796	.812	-.052	-.126	.051	-.021
Provide Practical Help	.844	.862	-.056	-.132	-.038	.070
Provide Emotional Support	.776	.778	.076	.001	.171	-.129
Confronting the problem	.643	.650	.020	-.037	-.013	.044
Seek Practical Help	.588	.577	.196	.144	.088	-.042
Seek Information	.533	.531	.084	.034	.110	-.078
Seek Emotional Help	.509	.489	.242	.185	.413	-.366
Think Positive	.189	.123	.749	.751	-.023	.113
Distraction	-.078	-.145	.681	.696	.191	-.123
Ignore Situation/ Denial	-.257	-.326	.665	.696	.194	-.135
Remove Self from Situation	-.059	-.123	.620	.625	.390	-.328
Accept Situation	.165	.118	.572	.583	-.305	.376
Hope	.176	.124	.529	.510	.395	-.332
Rationalise/ Perspective	.380	.342	.520	.512	-.355	.430
Try to Relax/ Calm Oneself	.318	.274	.503	.482	.117	-.049
Panic	.004	-.021	.143	.113	.841	-.830
Become Upset	.162	.152	.011	-.037	.825	-.822
Become Angry	.004	-.016	.102	.075	.740	-.733
Worry	.313	.301	.082	.030	.668	-.649

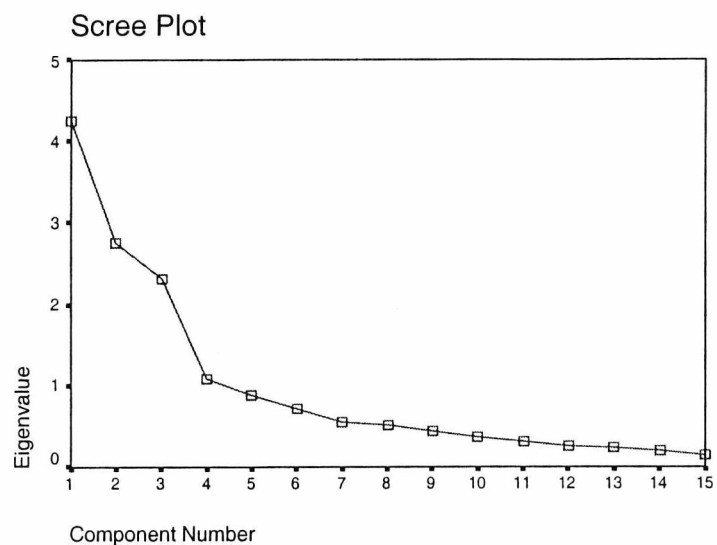
Table 7: Component Correlation Matrix

COMPONENT	1	2	3
1	1.00	.186	-.075
2	.186	1.00	-.152
3	-.075	-.152	1.00

Coping Dimensions – Revised Scale

After removing items that did not load clearly onto one factor only, scores were again subjected to principal components analysis. As previous rotations indicated that factors are highly independent, varimax rotation only was requested. The scree-plot again revealed a 3-factor solution, which accounted for 62% of the variance in time 1 responses and 58% of the variance at time 2 (see fig 3 and 4). Factor scores are shown in Table 8.

**Figure 3: Plot of Eigenvalues Against Components for Time 1 Coping Responses
(revised scale)**



**Figure 4: Plot of Eigenvalues Against Components for Time 2 Coping Responses
(revised scale)**

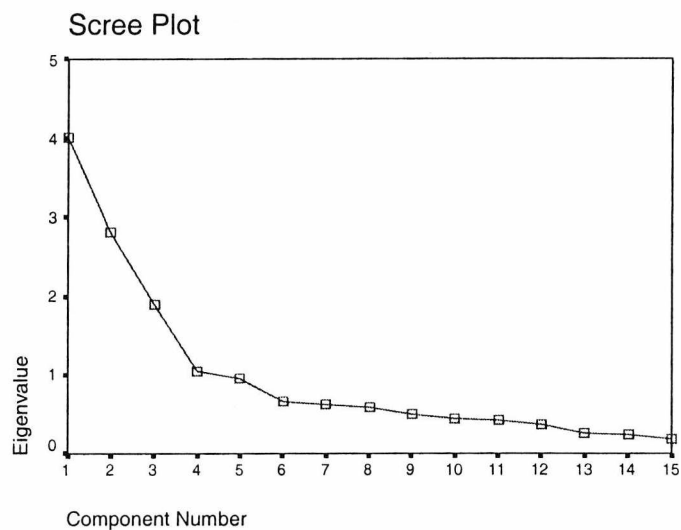


Table 8: Correlations Between the Coping Items and Coping Factors: Revised Scale

	<u>TIME 1</u>			<u>TIME 2</u>		
	Active coping	Avoidance	Emotional Response	Active coping	Avoidance	Emotional Response
Provide Information	.870	.092	.086	.803	-.105	.102
Provide Practical Help	.870	.029	-.011	.872	-.066	-.033
Provide Emotional Support	.808	.091	.120	.765	.039	.188
Confronting the problem	.748	.047	-.033	.666	-.005	.022
Seek Practical Help	.695	.212	-.032	.607	.246	.025
Seek Information	.665	-.090	.172	.563	.123	.088
Distraction	-.057	.831	-.008	.000	.798	.078
Ignore Situation/ Denial	-.140	.821	.021	-.181	.768	.108
Remove Self from Situation	.053	.676	.285	-.017	.651	.352
Think Positive	.288	.650	-.065	.216	.709	-.082
Try to Relax/ Calm Oneself	.248	.591	.102	.320	.474	.141
Become Upset	.085	-.017	.883	.129	.030	.856
Panic	-.052	.102	.854	-.013	.206	.846
Become Angry	.007	.130	.745	-.009	.130	.784
Worry	.174	.027	.729	.276	.044	.700

Factor loadings for the revised scale conform well to the principles of 'simple structure', with only 2 of the total 30 responses loading significantly on more than one factor. These are 'remove self from the situation' (time 2), and 'try to relax/ calm oneself' (time 2). Although the former clearly loads onto 'avoidance', the latter has similar loadings on both 'avoidance' and 'active coping'.

Cross-Situational Consistency of Factor Scores

Factor scores were obtained by summing scores on all items loading onto a factor (indicated in the table above). This method is the simplest means of obtaining factor scores and generally correlates highly with more elaborate statistical procedures (see Kline, 1999). Factor scores for each scenario were saved into SPSS (v. 9.0) in order that item analyses could be conducted. All item-total correlations were greater than .30. Coefficient alpha ranged from .74 for active coping (Time 2) to .87 for avoidance (Time 1) indicating a high degree of cross-situational consistency for all three dimensions.

Study II Conclusions and Implications for Study III

The analyses reported in the present study indicate that the situation and response categories identified in Study I were perceived as stressful and highly imaginable by an independent sample of respondents. Three of the original situation categories were excluded, as these types of situations were not typical of respondents' day-to-day experience. The resulting seven-scenario scale demonstrated a high degree of internal consistency.

Asking participants to indicate how they would respond at time 1 and 2, meant that it was possible to examine whether the coping options provided by the CSSQ are appropriate to coping in both the initial and late stages of stressful encounters. Item analyses indicated that the 19 responses hypothesised to assess coping at time 1 were measuring the same underlying construct. At time 2, 18 of the 19 responses were highly correlated with the overall construct, the exception being 'acceptance'. Principal components analyses provided greater detail regarding the interrelationships between coping items. Three factors were extracted both at time 1 and time 2. Comparison of orthogonal and oblique rotations suggested that these factors were not highly correlated.

Four of the original 19 responses were excluded due to significant loadings on more than one factor. Rationalising/ putting things in perspective and acceptance had similar loadings on the active coping and avoidance dimensions. It is possible that accepting the situation and putting things in perspective may allow the individual to form a meaningful structure of the event in order to take steps to take an active role in dealing with the situation, or may allow the individual to arrive at a less catastrophic perception of the event in order that it may be put out of mind. The multi-faceted nature of acceptance as a coping strategy has also been highlighted by Lyne and Roger (2000). They explain that accepting the reality of a situation may facilitate active coping, however a tendency to accept that nothing can be done to change the situation may predispose the individual to denial or helplessness. It is possible that acceptance is distinct from coping, and may be more allied to appraisal processes. The present study provides mixed results with respect to acceptance; whilst this response appeared to be highly correlated with the overall construct at Time 1, this was not the

case at Time 2. Further research would be beneficial to examine the role of acceptance both in the early and late stages of stressful encounters.

Seeking emotional support had similar loadings on the active coping and emotional response dimensions. Again, it is likely that this strategy can be used for a number of different reasons. For example, seeking emotional support may form part of collaboration with others aimed at changing the situation, or may be used to deal with feelings of panic, anger, upset and worry. Similarly, dual loadings for 'hoping/wishful thinking' suggest that this strategy may be used either to allow the individual to see the event in a more positive light in order to put it out of mind, or may be used to deal with emotional arousal. Such overlaps highlight the importance of designing scale items that specify not only the behaviour/ cognition, but also the underlying intention.

The revised 15-item scale appears to tap three coping dimensions: active coping, avoidance, and emotional response. This structure is supportive of the notion that vigilant or active methods of coping can be distinguished from avoidant or passive methods. In general the active coping dimension appears to involve cognitions or behaviours aimed at drawing on resources available and doing what one can to improve the situation for oneself or for others. The avoidance dimension seems to involve cognitions or behaviours aimed at avoiding anxiety, maintaining a positive view of the situation, or withdrawing either physically or mentally. The addition of a third factor for 'emotional response' is supportive of Lyne and Roger's (2000) re-evaluation of the COPE in which they extracted 'rational', 'emotion-focused' and 'avoidance' coping dimensions. In the current study this factor is labelled *emotional response* rather than *emotion-focus* as it appears to tap emotional reactions such as worrying, panicking, becoming angry, or upset as opposed to attempts to change one's emotions. In fact it is possible that the label *emotional response* may be a more accurate description of the *emotion-focus* factor of the COPE. It is not possible to determine whether COPE items such as 'I feel emotional distress and express those feelings', 'I get upset and let my emotions out', and 'I get upset and am really aware of it' are assessing a propensity to become emotionally aroused or a tendency to express those emotions. In order to identify the important dimensions of coping it

will be necessary to design scales carefully, avoiding the use of potentially ambiguous items.

A further limitation of previous three-factor models of coping is that they have been based on questionnaires which request participants to indicate how they *generally* cope (eg. Endler & Parker, 1990; Lyne & Roger, 2001). It is therefore not clear that this structure is applicable to different types of stressful situations (see Chapter III). The use of hypothetical situations in the current study addressed this problem. Scores for the three coping factors were highly consistent across seven different situations.

The CSSQ therefore appears to represent an improvement on previous measures of coping in that the scenarios described are sufficiently close to individuals' day-to-day experience to be effectively imagined, the scale demonstrates a high degree of internal reliability and the structure of the questionnaire allows for comparisons of coping responses to different types of stressful situation. The scale also allows for examination of coping in both the early and late stages of stressful encounters, and includes measures of situational appraisals and level of experience with the type of situation described. The factor-structure of the CSSQ appears to concur more closely with three-factor models of coping than either the problem/ emotion- focused or vigilance/ avoidance distinctions. In order to support the validity of this three-factor structure however, it is not only necessary to demonstrate that scores generalise across situations, but also that they remain stable over time, and that they relate in predictable ways to measures of person and situation variables. Study III will therefore examine test-retest reliability of the CSSQ, and test a set of hypothesised interrelations between scores on each of the three sub-scales and measures of personality, cognitive variables (appraisals and ability to achieve cognitive structure), social support and demography (see Chapter III for a discussion of the role of these factors in coping). In order for the CSSQ to be utilised with patient populations it is important not only to consider psychometric properties such as reliability and validity, but also to ensure that the scale is an acceptable length and that instructions are easy to understand. Respondents' perceptions of the CSSQ will therefore also be investigated in Study III.

Study III: Relationships Between Coping Scores Psychological and Social Variables

This study aims to test the coping questionnaire designed in Study II using a new sample of respondents. Convergent and divergent validity will be investigated by examining the coping measure in the context of a set of hypothesised interrelations with person variables. Internal consistency and test-retest reliability will also be examined and participants will be asked to comment on the revised scale.

Associations between coping and person variables

The research reviewed in Chapters II and III suggests that individuals will take an active role in confronting stressful situations only if they appraise the situation as controllable, if they have adequate coping resources and believe in the effectiveness of their own coping efforts. If the individual is lacking in coping resources however, is unable to make sense of the situation, or does not believe that coping efforts will be effective, he or she is more likely to become emotionally aroused or engage in avoidance coping. Chapter II suggests that emotional arousal in stressful situations may also be associated with gender, with appraisals of stressfulness, and with personality variables such as neuroticism and trait anxiety.

In addition previous research has linked active attempts to deal with stressful situations to extraversion (McCrae & Costa, 1986; Parkes, 1986; Rim, 1987; Bolger, 1990; Amirkhan, Risinger, & Swickert, 1995), optimism, internal locus of control (Smith et al., 1989; Scheier et al., 1986; Compas et al., 1991) and a lack of neuroticism (Epstein & Meier, 1989; Endler & Parker, 1990; Amirkhan, et al., 1995) whilst avoidance coping appears to be associated with neuroticism (McCrae & Costa, 1986; Parkes, 1986; Rim, 1987; Bolger, 1990; Endler & Parker, 1990), introversion (McCrae & Costa, 1986; Parkes, 1986; Rim, 1987; Bolger, 1990; Amirkhan et al., 1995), trait anxiety (Smith et al., 1989) and pessimism (Scheier et al., 1986). Further, men have been reported to use more avoidant and women more vigilant forms of coping (Miller & Kirsch, 1987; Krohne, Schumacher & Egloff, 1992; Weidner &

Collins, 1993). Drawing on this research a number of significant associations between scores on the CSSQ coping dimensions and person variables are predicted:

Active coping: scores on the active coping dimension will be significantly associated with extraversion, optimism, internality, self-efficacy, social support, appraisals of controllability and coping effectiveness and the female gender.

Avoidance: scores on the avoidance dimension will be significantly associated with neuroticism, introversion, pessimism, trait anxiety, a lack of social support, lack of self-efficacy, low ratings of coping effectiveness and controllability, difficulty forming a meaningful structure of stressful events and the male gender.

Emotional arousal: scores on this dimension will be significantly associated with neuroticism, trait anxiety, lack of social support, lack of self-efficacy, low ratings of coping effectiveness and controllability, high ratings of stressfulness and the female gender.

Although associations with CSSQ dimension scores are expected to conform generally with the above hypotheses, it is important to note that these are formulated on the basis of previous research using a range of different coping measures. As discussed previously in this thesis, there is no single agreed definition, or measure of 'avoidance', 'active coping' or 'emotional arousal', so associations with person variables are likely to differ depending on the measures used. Some deviations from this pattern of results are therefore anticipated.

Method

Participants

Twenty-five male and 77 female Psychology students from the University of Kent at Canterbury participated for course credits. The mean age of participants was 22 years (range from 18-35).

Materials

Participants completed a participant information sheet asking them to indicate their age and gender, and the seven-scenario CSSQ (see Appendix 5). After completing the CSSQ, participants were requested to indicate their perceptions about the length of time the questionnaire took to complete on a five point scale ranging from 0 (not at all acceptable) to 5 (totally acceptable). Participants were also asked to give general comments on the scale. Participants were then requested to complete measures of personality, social support and cognitive variables. In order to reduce the amount of time required to complete all measures, short-form questionnaires were used where possible. These are described below:

The personality dimensions of *Neuroticism*, *Extraversion*, *Optimism*, *Internality*, and *Self-efficacy* were assessed using a single questionnaire comprising items from the International Personality Item Pool (2001), a web-site providing access to measures of individual differences with a common item format (see Goldberg, 1999; <http://ipip.ori.org/>). Respondents are asked to indicate 'how accurately each statement describes you' on a scale ranging from 1 (very inaccurate) to 5 (very accurate). Scores for each personality variable are obtained by summing five positive and five negatively coded items. The order of negative and positive items, and the order of items relating to each of the five personality variables is counterbalanced. Alpha coefficients are reported ranging from 0.71 for Internality to 0.86 for Optimism and Extraversion (see <http://ipip.ori.org/>). In the current sample Cronbach's alpha ranged from 0.66 for Internality to 0.87 for Extraversion and Optimism.

Trait and State Anxiety were assessed using the State Trait Anxiety Inventory (STAI-Spielberger, et al., 1980). This inventory comprises separate self-report scales for measuring state and trait anxiety. The state anxiety scale comprises 20 statements (10 negative and 10 positive) which evaluate how respondents feel 'right now, at this moment', whilst the trait anxiety scale comprises 20 items (11 positive, nine negative) assessing how individuals *generally* feel. Participants respond by indicating a number from 1 (almost never) to 4 (always). Alpha coefficients have been reported ranging between 0.86 and 0.95 for state anxiety and between 0.89 and 0.91 for trait anxiety (Spielberger, Gorsuch, Lushene, Vagg & Jacobs, 1983). In the current study, Cronbach's alpha of 0.94 was obtained for state anxiety and 0.93 for trait anxiety.

Social support was assessed using the 12-item version of the Interpersonal Support Evaluation List (ISEL, Cohen & Hoberman, 1983; Cohen, Mermelstein, Kamarck, & Hoberman, 1985). The scale comprises six positive statements about the availability of potential social resources and six negative items. Respondents are asked to indicate whether each statement 'is true about you' on a scale from 1 (definitely false) to 4 (definitely true). The ISEL-12 includes three subscales; appraisal support, which assesses the perceived availability of confidants to talk to about one's difficulties; belonging support, which assesses the availability of people to do things with; and tangible support, which assesses the availability of practical or instrumental help. Cohen et al (1985) report internal consistency ranges for the original (40-item) ISEL between 0.70 and 0.82 for appraisal, 0.73 and 0.78 for belonging and between 0.73 and 0.81 for tangible support. In the current sample values of 0.78 (appraisal), 0.74 (belonging) and 0.63 (tangible) were obtained.

Ability to Achieve Cognitive Structure was assessed using the AACS (Bar-Tal & Spitzer, 1999). This scale comprises 24-items with a 6-point scale ranging from completely disagree (1) to completely agree (6). Scores tap ability to make sense of ambiguous situations. Nine items are positively phrased (eg. 'usually I don't have afterthoughts after making a decision') and nine negatively phrased (eg. 'even when I am bothered by a decision I should make, it is hard for me to make up my mind and free myself from the hassle'). Bar-Tal (1994c; Bar-Tal et al., 1997) reported Cronbach's alpha of 0.84 for the AACS scale. Cronbach's alpha of 0.84 was also obtained in the current study.

Design and Procedure

Participants were recruited via the Research Participation Scheme web-site and were informed that the purpose of the experiment was to examine the interrelationships between a number of different person variables measured using self-report questionnaires. Participants completed the questionnaires (described above) independently whilst seated in a quiet room, and were debriefed at the end of the session. All participants were invited to return one to two weeks later in order to complete 'an additional questionnaire'. Of the total sample, sixty attended the second session where they were asked to complete the CSSQ again. Participants were informed that the purpose of repeating the questionnaire was to examine whether scores remain stable over a period of one to two weeks. They were not informed whether scores would be expected to change or to remain the same over this period of time. In order to allow examination of the seven situations independently, free from order-effects, counterbalancing was used such that 50% of the participants received the scenarios in reverse-order.

Data Analysis and Hypotheses

The following analyses were conducted:

Ecological Validity and Respondents' Perceptions of the Questionnaire – Participants' ratings of the situations in terms of previous experience with the type of scenario described, imaginability and stressfulness were examined. As in Study II, all scenarios were required to be above the mid-point of the stressfulness and imaginability scales and to have been experienced by at least 50% of respondents. In addition, a mean score was calculated for participants' ratings of the length of the questionnaire.

Item analyses, reliability and association with state-anxiety- The internal consistency of the 15-item, seven-scenario measure was assessed using Cronbach's alpha. In addition, correlations were obtained between the test and re-test scores for each factor, and between coping dimensions and state anxiety. As the CSSQ is intended to

measure dispositional coping, scores should not correlate significantly with state anxiety, when trait anxiety is statistically controlled.

Associations between coping and person variables – These analyses were conducted in two stages.

Stage 1: In order to test hypothesised associations with coping, bivariate correlations were conducted between scores on the three CSSQ dimensions at time 1 and 2 and the person variables described above.

Stage 2: Bivariate correlations between person variables and coping scores are likely to present an over-simplified picture of such relationships. Correlations do not take into account interrelationships between the variables. For example, appraisals are likely to be influenced by personality and social support, personality is likely to be influenced by gender and so on. In order to address this limitation the current study followed the approach employed by Terry (1994) in which stable factors are entered into hierarchical models prior to more transitory factors. Hierarchical regression analyses were conducted, entering gender in the first step, personality and support variables in the second step and appraisals¹ in the third. Regressions were conducted for each coping dimension separately, entering only those variables that were significantly correlated with the dependent variable in the preceding analysis (see stage 1). As personality variables are typically intercorrelated, possible problems of multicollinearity were anticipated. Tabachnik and Fidell (1996) suggest that to avoid multicollinearity (or singularity), variables that correlate at 0.7 or above should not be entered into the regression model. Highly correlated pairs of variables were therefore identified and the variable with the lowest association with the dependent variable was excluded.

¹Total scores were computed for ratings of stressfulness, controllability and coping effectiveness by summing across the seven scenarios.

Results

Ecological Validity of Stressful Situations

For all seven scenarios, the majority of participants (between 51% and 91%) indicated that they had previously experienced situations of the type described. Mean imaginability ratings ranged from 3.64 (for bereavement) to 4.54 (for assessment) and mean stressfulness ratings ranged from 2.94 (for conflict) to 4.18 (for bereavement). The scenarios were therefore perceived as stressful by the current sample, and were sufficiently close to their real-life experience to be adequately imagined.

Participants' Ratings of the Questionnaire

Participants' ratings of the CSSQ ranged from 0 to 5, indicating that whilst the scale was perceived as completely acceptable to some respondents, to others it was considered completely unacceptable. The mean score of 3.12 (out of maximum possible score of 5) indicated that on the whole the scale in its current form is perceived to be around 60% acceptable. Eighteen participants gave additional comments on the questionnaire. The majority (N=14) of these indicated that the questionnaire was too long, or too repetitive. One participant also indicated that, as a student, he found it difficult to imagine the work-place scenarios. Three participants gave positive feedback about the questionnaire. For example, one participant wrote that 'it does need a lot more concentration than other studies I have done, but I do not find this unreasonable' (participant 79), one wrote that 'it was easy to follow and not at all time consuming' (participant 98), and a third commented 'very good situations chosen' (participant 66). Two of the participants who indicated that the questionnaire was too long also gave additional positive feedback. For example participant 17 wrote that although the questionnaire was 'really long,.....it was pretty interesting'. Participant 20 wrote that 'it was quite long but not difficult to answer'.

Item Analyses, Reliability and State Anxiety

Mean scores (averaging across the seven scenarios) were calculated for each coping response at time 1 and time 2. Item analyses were conducted on the 15 responses hypothesised to assess coping at the two time points. Coefficient alpha for the coping scale was .80 at time 1 and .82 at time 2. Factor scores for each scenario were saved into SPSS (v 9.0). Item analyses were then conducted separately for each factor treating the scenarios as scale items. Cronbach's alpha was calculated separately for each factor in order to assess consistency of factor scores across the seven scenarios. Coefficient alpha for all factors was above .70 indicating that scores were highly consistent across the seven situations. Item-total correlations were greater than .30 for all items apart from 'relax' time 1 ($r=.21$) and both 'relax' ($r=.22$) and 'positive thinking' ($r=.19$) at time 2. Removing these two items resulted in an increase in alpha at both time points. The following analyses are therefore based on the shortened avoidance scale with the items 'relax' and 'positive thinking' omitted. Summary statistics are reported in Table 1 below.

Table 1: Cross-situational Consistency of Factor Scores

	TIME 1			TIME 2		
	Active coping	Avoidance	Emotional Response	Active coping	Avoidance	Emotional Response
Alpha	.89*	.80	.81	.89	.81	.82
M	18.28	4.73	9.46	20.33	5.06	9.42
SD	4.07	2.22	2.95	3.85	2.17	2.84

Sixty participants completed the questionnaires 1-2 weeks later. Correlations between test and retest scores on each of the coping dimensions were obtained. Correlations ranged from .83 (for avoidance time 1) to .89 (for active coping time 2). All correlations were significant at the $p < .001$ level, indicating a high level of test-retest reliability. Partial correlations were conducted between the coping factor scores and state anxiety, controlling for trait anxiety. No significant associations with state anxiety were revealed, confirming that coping dimension scores are unrelated to mood at the time of testing.

Bivariate correlations were conducted between scores on the three coping dimensions at time 1 and 2 and the person variables described above. Results are shown in tables 2 and 3 and are described below.

Time 1 Coping

As hypothesised, active coping scores are associated with gender, extraversion, self-efficacy, appraisal support and ratings of coping effectiveness, indicating that women, extraverts, individuals who believe their coping efforts will be successful and those who feel able to confide in others are most likely to confront situations in the early stages. Active coping dimension scores however, were not associated with internality or optimism, or with ratings of controllability, although individual items on this scale are associated with all three variables in the direction predicted.

The associations for the emotional response dimension also conform in general to the pattern predicted, as scores are positively correlated with gender, neuroticism, trait anxiety and ratings of stressfulness, and negatively associated with self-efficacy, ability to form a meaningful structure of the event, ratings of controllability and coping effectiveness. Scores were not however significantly associated with social support, and significant correlations were revealed for optimism and internality. This pattern of results suggests that people are most likely to become emotionally aroused if they are female, neurotic, pessimistic, have an external locus of control, lack belief in their own coping efforts, see the situation as highly stressful or uncontrollable or have difficulty forming a meaningful structure of the event.

Consistent with predictions, avoidance scores are positively associated with trait anxiety, and negatively associated with self-efficacy, ability to achieve cognitive structure, social support and ratings of coping effectiveness, although hypothesised associations with controllability are not supported. Scores are also negatively associated with optimism and internality.

Table 2: Correlations Between Time 1 Coping and Person Variables

	Gender	N	E	O	I	SE	TA	AACS	Appraisal Support	Belonging Support	Tangible Support	Stressfulness	Controllability	Coping Effectiveness
Active Coping	.360**	-	.231*	-	-	.265**	-	-	.290*				-	.256*
Provide Information	.341**	-	-	-	-	.291**	-	-	.236*				-	-
Provide Practical Help	.276**	-	-	-	-	-	-	-	.235*				-	-
Provide Emotional Support	.338**	-	-	-	-	-	-	-	.277**				-	-
Confrontive Coping	.252*	-.288*	.258*	.312**	.353**	.409**	-.333**	.356**	-				.278**	.371**
Seek Practical Help	.350**	-	.255*	.209*	-	-	-	-	.267**				.204*	-
Seek Information	-	-	.210*	-	.211*	.277**	-.207*	.229*	.208*				-	.344**
Emotional Response	.333**	.440**	-	-.296**	-.327**	-.225*	.432**	-.413**	-			.438**	-.352**	-.520**
Become Upset	.370**	.407**	-	-.231*	-.234*	-	.327**	-.322**	-			.362**	-.287**	-.473**
Panic	.315**	.366**	-	-.238*	-.310**	-.233*	.387**	-.377**	-			.402**	-.284**	-.488**
Become Angry	-	.279**	-	-.234*	-.271**	-.223*	.334**	-.308**	-			.248*	-.264**	-.373**
Worry	.307**	.375**	-	-.261*	-.227*	-	.351**	-.325**	-			.398**	-.309**	-.309**
Avoidance	-	-	-	-.222*	-.385**	-.309**	.258*	-.343**	-	-	-.209*	-	-	-.199*
Distraction	-	-	-	-.201*	-.353**	-.236*	.226*	-.330**	-	-	-	-	-	-
Ignore Situation/Denial	-	-	-.252*	-	-.339**	-.296**	.218*	-.261*	-.269**	-.203*	-.238*	-	-	-
Remove self from situation	-	-	-	-	-.284**	-.267**	.208*	-.267**	-	-	-.218*	-	-	-.244*

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

N= neuroticism, E=extraversion, O=optimism, I=internality, AACS=ability to achieve cognitive structure

Table 3: Correlations between Time 2 Coping and Person Variables

	Gender	N	E	O	I	SE	TA	AACS	Appraisal Support	Belonging Support	Tangible Support	Stressfulness	Controllability	Coping Effectiveness
Active Coping	.362**	-	.282**	-	-	-	-	-	.333**	.269**	-	-	-	-
Provide Information	.256*	-	.221*	-	-	.253*	-	-	.231*	-	-	-	-	-
Provide Practical Help	.280**	-	-	-	-	-	-	-	.234*	-	-	-	-	-
Provide Emotional Support	.349**	-	-	-	-	-	-	-	.275**	.215*	-	-	-	-
Confrontive Coping	.235*	-.209*	.392**	.313**	.264**	.298**	-	-	.323**	.326**	-	-	-	-
Seek Practical Help	.402**	-	.291**	.258*	-	-	-	-	.350**	.299**	-	-	-	-
Seek Information	.238*	-	.277**	.236*	-	-	-	-	.233*	.325**	.286**	-	-	-
Emotional Response	.282**	.452**	-	-.325**	-.386**	-.236*	.488**	-.540**	-	-	-	.478**	-.355**	-.538**
Become Upset	.315**	.454**	-	-.299**	-.331**		.423**	-.494**	-	-	-	.396**	-.302**	-.504**
Panic	.232*	.399**	-	-.295**	-.397**	-.301**	.426**	-.479**	-	-	-	.435**	-.319**	-.526**
Become Angry	-	.280**	-	-.229*	-.286**		.368**	-.326**	-	-	-	.257**	-.201*	-.342**
Worry	.308**	.315**	-	-.213*	-.217*		.347**	-.437**	-	-	-	.457**	-.325**	-.349**
Avoidance	-	.211*	-	-.226*	-.385**	-.293**	.314**	-.342**	-	-	-.204*	-	-	-.217*
Distraction	-	.225*	-	-.240*	-.404**	-.252*	.328**	-.330**	-	-	-	-	-.262**	-.239*
Ignore Situation/Denial	-	-	-	-	-.269**	-.266**	.225*		-.247*	-	-.244*	-	-	-
Remove self from situation	-	-	-	-	-.308**	-.232*	.242*	-.335**	-	-	-.231*	-	-	-.216*

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

N= neuroticism, E=extraversion, O=optimism, I=internality, AACS=ability to achieve cognitive structure

Time 2 Coping

At time 2 the associations between coping and person variables are very similar to time 1. However, active coping scores are no longer associated with coping effectiveness and are significantly associated with belonging support. Avoidance at time 2 is additionally associated with neuroticism, consistent with the predictions for this dimension. This pattern of results suggests that belief in one's coping efforts may be a more important predictor of active coping in the early than in the later stages. Having people to do things with (belonging support) may be an important factor in the maintenance of active coping efforts in the long term, and continuing to engage in avoidance coping after a significant period of time may indicate a neurotic disposition.

Predicting Coping Scores from Person Variables

The following analyses aimed to examine the combined influence of stable and more transient influences on coping, using hierarchical regression analyses in which gender is entered in the first step, personality and social support in the second step, and appraisals of the CSSQ scenarios in the third step. Separate analyses were conducted for each of the three coping dimensions at time 1 and time 2. The bivariate associations described above suggest that the following variables should be entered into regression models:

Time 1:

- *Active coping*: Gender (step 1), extraversion, self-efficacy and appraisal support (step 2), coping effectiveness (step 3).
- *Emotional response*: Gender (step 1), neuroticism, optimism, internality, self-efficacy, trait-anxiety and AACS (step 2), stressfulness, controllability, coping effectiveness (step 3).
- *Avoidance*: Optimism, internality, self-efficacy, trait-anxiety, AACS and tangible support (step 1), coping effectiveness (step 2)

Time 2:

- *Active coping*: Gender (step 1), extraversion, appraisal support and belonging support (step 2)
- *Emotional response*: Gender (step 1), neuroticism, optimism, internality, self-efficacy, trait-anxiety, AACS (step 2), stressfulness, controllability, coping effectiveness (step 3)
- *Avoidance*: Neuroticism, optimism, internality, self-efficacy, trait-anxiety, AACS and tangible support (step 1), coping effectiveness (step 2)

Before conducting the regression analyses however, it was necessary to examine correlations between the predictor variables in order to identify potential problems of multicollinearity or singularity. Correlations greater than 0.7 were observed between trait anxiety and the following variables: neuroticism (.832) internality (-.753) optimism (-.849) and AACS (-.723). Optimism was also highly correlated with neuroticism (-.896) and internality (.806) and self-efficacy with internality (.702).

On the basis of these correlations optimism, trait-anxiety and self-efficacy were excluded from the second step of the regression analyses predicting emotional response scores and from the first step of the regression analysis predicting avoidance. Results are shown below:

Predicting Active coping Scores

Time 1: Gender accounted for a significant proportion of the variance in active coping scores at time 1 ($R^2 = .124$, $F_{(1,93)} = 13.162$, $p < .001$). Addition of extraversion, self-efficacy and appraisal support in the second step did not result in a significant increase in R^2 ($F\text{-change}_{(3,90)} = 2.287$, n.s). Addition of coping effectiveness in the third step however did result in a significant increase in R^2 ($R^2 = .243$, $F\text{-change}_{(1,89)} = 6.664$, $p = .011$). These results indicate that females and individuals who believe their coping efforts will be effective are most likely to confront stressful situations in the early stages. Personality variables are not significantly associated with active coping once gender is statistically controlled, and beliefs in the effectiveness of one's coping efforts are more important than generalised self-efficacy (see Table 4).



*Table 4: Hierarchical Regression Analysis Predicting Active coping Scores
(Time 1) from Person Variables and Appraisals*

Step	Unstandardized Coefficients		Standardized Coefficients		t	Sig
	B	Std. Error	Beta			
(Constant)	.593	3.596			.165	.869
1. Gender	3.130	.974	.330		3.215	.002
2. Extraversion	.058	.059	.099		.983	.328
Self-efficacy	.019	.087	.024		.217	.829
Appraisal Support	.190	.179	.109		1.060	.292
3. Coping effectiveness	2.007	.778	.276		2.582	.011

Time 2: Gender significantly predicted active coping scores at time 2 ($R^2 = .132$, $F_{(1,94)} = 14.250$, $p < .001$) and addition of extraversion, appraisal support and belonging support in the second step resulted in a significant increase in R^2 ($R^2 = .203$, $F\text{-change}_{(3,91)} = 2.704$, $p = .05$), indicating that females who are extraverted and have high levels of support are most likely to confront stressful situations in the later stages. Associations between individual predictors and the DV in the second step are all non-significant (see Table 5).

*Table 5: Hierarchical Regression Analysis Predicting Active coping Scores
(Time 2) from Person Variables*

Step	Unstandardized Coefficients		Standardized Coefficients		t	Sig
	B	Std. Error	Beta			
(Constant)	7.791	2.949			2.618	.010
1. Gender	2.492	.913	.276		2.729	.008
2. Extraversion	.051	.061	.092		.834	.406
Appraisal Support	.275	.177	.166		1.556	.123
Belonging Support	.207	.218	.106		.947	.346

Predicting Emotional Response Scores

Time 1: Gender accounted for a significant proportion of the variance in emotional response scores at time 1 ($R^2 = .129$, $F_{(1,91)} = 13.531$, $p < .001$), indicating that females are more likely than males to become emotionally aroused in the early stages of stressful events. Addition of neuroticism, internality and AACS in the second step resulted in a significant increase in R^2 ($R^2 = .352$, $F\text{-change}_{(3,88)} = 10.051$, $p < .001$),

suggesting that the combination of a neurotic disposition, an external locus of control and inability to make sense of stressful events further increases the probability of becoming emotionally aroused. Addition of appraisals in the third step also resulted in a significant increase in R^2 ($R^2 = .441$, $F\text{-change}_{(3,85)} = 4.551$, $p=.005$). All correlations were in the expected direction, suggesting that a tendency to appraise stressful events in a negative manner is associated with greater emotional arousal. Gender and appraisals of coping effectiveness are the most important individual predictors of emotional response scores (see Table 6).

Table 6: Hierarchical Regression Analysis Predicting Emotional Response Scores (Time 1) from Person Variables and Appraisals

Step	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	10.130	3.644		2.780	.007
1. Gender	1.806	.643	.256	2.808	.006
2. Neuroticism	.072	.048	.184	1.521	.132
Internality	-.002	.071	-.003	-.026	.890
AACS	-.028	.023	-.148	-1.248	.215
3. Stressfulness	.400	.431	.095	.929	.355
Controllability	-.100	.420	-.024	-.237	.813
Coping effectiveness	-1.608	.570	-.297	-2.821	.006

Time 2: Gender accounted for a significant proportion of the variance in emotional response scores at time 2 ($R^2 = .114$, $F_{(1,91)} = 11.714$, $p = .001$). Addition of neuroticism, internality and AACS in the second step again resulted in a significant increase in R^2 ($R^2 = .428$, $F\text{-change}_{(3,88)} = 16.127$, $p < .001$). As before, addition of appraisals in the third step resulted in a significant increase in R^2 ($R^2 = .514$, $F\text{-change}_{(3,85)} = 5.024$, $p = .003$). Beta coefficients indicate that at time 2, ability to achieve cognitive structure and coping effectiveness are more important predictors of emotional arousal than gender. Stressfulness is also marginally significant (see Table 7).

Table 7: Hierarchical Regression Analysis Predicting Emotional Response Scores
(Time 2) from Person Variables and Appraisals

Step	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	11.785	3.242		3.635	.000
1. Gender	1.615	.572	.240	2.823	.006
2. Neuroticism	.022	.042	.059	.525	.601
Internality	-.014	.063	-.026	-.216	.829
AACS	-.059	.020	-.322	-2.912	.005
3. Stressfulness	.696	.383	.173	1.817	.073
Controllability	.166	.374	.042	.444	.658
Coping effectiveness	-1.461	.507	-.282	-2.880	.005

Predicting Avoidance Scores

Time 1: Scores on the avoidance dimension were significantly predicted by internality, AACS and tangible support entered in the first step ($R^2 = .154$, $F_{(3,89)} = 5.392$, $p = .002$). All coefficients were in the expected direction and AACS was the most highly associated with avoidance coping scores (see Table 8). Addition of coping effectiveness ratings in the second step did not significantly increase R^2 ($R^2 = .156$, $F\text{-change}_{(1,88)} = .204$, ns). This pattern of results suggests that individuals who have difficulty forming a meaningful structure of stressful events, have low levels of support and an external locus of control will be the most likely to engage in avoidance coping in the early stages.

Table 8: Hierarchical Regression Analysis Predicting Avoidance Scores
(Time 1) from Person Variables

Step	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	10.002	2.125		4.707	.000
2. AACS	-.033	.018	-.246	-1.840	.069
Internality	-.063	.052	-.159	-1.216	.227
Tangible support	-.158	.112	-.139	-1.412	.161
3. Coping effectiveness	.184	.408	.048	.452	.652

Time 2: at time 2, neuroticism was added into the first stage of the regression model. However, collinearity diagnostics indicated that neuroticism is a linear combination of internality, AACS, tangible support and internality ($R^2 = .515, p < .001$), so this variable was removed. AACS, internality and tangible support significantly predicted scores on this coping dimension at time 2 ($R^2 = .152, F_{(3,89)} = 5.314, p = .002$). All coefficients were in the expected direction. As at time 1, addition of coping effectiveness ratings in the second step did not significantly increase R^2 ($R^2 = .153, F\text{-change}_{(1,88)} = .095, ns$). Again, AACS is the most important individual predictor of avoidance coping. Results are shown in Table 9 below.

*Table 9: Hierarchical Regression Analysis Predicting Avoidance Scores
(Time 2) from Person Variables*

Step	Unstandardized Coefficients		Standardized Coefficients		Sig
	B	Std. Error	Beta	t	
(Constant)	10.265	2.066		4.969	.000
2. AACS					
Internality	-.032	.017	-.243	-1.820	.072
Tangible support	-.058	.050	-.151	-1.151	.253
AACS	-.155	.109	-.141	-1.425	.158
3. Coping effectiveness	.122	.396	.033	.309	.758

Study III Conclusions and Implications for Study IV

The results of the current study provide further support for the validity and reliability of the CSSQ as a measure of dispositional coping style. Bivariate correlations between scores on the three coping dimensions and person variables were in the directions predicted and the regression models tested were all highly significant. In addition, whilst several significant associations between coping scores and trait-measures were revealed, scores did not correlate significantly with state-anxiety. Scores on the CSSQ therefore appear to reflect relatively enduring styles of coping that are not influenced by fluctuations in mood.

The stability of CSSQ scores was also supported by test-retest analyses. All correlations between time-1 and time-2 coping were significant at the .001 level. The high degree of test-retest reliability of the current measure is particularly impressive given the structure of the scale. Participants were required to number 15 response options at two time points, for seven situations. Therefore, it seems very unlikely that participants are simply recalling their responses from the previous session, as this would require recall of 210 separate scores over a period of 1-2 weeks. Participants were not informed in advance that the second session would involve repeating the CSSQ, and were not aware of the factor-structure of the questionnaire, so participant attempts to appear consistent would be unlikely to explain the high test-retest reliability.

All seven scenarios included in the current version were perceived as stressful and highly imaginable. However, participants' ratings of the current form of the questionnaire indicated that the scale is too long to complete in an acceptable period of time. This limitation may be particularly important if the scale is used with vulnerable groups such as hospital patients or individuals with anxiety disorders. Participants rated the scale as 60% acceptable in its current form. Reducing the length by 40% would result in a four-item measure. Scores are highly consistent across the seven scenarios, suggesting that similar results would be arrived at using different shortened versions of the measure. It may be useful for researchers to test different versions in relation to the population of interest. For example, researchers

working with individuals who do not have experience of working environments may chose to omit the work-related scenarios, researchers working with couples may chose to examine how they cope with interpersonal conflict and the stress of major life events such as bereavement, those working with vulnerable groups such as patients may prefer to omit the most stressful scenarios. Alternatively, Krohne and Egloff (in press) have suggested that scenarios for coping scales should be selected in order to allow variability in terms of controllability.

Although all subscales demonstrated adequate internal consistency, inter-item correlations indicated that the items 'relax' and 'think positive' were not highly related to avoidance coping. These two items were therefore omitted from the scale. The revised avoidance scale demonstrates a high degree of internal consistency and a very similar pattern of associations with person variables at time 1 and time 2. This is likely to be due to consistency in the use of these strategies across the two time points (see Study II). Regression analyses suggested that scores on this dimension are associated with an external locus of control, inability to make sense of the situation and low levels of support. It would appear therefore that individuals engage in avoidance coping because they believe that the event is due to factors outside their control, and are not able to draw on practical or instrumental help in order to alter the situation. It was also revealed that ability to achieve cognitive structure is highly correlated with trait anxiety, although the former correlated more closely with avoidance coping than the latter. It is possible that trait anxiety results in difficulty forming meaningful representations of stressful events, and it is this lack of a meaningful structure that prevents the individual from taking an active role in confronting the situation. This explanation is certainly consistent with evidence of associations between anxiety and interpretation processes (see Chapter II), however further research will be needed to test such directional hypotheses. Further research will also be needed in order to determine the long-term consequences of inability to make sense of stressful events. Related research focusing on 'sense of coherence' (SOC) has revealed negative associations between SOC and stress, anxiety and anger during a stressful experience (McSherry & Holm, 1994), and degree of PTSD symptoms following a stressful experience (Frommberger et al., 1999). It would be useful to determine whether such associations are mediated or moderated by coping.

Scores for the remaining two dimensions appeared to demonstrate different relationships with predictor variables at time 1 compared to time 2. For example, whilst gender and ratings of coping effectiveness significantly predicted time 1 active coping scores, at time 2 scores were predicted by gender, and by the combined influence of extraversion and social support. This suggests that attempts to actively confront stressful situations in the early stages are motivated by a belief in the effectiveness of one's coping efforts, whilst active coping at a later stage is determined by ability to engage with others. For the emotional response dimension regression analyses indicated that gender and perceived coping effectiveness were the most important predictors of time 1 scores, whilst ability to achieve cognitive structure and ratings of stressfulness played a greater role at time 2. It may be that in the early stages of stressful encounters tendencies to become emotionally aroused are largely determined by biological factors such as activation of the body's stress-response systems, whilst at a later stage the individual has had the opportunity to assess the situational parameters and consequently individual differences in appraisal processes and ability to make sense of stressful situations also influence arousal. However, as biological processes were not examined in the current study this hypothesis must remain as speculation. Relationships between scores on the CSSQ and biological processes will however be explored in the following study.

Further research will be necessary in order to determine whether coping styles remain consistent over longer periods of time, such as months or even years. The CSSQ would be a useful measure for assessment of coping consistency over time, as it is possible to ensure that participants are responding to the same scenarios at the same time points, both at test and re-test. As the scale also incorporates measures of experience and appraisals, it would be possible to determine whether any changes in scores are due to increased experience with the types of situations described, or to changes in the way the situations are appraised. Differences in appraisal processes over time may occur due to changes in resources or to changes in life-goals. For example, an individual may feel that the 'time pressure/ delay' scenario would not cause him significant anxiety if he has an understanding boss, or if he does not value his job. If, in a year's time this individual has changed to a job he values, or has had an argument with his boss, he may rate this scenario as highly stressful. The CSSQ allows measurement of coping responses and appraisals simultaneously, so it is

possible to explore reasons why responses may change from one testing period to the next.

Study IV: The Relationship between Coping Style and Cortisol Response to an Acute Experimental Stressor

'One of the most remarkable lines of research in psychosomatics is represented by the study of the differences in reactivity exhibited by each individual in response to exactly the same stressful situation' (Biondi & Picardi, 1999, p.131).

A number of studies have attempted to identify factors that explain individual variation in physiological responses to stressful situations. Although a wide range of variables have been examined, a recent review suggested that personality or coping styles associated with negative emotion, affect regulation, or interpersonal relationships are most likely to correlate with biological changes following stress (Kiecolt-Glaser, McGuire, Robles & Glaser, 2002a). Kiecolt-Glaser, McGuire, Robles and Glaser (2002b) write that 'the link between personal relationships and immune function is one of the most robust findings in PNI' (p 539). High social support has been linked to lower cortisol levels in women with metastatic breast cancer (Turner-Cobb et al., 2000), better immune function among medical students (Glaser et al., 1992), and among spouses of both cancer patients (Baron, Cutrona, Hicklin, Russell & Lubaroff, 1990) and dementia sufferers (Kiecol-Glaser, Dura, Speicher, Trask & Glaser, 1991), whilst discordant personal relationships have been associated with immune dysregulation (Kiecolt-Glaser et al., 1993;1994;1996;1997; Mayne, O'Leary, McCrady, Contrada & Labouvie, 1997).

Social support may influence immune function via coping processes, as individuals with supportive social networks are likely to have greater opportunity for coping by expressing emotions and leaning on others in times of need. Research evidence suggests that expression of emotions during stress may have a beneficial impact on immune status, whilst suppression of emotions may have negative outcomes. For example, Cole, Kemeny, Taylor, Visscher & Fahey (1996) found that gay men who concealed their homosexual identity experienced an accelerated course of HIV over 9 years, assessed by CD4+ T-cell counts, AIDS diagnosis and AIDS mortality, even when demographic, health and psychopathology factors were controlled. Interventions that encourage individuals to express their emotional responses to

negative events have been demonstrated to result in improvements in both immune status and disease activity (Pennebaker, Kiecolt-Glaser & Glaser, 1988; Esterling et al., 1994; Petrie, Booth, Pennebaker, Davison & Thomas, 1995; Smyth, Stone, Hurewitz & Kaell, 1999).

Brown et al (1996) however, point out that studies focusing on anxiety, distress, and other dimensions of negative affect have yielded inconsistent results. They discuss a number of studies linking negative affect with cortisol responses to stressful situations. One set of studies has reported that heightened cortisol responses to stress are associated with inhibition of negative emotions. However, other studies suggest that heightened subjective or behavioural signs of anxiety or distress are associated with elevated cortisol levels. Brown et al (1996) suggest that heightened distress and inhibition of distress may be independently linked to elevations in cortisol and that this pattern of results can be explained by individual differences in repression-sensitization. Brown et al (1996) demonstrated that repressors and high anxious participants evidence higher basal cortisol levels than low anxious participants.

Frankenhaeuser (eg. Frankenhauser, 1982; 1986; Lundberg & Frankenhaeuser, 1980) suggests that individual differences in physiological responses to stress may be explained by levels of distress and effort. According to this model, effort is associated with high personal control and active coping, whilst distress is associated with low personal control and avoidant coping. Lundberg and Frankenhaeuser (1980) demonstrated that adrenalin responses to a number of stressful tasks were highly associated with effort, whilst cortisol responses were moderately associated with both distress and effort. More recently, Suzuki, Kumano and Sakano (2003) demonstrated the impact of different combinations of effort and distress on physiological and psychological responses to stress. In this study participants were required to complete a mental arithmetic task under one of four conditions. In the *effort* coping condition, the participant was informed that good performance would be rewarded with a 1000-yen bonus, in the *distress* condition the participant was warned that poor performance would be punished with an electric shock, in the *effort-distress* condition the participant was given both punishment and reward instructions, and in the control condition the participant was not informed that any punishment or reward would be given. A manipulation check (participants' ratings of

their level of effort and distress) confirmed that the instructions had resulted in the required combinations of effort and distress. Results indicated that distress coping and effort-distress coping intensified skin conductance level, and that effort coping and effort-distress coping intensified cardiovascular responses, particularly blood pressure. Cluster analysis indicated that changes of heart rate and blood pressure were correlated with the change in effort score, whilst changes in SCL and psychological responses correlated to the change in distress scores.

The research evidence therefore suggests that active coping styles associated with exerting effort, or drawing on social support are likely to be associated with physiological responses to stressful situations. Coping styles associated with distress and negative affect in stressful situations are likely to demonstrate associations with both physiological and psychological responses to stress. The following study therefore examines associations between cortisol responses to an acute laboratory stressor and scores on the coping questionnaire developed in this chapter. It is hypothesised that cortisol elevations will be associated with scores on the active coping and emotional response dimensions and increases in anxiety will be associated with scores on the emotional response dimension. The CSSQ assesses the methods people use to cope in both in early (time 1) and later stages (time 2) of stressful encounters. As the current study examines coping with an acute stressor, stronger associations are expected with scores at time 1.

Method

Participants

Fifteen females and six males, ranging in age from 17 to 49 years (mean age 28.48) took part in the study after responding to an advertisement. All participants were students, staff or prospective students of the University of Kent at Canterbury.

Research Protocol

In order to examine associations between coping and cortisol responses to stress, the questionnaire under development was added to an ongoing program of research examining the effectiveness of a shortened version of the Trier Social Stress Test. Participants were required to undertake a 5-minute verbal serial-subtraction exercise standing in front of a panel and were informed that they were being recorded on video camera and audiocassette. Before completing the task, participants were taken into a room by a 'receptionist' who collected information relating to illness, medications taken, physical exertion prior to arrival at the laboratory and smoking behaviour. An information sheet was designed to assess these variables (see materials).

Design and Procedure

Flyers were posted in a number of locations on the University of Kent at Canterbury campus, advertising the opportunity to win £25 for taking part in a 'mental arithmetic task'. A contact telephone number and e-mail address was given for further details. Individuals who contacted the experimenter were informed that the purpose of the study was to evaluate the effect of a mental arithmetic task upon hormone levels, and that in addition to the mental arithmetic task, they would be required to fill-out questionnaires and provide saliva samples by chewing on a cotton-swab for one to three minutes. Reassurance was given that there are no risks associated with the saliva sampling procedure.

Cortisol levels peak after waking in the morning and after meals (Kirschbaum & Hellhammer, 2000). Testing was therefore conducted during the afternoon and participants were requested not to eat or drink anything in the hour prior to the study. Participants were also asked to refrain from smoking, brushing their teeth, or performing strenuous exercise in the hour prior to the study, as these activities have been demonstrated to influence cortisol (see Biondi & Picardi, 1999). Participants were asked to take a note of the time they awoke on the morning of the study and the approximate time they fell asleep the night before.

After arriving at the laboratory, the experimenter left the room, and the participant was given 10 minutes to rest. After this period the experimenter returned to collect the first saliva sample. The participant was shown how to use the salivette and asked to wash their hands before handling the cotton swab. The salivette was placed immediately into the freezer. The experimenter again left the room, and the participant completed the sample information sheet, questionnaire about the day of participation, STAI-trait anxiety, and CSSQ (approximately 25 minutes). A second saliva sample was then taken, and the participant was taken directly into the test room. The participant was instructed to stand on a mark in the centre of the room facing a panel of three experimenters and a video camera. The mental arithmetic task was then described as follows:

'Please serially subtract 13 from 1022. We will follow your progress and if you make a mistake we will ask you to start again from the beginning, saying "Stop. 1022". You will have 5 minutes to perform this task. Most people can perform this task reasonably quickly and easily. Do you understand the task? Then please begin.'

All experimenters maintained a stern, austere manner throughout the task. After the task had been administered for 5 minutes, the participant was instructed to stop and was taken immediately into the relaxation room. A saliva sample was taken, and the participant completed the STAI-state anxiety. Further samples were collected after 20, 40 and 60 minutes of relaxation. A summary of the study time plan is given below.

Time	Activity	Location
0-10 minutes	Rest	Wet-lab
10-15 minutes	Cortisol sample 1	Wet-lab
15-40 minutes	Questionnaire completion	Wet-lab
40-45 minutes	Cortisol sample 2	Wet-lab
45-50 minutes	Mental Stress Task	Test room
50-55 minutes	STAI-state anxiety and cortisol sample 3	Relaxation room
55-75 minutes	Rest period and cortisol sample 4	Relaxation room
75-95 minutes	Rest period and cortisol sample 5	Relaxation room
95-115 minutes	Rest period and cortisol sample 6	Relaxation room
115 minutes	Debriefing	Relaxation room

Materials

Three rooms were set-up for the purposes of the experiment; the wet lab (containing a table and chair, a hand-basin, and a freezer (-80°C)), the test-room (containing a table, four chairs and a video-camera) and the relaxation room (containing comfortable chairs and magazines). Saliva samples were collected using salivettes.

Participants completed the 7-item Coping with Stressful Situations Questionnaire (CSSQ) and the State-Trait Anxiety Inventory (STAI, Spielberger et al., 1980). In addition a sample information sheet, and questionnaire about the day of participation were administered in order to collect demographic data (age, and gender) and information relating to a number of variables known to influence cortisol (Kirschbaum & Hellhammer, 2000). These were as follows:

Smoking: participants were requested to indicate whether they smoked and if so, the number of cigarettes smoked in an average day. In addition, participants were asked if they had stopped smoking during the past year.

Caffeine: participants were asked to indicate whether they drink any caffeinated beverages such as tea, coffee, or caffeinated soft drinks, and if so the number of drinks they consume each day. Participants also rated the number of caffeinated

drinks consumed on the day of the study on a Likert scale ranging from 0 (many less than usual) to 10 (many more than usual).

Medication: participants were asked to indicate whether they were currently taking any medications, or had taken medications in the past month. If so, the participant was requested to indicate the name of the medication and when the medication was taken. In addition, participants were asked to list any hormone medication, or steroid treatment, or any type of hydrocortisone taken at any time in the past.

Physical Activity: participants rated their level of physical activity on the day of the study on a Likert scale ranging from 0 (much less active than usual) to 10 (much more active than usual). Participants were also asked to indicate whether they had exercised today, and if so to describe the type of exercise, and time of day.

Perceived Well-being: participants rated their level of health in terms of how they felt on the day of the study on a Likert scale ranging from 0 (much worse than usual) to 10 (much better than usual).

Perceived Stress: participants rated their level of stress on the day of the study from 0 (much less stressful than usual) to 10 (much more stressful than usual). Participants were also asked to indicate any times during the day that were particularly stressful, or particularly relaxing.

Quality of Sleep: participants indicated how well they slept on the night prior to the study on a Likert scale ranging from 0 (much worse than usual) to 10 (much better than usual). Participants also indicated the time they went to sleep, and the time they woke in the morning on the day of the study, and the time they usually go to bed/ get up in the morning.

Diet: participants were asked to indicate how healthy their diet was on the day of the study on a Likert scale ranging from 0 (much less healthy than usual) to 10 (much more healthy than usual). Participants also indicated what they had eaten on the day of the study and the times at which they had eaten.

Data Analyses

Change scores for cortisol and anxiety

Following Suzuki et al (2003), cortisol responses to the mental stress task were transformed into Z-scores as the index of change from baseline ($Z\text{-score} = \frac{X_{\text{sample4}} - \text{Mean}_{\text{baseline}}}{\text{SD}_{\text{baseline}}}$). State anxiety scores following the stress task were also transformed into change scores relative to trait anxiety scores assessed at baseline.

Potential confounding variables

Bivariate correlation analyses were conducted between change scores and variables known to influence cortisol (see above).

Association between coping and response to the stress task

In order to examine associations between coping and responses to the stress task, an analysis of covariance (ANCOVA) was performed with the change score as the DV and scores on the three time 1 coping dimensions as IVs. This analysis was then repeated for time 2 coping dimensions. Potential confounding variables (see above) were entered as covariates.

Results

Data-screening

Cortisol was undetectable in the saliva of one participant. This is likely to be due to the effects of medication, as the participant indicated that he was taking Clonazepam, a benzodiazepine used for the treatment of seizures, panic disorder and anxiety. Analyses of cortisol data were therefore conducted on the remaining 20 participants. As is typical for physiological markers of stress (eg. see Turner-Cobb, Sephton, Koopman, Blake-Mortimer & Spiegel, 2000), the distribution of cortisol levels was skewed. Raw cortisol levels were therefore log-transformed for all analyses.

Effectiveness of the Stress Task

Figure 1 shows mean salivary cortisol levels at each of the six time points. It is typical for cortisol responses to lag by 5-20 minutes with maximum cortisol levels 10-30 minutes after cessation of a stressor (Kirschbaum & Hellhammer, 2000). Maximum cortisol levels in the current study were observed at sample 4, twenty minutes after the cessation of the stressor. A paired samples t-test comparing mean log-transformed cortisol at sample 3 and sample 4 indicated that the test was successful in producing a significant increase in cortisol ($t_{(18)}=-3.40, p<.003$). There was also a significant decrease in cortisol from sample 1 to sample 3 ($t_{(18)}=2.641, p=.017$). During this period participants were either resting or filling in questionnaires. This decrease may therefore reflect a reduction in physical activity during this period, relative to the physical activity necessary to arrive at the laboratory on time. Cortisol levels at the end of the test were not significantly different from levels at the beginning of the test ($t_{(18)}=.252, n.s$). The time-period was therefore appropriate for the purpose of examining both the increase in cortisol following the stressor, and the subsequent return to normal pre-test levels. All significant differences remained significant after Bonferroni adjustment. Figure 2 shows cortisol levels for each participant. It is evident that there is some considerable variability in responses across the six time points.

A paired samples t-test was also conducted comparing state anxiety levels following the mental arithmetic task with trait anxiety levels assessed prior to the test. This revealed that the test was successful in producing a significant increase in self-reported anxiety ($t_{(18)}=2.396, p=.028$). The mean for state anxiety was 49 compared with a mean of 43 for trait anxiety.

Figure 1: Mean Salivary Cortisol Levels at Time 1 to Time 6

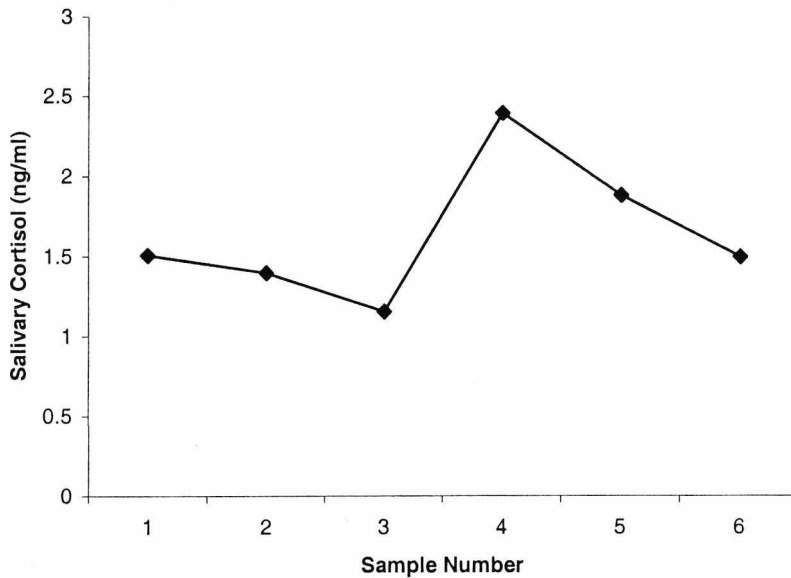
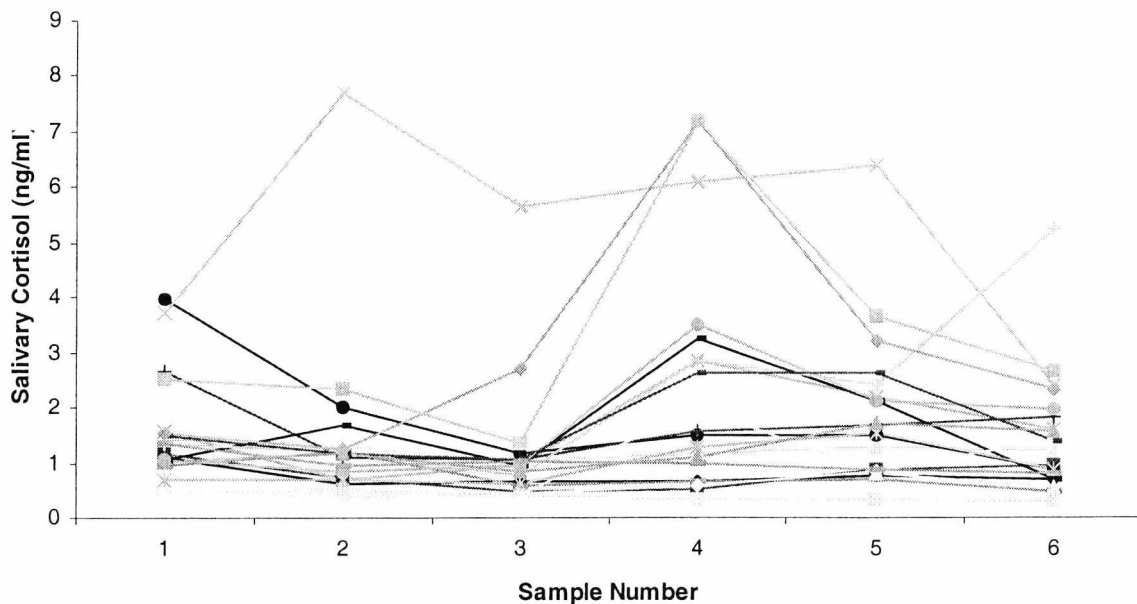


Fig 2: Cortisol Levels for each Participant



Potential Confounds

Bivariate correlation analyses indicated a significant association between the increase in cortisol following the stress task and both gender ($r = -.545, p = .013$) and smoking ($r = -.602, p = .005$), a positive association with gender indicates that males evidenced greater increases in cortisol following the stress task than females. The change in anxiety scores was also negatively associated with smoking ($r = -.580, p = .007$).

Association with Coping

A one way analysis of covariance (ANCOVA) was conducted to compare high vs low scorers on each of the time 1 coping dimensions with respect to the change in cortisol from sample 3 to sample 4, controlling for gender and smoking. Results indicated a marginal main effect for active coping ($F(1,10) = 3.664, p = .085$) and emotional response ($F(1,10) = 3.988, p = .074$), indicating that high active copers evidenced a greater increase in cortisol than low active copers, and that low emotional responders evidenced a greater cortisol increase than high emotional responders. No significant effect of avoidance was revealed. A one way analysis of covariance was then conducted for the change in anxiety following the stress task, entering gender as a covariate. A significant difference between high and low emotional responders was revealed ($F(1,12) = 5.525, p = .037$), indicating that high emotional responders evidenced a greater increase in anxiety following the task than low emotional responders. No other significant effects were revealed. Estimated marginal means and standard errors are shown in the table below. ANCOVAs were repeated with time 2 coping dimensions as the independent variables. No significant main effects were revealed. Change scores for high and low scorers on each of the three coping dimensions are shown in table 1 below.

Table 1: Standardized change scores for cortisol and anxiety

	ACTIVE COPING		EMOTIONAL RESPONSE		AVOIDANCE	
	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>	<u>High</u>	<u>Low</u>
Cortisol	1.292	.424	.440	1.275	.939	.777
change	(.286)	(.330)	(.286)	(.306)	(.283)	(.319)
Anxiety	.540	.827	1.357	.010	.803	.564
change	(.380)	(.467)	(.382)	(.431)	(.372)	(.450)

Conclusions and Implications for Future Research

The results of the present study indicate that the mental arithmetic task was successful in producing significant elevations in salivary cortisol levels. Cortisol levels reached a peak 20 minutes following the task and returned to baseline by the end of the test period.

Although the plot of mean cortisol levels at each time point follows a predictable pattern, considerable inter-individual variability was also observed. Consistent with the findings of previous research (eg. Kirschbaum et al., 1993; Steptoe et al., 2000), significant associations were revealed between cortisol levels and smoking and cortisol levels and gender. Individual differences in health behaviour and differential reactivity of male and female stress-response systems therefore appear to explain some of the inter-individual variability observed.

The findings of this study however, also suggest that coping may be an important predictor of variation in cortisol levels following stress. As predicted, Time 1 coping scores demonstrated a stronger association with cortisol than Time 2 scores, supporting the validity of the response scale at Time 1 as a measure of *initial* coping responses. Analyses of covariance revealed that high scorers on the active coping dimension evidenced greater increases in cortisol than low scorers on this dimension. High scorers on the emotional response dimension evidenced a greater increase in anxiety, but a smaller increase in cortisol following the stress task, compared to low emotional responders.

Individuals with high scores on the active coping dimension prefer to cope by drawing on their resources and doing what they can to change the situation. The TSST however, allows little opportunity to collaborate with others or to take control of the situation. Low scorers on this dimension may therefore become less aroused in this kind of situation as they have less need for personal control and are less dependent on social modes of coping. This hypothesis is consistent with previous suggestions that monitoring and problem-focused coping are more effective in situations where high levels of information are available and the individual has more opportunity for control, whereas blunting and emotion-focused coping are more effective in ambiguous or uncontrollable situations (eg. Vitaliano et al., 1990; Miller & Mangan, 1983; see Chapter III for discussion). Future research examining relationships between coping style and cortisol levels following controllable and uncontrollable stressful events would be beneficial.

The findings relating to the emotional response dimension appear consistent with previous reports that attempts to suppress emotional reactions to stress may have a paradoxical effect on arousal levels. Low emotional responders showed a greater increase in cortisol after the stressful task. High emotional responders however experienced a greater increase in subjective measures of anxiety. It is possible therefore that expression, or at least conscious awareness of, feelings of anger, panic, worry or upset immediately following stressful encounters may reduce the impact of stress on physiological arousal. This hypothesis is consistent with findings that attempts to repress negative emotions are associated with elevations in cortisol (see Brown et al., 1996). The hypothesis is also supported by findings that interventions which encourage individuals to explore their emotional responses to negative events lead to improved immune status (Pennebaker, Kiecolt-Glaser & Glaser, 1988; Esterling et al., 1994; Petrie, Booth, Pennebaker, Davison & Thomas, 1995). These types of interventions will be discussed further in the following chapter.

The current study did not find any significant associations between avoidance coping and salivary cortisol. This could be due to limitations of the current study such as the small sample size. However, it is also possible that avoidance coping is not associated with activation of the HPA-axis. As discussed in Chapter II, research suggests that

HPA-activation is associated with factors such as beliefs in the effectiveness of one's coping efforts, levels of self-esteem, appraisals of resources and tendencies to inhibit emotional responses to stress. The avoidance dimension of the CSSQ however, is associated with an external locus of control, low levels of social support and difficulties forming meaningful representations of stressful situations. It was also noted in the previous study that this dimension is not associated with gender and therefore may be unrelated to biological factors. The significant associations with active coping and emotional response scores, but not with avoidance also appear consistent with Kiecolt-Glaser et al's recent review of the psychoneuroimmunology literature in which they concluded that 'clearly, personality or coping styles associated with emotion or affect regulation are likely to have immunological correlates as well as those that influence interpersonal relationships' (2002, p18). These types of coping styles may therefore be an important focus for future examinations of individual variability in cortisol responses to stress.

It must be stated however, that the results reported here are based on a relatively small sample and it is not possible to infer directional relationships between coping and cortisol responses. Only marginal associations were revealed between coping and cortisol in the current study. Further investigation of the relationships highlighted here using larger samples and multivariate analyses, would be beneficial. The use of regression analysis in subsequent research would allow for the examination of directional relationships between coping and cortisol responses to stress and examination of the proportion of variance in cortisol levels that can be explained by coping.

Similarly, it is not possible to determine as yet whether relationships between coping styles and cortisol responses to stress have implications for health. Future research should therefore aim to clarify not only the role that is played by coping in determining physiological changes following stress, but also the extent to which such physiological changes are associated with health outcomes. Kiecolt-Glaser et al (2002) highlight one study that has provided some evidence that the effects of coping on immune system activity may have important health consequences. In this study, gay men who concealed their homosexual identity experienced an accelerated course of HIV over 9 years, assessed by CD4+ T-cell counts, AIDS diagnosis and AIDS

mortality, even when demographic, health and psychopathology factors were controlled (Cole, Kemeny, Taylor, Visscher & Fahey, 1998). Further longitudinal studies of this type are needed to clarify relationships between coping, immune processes and health outcomes. This research should also aim to determine whether the methods individuals use to cope with serious illness are related to their preferred styles of coping with everyday life events. A greater understanding of individual differences in coping behaviour may pave the way for the development of psychological interventions aimed at reducing the impact on the patient of major illness.

Taken together with the results of Study III, the current findings provide support for the validity of the CSSQ as a measure of dispositional coping, and highlight the importance of assessing coping styles in both the early and late stages of stressful encounters. These findings are however, important not only for validation purposes but also for shedding light on the relationships between psychological, behavioural and biological variables. As discussed in Chapter I, such relationships are central to the field of health psychology and imperative to the understanding of the causes of illness. For this reason therefore, future research focusing on the relationships between coping style and physiological responses to environmental stressors will be extremely important.

General Discussion to Chapter V

This chapter has presented four studies aimed at developing a valid and reliable measure for the assessment of coping styles. This measure is intended to overcome some of the limitations of existing scales, such as unstable factor-structures, poor ecological validity, failure to consider coping with different types of situations, and the use of items that are ambiguous with respect to intention. Development of the scale began with an investigation of the nature of coping. Qualitative content analyses of participants' descriptions of real-life coping efforts indicated a broad conceptualisation of coping as a phenomenon encompassing behavioural, cognitive and emotional reactions to perceived stress. Participants indicated that their responses to real life stressful events were influenced by factors such as ability to control negative emotions and the availability of resources. Responses also indicated the use of different strategies at different stages of stressful encounters.

These results were reinforced by quantitative investigations. The results of Study II indicated that the responses identified from qualitative content analysis were highly related to one underlying construct. Factor analyses suggested that this construct conformed to a three-dimensional structure, and scores on these three dimensions were consistent across a range of stressful situations. Regression analyses reported in Study III indicated that coping dimension scores are influenced by demography, by relatively stable factors such as personal and social resources and by appraisals of the particular situation. Cognitive appraisal processes appear more important predictors of emotional arousal in the later stages of stressful encounters. Coping in the early stages of stressful encounters appears to be associated with biological reactions to stress (Study IV). Participants' perceptions of the coping scale were assessed at each stage of development and results indicated that all retained scenarios were perceived as stressful and imaginable. In addition, scores were demonstrated to remain stable across a period of one to two weeks. Therefore the validity and reliability criteria specified in the introduction to this chapter were met.

Limitations and Recommendations for Future Research

Although the coping measure developed in this chapter demonstrated adequate reliability and validity, participants' ratings and comments in Study III also suggested that the scale is too long to be completed in an acceptable period of time. This is a particularly important consideration if the scale is to be used with patient samples and should therefore be addressed in future research. In addition, although development of the scale began with a qualitative analysis of descriptions of real-life stressful situations, subsequent stages have focused almost exclusively on quantitative data, and scores are derived from responses to hypothetical situations. It is therefore important to examine the extent to which coping styles assessed using hypothetical situations are predictive of real-life coping behaviour. Attaining adequate ecological validity meant selection of scenarios that are typical of individuals' everyday experience. Further research should aim to determine whether tendencies to cope in a particular manner with everyday experiences generalise to coping with more extreme life-changing events. For example, do coping styles assessed using questionnaires such as the CSSQ predict the methods used by individuals to cope with the implications of a serious illness?

Finally, in order to understand the ways in which coping and appraisal processes intervene in the relationship between stress and illness, it is not only necessary to examine links between coping style and coping behaviour, but also to relate these factors to health outcomes. The research reviewed in Chapter II suggests that coping may be an important determinant of both physical and psychological well being following stressful events. In order to assess the need for coping-based interventions for individuals diagnosed with a serious illness, it is therefore first necessary to determine the extent to which coping behaviour influences prognosis in terms of both the physical effects of the condition, and mental health outcomes such as anxiety and depression.

In order to address the limitations and future research directions highlighted in this chapter therefore, the following chapter will examine the extent to which coping factor scores, assessed using a shortened version of the CSSQ, predict strategies used to cope on a daily basis with the effects of a chronic illness. Relationships between

individuals' dispositional style of coping with stress, methods used to cope on a daily basis, and health outcomes will also be examined. Following these analyses, a psychological intervention aimed at weakening associations between stress and health outcomes will be tested.

CHAPTER VI

COPING WITH A CHRONIC ILLNESS

Study V

Introduction

In Chapter VI it was argued that in order to apply the coping concept to the development of patient interventions, it is first necessary to determine the extent to which (a) coping dispositions predict real-life coping behaviour, and (b) coping behaviour influences prognosis. This chapter therefore aims to examine these issues by focusing on a group of patients with a chronic pain condition; ankylosing spondylitis. Following these considerations a coping based intervention will be applied.

Ankylosing Spondylitis

AS is a member of a group of diseases referred to as ‘seronegative spondylarthropathies (SpA)’. SpA’s also include Reiter’s syndrome (RS), reactive arthritis (ReA), psoriatic arthritis (PsA), arthritis associated with inflammatory bowel disease (IBD), ulcerative colitis and Crohn’s disease. Until the 1970’s these diseases were considered variants of rheumatoid arthritis (RA), but are now recognised as distinct from RA, and sharing common clinical and radiologic manifestations (see Olivieri, Barozzi, Padula, Matteis & Pavlica, 1998).

The term ‘ankylosing spondylitis’ literally means inflammation and fusing together of the vertebrae (from the Greek, *Ankylosing* – ‘fusing together’, and *Spondylitis* – ‘inflammation of the vertebrae’). AS affects approximately 1 in 500 women and 1 in 200 men in the UK. It is a painful progressive condition with no cure. The average age of onset is 24 years and the patient must live with the condition for the rest of their life. The main clinical manifestations of AS are back and neck pain and a variable degree of restricted mobility of the spine, although the condition is also often associated with arthritis of the peripheral joints and inflammation of the outer wall of the eye - acute anterior uveitis (AAU) (see Gran & Skomsvoll, 1997; Mau et al., 1988; Edmunds, Elswood & Calin, 1991; www.nass.co.uk). The physical effects of AS are not only aversive in themselves, but also have important social implications. Gran and Skomsvoll (1997) reported that the average retirement age in a sample of

100 Norwegian AS patients was 39 years. Unemployment was related to the development of an ankylosed spine, the occurrence of AAU and the co-existence of other non-rheumatic diseases (cf. McGuigan et al., 1984).

In addition to these physical and social effects, AS patients also have to deal with diagnostic and prognostic uncertainty. McDermaid and Mior (2000) explain that the criteria used to diagnose AS are not always helpful because they require evidence of radiographic change for a definitive diagnosis. These changes however, can lag four to six years after onset of symptoms (Gran & Husby, 1993; Dougados, 1995). This means that cases may be missed, particularly in the early stages. Even after a patient is diagnosed with AS, it is difficult to tell exactly how the condition will progress and what the outcomes will be for each individual. This is partly due to the fact that AS is a highly variable disease, and partly due to the fact that research has been hampered by the lack of agreed criteria for assessing AS outcomes. Andrei Calin, a Consultant Rheumatologist at the Royal National Hospital for Rheumatic Diseases explains that ‘until a few years ago, we could not define outcome in the broadest sense’ (Calin, 2001, p1). He goes on to elaborate that whilst outcome is generally related to death, disability, cost, and other issues, ‘in the spondylarthritides, most of our patients did not die, the degree of disability was extraordinarily variable, ranging from minimal to devastating, and cost was an unknown factor’ (Calin, 2001, p1).

Since 1993 however, a number of questionnaires have been developed to measure outcome in AS. These include the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI; Garrett et al., 1994), the Bath Ankylosing Spondylitis Functional Index (BASFI; Calin et al., 1994), and the Bath Ankylosing Spondylitis Global Score (BAS-G; Jones, Steiner, Garrett & Calin, 1995). Whilst quick and simple to complete, these scales have been demonstrated to meet validity and reliability criteria and have led to the development of reference charts on which patients around the world may be compared. It is only since the development of such instruments that factors influencing disease outcome may be examined. To date, this research has focused mainly on genetics. There has been no research to date investigating relationships between the patient’s style of coping and health outcomes in AS, or between the

methods chosen to cope on a daily basis and AS outcomes. Such associations will therefore be the focus on the present study.

Coping-based Interventions

De Ridder and Schreurs (2001) suggest that there is a 'wide gap between research on stress coping and the clinical practice that such research is intended to inform' (p. 206). Clinical approaches to chronic disease consist of psychotherapy, patient education, support groups, cognitive behavioural interventions and combinations of these approaches. Devins and Binik (1996) suggest that these therapies lead to health enhancement via coping. Psychotherapy for example, allows individuals to 'work through' intrapsychic conflicts that are believed to underlie difficulties in adapting to the disease, cognitive behavioural therapies focus on problematic appraisals (eg. irrational beliefs) and coping skill deficits (eg. stress management), and self-help groups allow for modelling of effective coping strategies. De Ridder and Schreurs (2001) however point out that the effects of these therapies on health outcomes have not been demonstrated to operate via alterations in coping strategies or via alterations in other facets of coping such as appraisals and coping resources.

Smyth and Pennebaker (1999) suggest that psychological interventions may operate via an enhanced sense of meaning brought about by the process of disclosure. They point out that most therapies include the labelling of the problem and discussion of its causes and consequences as part of the therapeutic process, and that the act of putting emotional upheavals into words seems to improve physical and mental health significantly. A wide body of evidence suggests that emotional disclosure may lead to health benefits even in the absence of intervention from therapists. This evidence comes from research conducted since the 1980's in which participants are randomly assigned to write or talk privately about either a stressful or neutral topic. These studies have revealed that disclosing stressful, as opposed to neutral information leads to diverse positive health outcomes including fewer physician visits (Pennebaker & Beall, 1986; Pennebaker, Kiecolt-Glaser & Glaser, 1988; Pennebaker, Colder & Sharp, 1990; Greenberg, Wortman & Stone, 1996), improved liver function (Francis

& Pennebaker, 1992), better mood (Pennebaker et al., 1990) and improved immune status (Pennebaker, et al., 1988; Esterling et al., 1994; Petrie, Booth, Pennebaker, Davison & Thomas, 1995).

The effectiveness of the emotional expression paradigm has also been demonstrated with rheumatoid arthritis patients. Kelly, Lumley and Leisen (1997) reported that RA patients who talked privately about stressful events had less affective disturbance and better physical functioning in daily activities three months later than controls. Smyth, Stone, Hurewitz and Kaell (1999) found that RA patients who wrote about a stressful event showed improvements in overall disease activity four months later, whilst controls showed no significant change.

Smyth and Pennebaker (1999) suggest that disclosure may be important because it allows disorganised traumatic memories to be translated into a linguistic form that permits cognitive processing of the event. As discussed in Chapter II traumatic memories are often poorly integrated into cognitive structures and may as a consequence be easily triggered in the form of intrusive thoughts. Smyth and Pennebaker (1999) suggest that imposing a linguistic structure on these memories may aid integration and therefore reduce the frequency of thought intrusions. Research by Lepore (1997) investigated the effects of expressive writing on thought intrusions. Results indicated that disclosure did not alter the frequency of intrusive thoughts but did moderate the impact of these thoughts on depressive symptoms. The reduced impact of trauma-related thoughts may result from a more positive reframing of the event. Pennebaker, Mayne and Francis (1997) investigated the factors that predicted effectiveness of the emotional expression paradigm. They found that the more people used positive emotion words, the more their health improved and that an increase in both causal and insight words over the course of writing was strongly associated with improved health. Pennebaker et al. (1997) therefore suggest that emotional expression facilitates cognitive processing of traumatic memories by translating the experience into a linguistic structure that promotes understanding of the event and reframing in a more positive light. These findings thus suggest that disclosure-based therapies may operate via alterations in appraisal processes, although

it is yet to be demonstrated that alterations in appraisals lead to changes in coping.

There is some evidence to suggest that the effectiveness of disclosure based interventions may vary according to individuals' typical responses to stress. Sullivan and Neish (1999) hypothesised that disclosure may be most beneficial for individuals who experience heightened distress in response to aversive stimulation. To test this hypothesis they randomly assigned participants to a disclosure (writing about their thoughts and feelings they typically experienced during dental treatment) or control condition (writing about their activities the previous day), before undergoing a dental procedure. They found that the effectiveness of disclosure depended upon participants' level of catastrophizing; catastrophizers in the disclosure condition reported significantly less pain and distress than catastrophizers in the control condition. No significant differences between the two conditions were revealed for non-catastrophizers.

The current research aims to test the effectiveness of a disclosure intervention for improving physical and psychological health in a sample of AS patients. Further analyses will determine whether the effectiveness of the intervention is associated with patients' dispositional style of coping and whether benefits brought about via disclosure are associated with alterations in coping.

Study V: Coping with Ankylosing Spondylitis

Method

Participants

Forty-five males and 23 females participated in the study. The mean age of participants was 52 years (range from 22 to 78). Participants had been diagnosed with AS for a mean of 15 years (range from 0 to 46 years). The average delay between first symptoms and diagnosis was 10 years. Forty percent of the participants were in full-time employment, 9% employed part-time and the remainder were either retired, or not currently employed.

Design and Procedure

Participants were recruited via the National Ankylosing Spondylitis Society (NASS). NASS is a charitable organisation that provides information and advice to individuals with AS and promotes the formation of local AS support groups. Members of NASS receive a 'Guidebook for Patients' that includes information about AS and practical advice. For example patients are advised to avoid alcohol in combination with anti-inflammatory drugs, to give up smoking, and to undertake a range of exercises that are described in the booklet. Members of NASS also receive a bi-annual newsletter, including a list of local support-group contacts.

An advertisement for the study (see appendix 6) was placed in the NASS newsletter; (AS News, Spring/ Summer 2002 edition). Information about the study was also sent to each of the support-group contacts. Anyone interested in receiving further information about the study was requested to contact the researcher. Once initial contact had been made with the researcher, prospective participants received an information sheet explaining exactly what the study would involve and a consent form to sign and return (see Appendix 7). Once consent forms were received, the

participant was randomly allocated to the experimental or control condition and sent a participant information booklet (see appendices 8 and 9), daily diary (see appendix 10) and postage paid envelope. An unbalanced design with greater numbers of participants assigned to the experimental than control condition (ratio 2:1) was used to enhance exploration of the experimental group.

Participants were followed up at one-month and three-months after completion of the writing exercise (see Appendices 11 and 12).

Measures

1. Participant Information Booklet: This assessed the following variables:

Demography: Age, gender, occupation and level of education were assessed.

Disease duration: Participants were asked to indicate at what age they were diagnosed with AS and at what age they believe they first experienced the symptoms of AS.

NASS Exercise: Participants indicated how often they perform each of the exercises recommended by NASS on a scale ranging from 0 (never) to 4 (daily).

Additional Exercise: Participants were also requested to list any additional activities they perform regularly, such as cycling, swimming or exercise classes, together with duration of each exercise.

Smoking: Participants were asked 'do you smoke?', and if so to indicate the average number of cigarettes smoked per day

Alcohol: Participants were asked 'do you drink alcohol?'. and if so to indicate the number of glasses of wine, pints of beer and glasses of spirits consumed in an average week. This information was converted into alcohol units for analysis.

Positive and Negative Effects of AS: Participants were asked to describe in their own words ‘any ways in which AS has had a negative impact on your life’ and ‘any ways in which AS has had a positive impact on your life’.

Coping Style: A four-item version of the CSSQ was used. Items were selected to allow maximum divergence with respect to controllability. Using the controllability scores from study IV the following scenarios were selected: threat to health and safety, assessment, conflict, mistake. Mean scores for each coping dimension were computed, averaging across the four scenarios.

Physical Status: Participants completed the Bath Ankylosing Spondylitis Disease Activity Index (BASDAI), Functional Index (BASFI), and Global Score (BAS-G). These are described below.

- *BASDAI:* The BASDAI (Calin et al., 1999) was developed to measure disease activity in Ankylosing Spondylitis. Patients respond to six questions relating to individual domains of fatigue, spinal pain, joint pain and symptoms, together with perception of pain relating both to bony areas of the body and to morning stiffness. Responses are indicated by marking a line on a 100mm visual analogue scale, where higher scores equate to higher levels of disease activity. A total score is obtained by summing across the items. Calin et al. (1999) report Cronbach’s alpha values ranging from 0.76 to 0.90 for the BASDAI.
- *BASFI:* The BASFI (Calin et al., 1994) was developed to measure functional status in Ankylosing spondylitis. Patients respond to ten questions regarding function in AS and ability to meet the physical demands of everyday life, using a 100mm visual analogue scale. A mean score is obtained by averaging across the ten items. Higher scores indicate poorer functional status. Calin et al. (1994) report that scores on the BASFI correlate highly with observer scores of patients’ functional status ($r=0.87-0.89$, $p<.001$). Cronbach’s alpha is not reported.

- *BAS-G*: Jones, Steiner, Garrett and Calin (1996) report that the BAS-G was designed to formalize the clinician's question to the patient: 'how have you been over the last months?'. The BAS-G represents a quick, quantifiable way of obtaining the patient's perspective and to monitor changes over time. Patients are asked to respond to two questions regarding the effect of their disease on their health, over the past week, and over the past six months, by placing a mark on 100mm visual analogue scale. Higher scores indicate greater effect of the disease on well-being. Jones et al. (1996) report that BAS-G correlates well with the BASDAI and BASFI. Content validity is not reported as the score results from a single question.

Psychological Status: Participants completed the depression subscale of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). This scale requests participants to indicate how they have been feeling during the past week by responding to seven items. The HADS was developed specifically for use with patient samples and items are intended to prevent contamination of scores by reports of physical symptomatology. A four-point response scale is used ranging from 0-3 where higher numbers reflect greater depression. Moorey et al. (1991) report Cronbach's alpha of 0.90 for the depression subscale.

2. Daily Diaries: these assessed level of pain, coping strategies used, coping efficacy, and mood on a daily basis, using the following items:

Daily pain: Patients indicated the level of pain they experienced each day by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

Daily pain coping: Participants completed the Daily Coping Inventory (Stone & Neale, 1984) adapted for chronic pain coping by Affleck et al. (1992b). Participants were requested to tick the strategies they had used to cope with pain that day. The seven strategies listed were: (1) pain reduction attempt: 'did something specific to try to reduce the pain'; (2) relaxation: 'did something to help me relax'; (3) distraction: 'diverted attention from the pain by thinking about other things or engaging in some

activity’; (4) redefinition: ‘tried to see the pain in a different light that made it seem more bearable’; (5) vent emotions; ‘expressed emotions to reduce my anxiety, frustration, or tension about the pain’; (6) seek spiritual comfort; ‘sought spiritual support or comfort concerning my pain’; and (7) seek emotional support: ‘sought emotional support from loved ones, friends, or professionals concerning my pain’.

Coping efficacy: Following the procedure employed by Keefe et al. (1997), participants were also presented with two items drawn from the Coping Strategies Questionnaire (Rosensteil & Keefe, 1983). The first item asked participants ‘based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it?’, whilst the second asked ‘based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it?’ Both were scored on a seven-point scale ranging from 0 (no control/ I couldn’t decrease it at all) to 6 (complete control/ could decrease it completely).

Daily mood: After completing items relating to daily pain, daily coping and coping self-efficacy, participants completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark & Tellegen, 1988). This consists of a list of 20 adjectives describing feelings and emotions. Ten describe negative moods (eg. upset, distressed), and ten describe positive moods (eg. strong, inspired). Participants indicate the extent to which they felt this way today using a five point scale ranging from ‘very slightly or not at all’ (1) to ‘extremely’ (5). Watson et al. (1988) reported Cronbach’s alpha of 0.84 or above for both subscales. This scale was selected as it allows for investigation of positive and negative affect independently.

After completing ratings of pain, mood and coping for seven days, participants completed a writing task for a further three-days. The instructions for the task differed according to group assignment. Participants assigned to the intervention condition were instructed to write about ‘any stressful experiences you have encountered over the last month, or any worries or concerns that are currently troubling you’, control group participants were asked to write ‘in detail about your plans for the following day’. Both groups were asked to write continuously for 20 minutes per day before

retiring for the evening, allowing thoughts to flow freely, without concern for spelling or grammar. Participants were permitted to write about one topic only, or move from one topic to another. The control task was described as a ‘time-management exercise’.

3. Follow-up Questionnaires: these comprised the BAS-G, BASDAI, BASFI, HADS and daily diaries as described above.

Scale Reliability

Means, standard deviations and Cronbach’s alpha for each of the measures used are reported in Table 1 below. The situations described in the four-item CSSQ were rated as stressful ($M=3.0$, $SD=1.3$) and highly imaginable ($M=4.30$, $SD=0.90$) by the current sample. Summary statistics for each of the measures used are reported in Table 1.

Table 1: Scale reliability and summary statistics for measures used

	Mean	SD	Alpha
HADS	20.84	4.65	.71
CSSQ, 4-items:			
○ Active Coping Time 1	19.76	4.50	.87
○ Avoidance Time 1	4.25	2.38	.75
○ Emotional Response Time1	6.46	3.51	.84
○ Active Coping Time 2	21.82	4.20	.88
○ Avoidance Time 2	4.66	2.11	.72
○ Emotional Response Time 2	7.08	3.22	.81
BASDAI	26.71	10.71	.78
BASFI	5.00	2.32	.90
BAS-G 1 week	5.00	2.62	NA
BAS-G 1 month	5.96	2.49	NA

Data Analysis

Participant Information Booklets

In order to consider the role of coping in chronic illness, it is first necessary to consider what it means to live with the condition on a daily basis. A limited picture of the effects of AS on patients' lives may be obtained via quantitative data (eg. daily ratings of pain and mood). However, De Good (2000) has warned that 'we run the risk that our brief questionnaires trivialise the human spirit and the range of experiences to such an extent that we miss much that is essential to the coping process' (p154). This study therefore began with a qualitative content analysis of participants' descriptions of the negative and positive impacts of AS. Following these analyses, the data pertaining to health behaviours was examined in order to determine the extent to which participants take an active role in maintaining their own health. Associations between health behaviours, coping style, and health at baseline were then examined using bivariate correlation analyses.

Daily Diaries and Follow-up Questionnaires

Between Persons Associations - Following analyses of baseline data, associations between coping style, daily measures and coping outcomes were considered at a between subjects level. In order to transform daily measures into between subjects variables, aggregates of each measure were formed by averaging across the initial seven-day recording period¹ for each participant. Regression analyses were then conducted to determine the extent to which coping scores predict health behaviours over and above prediction provided by demographic and disease related variables. These analyses were conducted in two stages:

¹ As not all participants completed both the one month and three month follow-up, number of days recorded represented a potential confound in between persons analyses. Therefore all between persons analyses reported in this study focused only on data collected prior to the writing exercise. Within person analyses are conducted on the complete data set.

1. Correlates of Health at follow-up

Before examining relationships between coping and health outcomes it is first necessary to determine the extent to which outcomes are influenced by the medications patients are taking, by demographic variables such as age, gender and occupation, and by disease-related variables such as time since diagnosis and time since first symptoms of AS. Bivariate correlation analyses were therefore conducted to examine relationships between these variables and measures of physical and psychological health at one month and three month follow-up.

2. Relationship between Coping Style, Coping Behaviour and Health Outcomes

Associations between coping and health status may indicate that coping influences health, or that individuals have developed particular styles of coping due to their changing health status. In order to identify temporal associations between coping and health outcomes, hierarchical regression analyses were employed, predicting health at one month and three month follow-up from coping assessed at baseline. Initial level of the DV and potential confounds (see above) were entered into the first step. Coping variables were entered into the second step. Alternative models were tested predicting health from coping style and coping behaviour.

Within-Persons Associations - Following these between subjects analyses, the disaggregated data were examined in order to identify associations between pain, mood, coping and coping efficacy. The correlation between participants' ratings of ability to control pain and ability to decrease pain was highly significant ($r = .710$, $p \leq .001$). A combination of the two measures was therefore used to indicate coping efficacy in these analyses.

The general statistical procedure, multilevel data analysis, removes all variance due to differences between persons in both the dependent and independent variables by including participant number as a random factor in a general linear model. This is, in effect, a nested ANCOVA with tomorrow's rating of coping efficacy, pain, or mood as the DV, and today's value of the DV as a covariate. Schwartz and Stone (1998) suggest that nested ANCOVA models are appropriate for analysis of daily diary data.

A number of multilevel models were applied. Firstly, associations between coping strategies and coping efficacy were examined in order to determine which strategies were perceived as most effective by participants. Subsequent multilevel models then assessed associations between coping strategies and same day pain, coping strategies and same day positive mood and coping strategies and same day negative mood. These analyses determined whether coping methods used each day were associated with pain and mood (ie. do participants use more distraction on highly painful days? Is redefinition used more on days when positive mood is great?). Finally, associations between coping strategies and next day pain, next day negative mood and next day positive mood were addressed in order to determine whether particular strategies may be associated with reductions in pain and negative mood, and enhancement of positive mood the following day.

When examining next day associations, possible problems of serial autocorrelation were addressed by entering the value of the dependent variable on the previous day as a covariate. In order to address potential correlations between dependent variables at the within-subjects level this study followed the procedure specified by Keefe et al. (1997) in their examination of pain coping strategies and coping efficacy in rheumatoid arthritis. The primary interest of this study, as in Keefe et al's study, is the effect of coping strategies on pain; so mood was not controlled in these analyses. The second most important question concerned the effect of coping in alleviating negative mood; so pain was controlled in these analyses. The third question concerned the effect of coping in enhancing positive mood; so, in these analyses both pain and negative mood were controlled.

Effectiveness of the Intervention - Group differences in physical and psychological functioning at one-month and three-months post-writing were evaluated using analysis of covariance. Separate analyses were conducted for physical and psychological functioning, entering initial (pre-writing) level as a covariate. In order to determine whether the task resulted in changes in the use of daily coping strategies, mean coping scores were calculated for time 1, 2 and 3 aggregating across each seven-day recording period. Group differences in coping at one month and three

months post writing were then examined, entering baseline coping as a covariate. Separate analyses were conducted for each of the seven coping strategies. In order to determine whether the effectiveness of the intervention was associated with participants' coping style, difference scores were calculated for health at follow-up relative to baseline (subtracting t1 measures from t2 and t3). These difference scores were then correlated with scores on the CSSQ coping dimensions.

Results

One hundred and thirty seven people contacted the researcher for information about the study. Of these, 107 signed consent forms to participate in the study. Sixty-eight Time 1 questionnaires were received, 58 Time 2 questionnaires and 44 Time 3.

1. Effects of AS on Participants' Lives

The majority of participants (79%) felt that AS had had both negative and positive impacts on their lives. Eleven participants (16%) felt that AS had had only negative impacts and two participants (3%) felt that AS had only positive impacts. The remaining participant reported that AS had no negative or positive effects on his life. Nine positive categories and sixteen negative categories were identified with high inter-rater agreement ($Kappa = .86$ for negative and $.79$ for positive categories). Category labels and frequencies are shown in Tables 2 and 3 below.

Negative Impacts of AS

It is evident that ankylosing spondylitis has a very wide range of negative impacts on patients' lives. In addition to the physical effects such as pain, stiffness, postural changes and fatigue, participants described impacts of the condition on their work, relationships and family life. For example, Participant 6 wrote 'I am concerned for my job security' and Participant 56 felt that AS was 'a negative for job interviews'. Others explained that they had had to retire early, or change career due to AS. Several participants explained that AS had a negative impact on physical relationships with their partner, and others explained that it was difficult to 'play with children' (Participant 18), or 'cuddle my grandchildren' (Participant 83). Planning a family was also a concern for some participants. For example, Participant 6 wrote that 'I am debating whether or not to begin a family and AS is a negative influence on that decision' and Participant 44 wrote that I 'have put off having a second child until pain was under better control'.

Participants also described difficulties maintaining daily activities and leisure pursuits, changes in mood, personality and self-perceptions, and a feeling of being stigmatised, which in some cases had led to withdrawal from social situations. For example, Participant 40 wrote that ‘AS has also changed my personality dramatically from being an outgoing life and soul of the party to a very quiet nervous moody person and very ill at ease’. Participant 21 explained that ‘I cannot hoe or vacuum or maintain a bent position’. Participant 54 wrote that ‘What AS is doing to my body is perceived as contagious and to be shunned’.

Fear of the future was also a worry for a number of participants, as they were unsure how their symptoms would progress. For example, participant 49 wrote that ‘fear of being in a wheel chair was stopping me from living a full life’ and participant 26 described ‘unpredictability – never knowing when AS will flare up’. This unpredictability could make it difficult to ‘plan short breaks’ (participant 9) and meant it was necessary to ‘plan ahead in order to undertake any activities and social life’ (participant 42).

Table 2: Negative Impacts of AS on Participants' Lives

NEGATIVE CATEGORIES	F	%
Pain, ache or physical discomfort	28	11.5
Stiffness and reduced mobility	26	10.7
Fatigue	24	9.9
Negative effects on career	24	9.9
Difficulty continuing activities I enjoy	24	9.9
Mood or personality changes (eg. irritability, depression)	21	8.6
Difficulty performing daily activities	16	6.6
Other physical effects (eg. eye/ chest problems, side-effects of treatment)	14	5.8
Negative effects on family life	11	4.5
Social stigma/ lack of understanding by others	11	4.5
Poor self-esteem/ self confidence/ self-image	11	4.5
Negative effects on relationship with partner (including sexual problems)	10	4.1
Unpredictability and fear/ worry about the future	8	3.3
Postural changes, bent back	6	2.5
Difficulty standing, sitting, or staying in one position for a long time	5	2.1
Feeling of being older/ losing one's youth to AS	3	1.2

Positive Impacts of AS

Participants not only described negative effects of having a chronic condition, but were also able to cite a number of benefits, or positive impacts of the condition. The most frequently cited benefit was exercise, or an increased awareness of the importance of maintaining one's health. For example, participant 12 wrote that 'AS is actually beneficial in that it forces me to spend a substantial part of my life exercising to an extent that would never have otherwise been the case.' Several participants described social benefits to their condition, such as meeting other people with AS. For example, participant 50 wrote that 'I greatly enjoy the AS group and the course in Bath, I have made close friends through both.' And others explained that they enjoyed 'helping with fund raising activities' (participant 77) or 'being used as a specimen for medical students' (participant 20). Others felt that AS had made them stronger, more determined or had brought a new perspective on life. For example,

participant 79 wrote ‘the saying ‘no pain no gain’ has some truth to it because when the pain has decreased, the pleasure of living I feel is more than if no pain was experienced’. Others felt that their relationships with family and friends had become stronger or more meaningful. For example participant 2 cited ‘a strong sense of love for my family and closest friends’ as a positive effect of AS. Participants also reported that they had learnt more about themselves as a result of AS and had a greater insight into the suffering of others. For example, participant 39 wrote ‘it has made me more aware of how my body works. I understand other people’s aches and pains and sympathise with them’. Others wrote that AS had slowed their pace of living, so that they did not put so much pressure on themselves to complete tasks quickly and instead took time to enjoy things. Participant 13 for example wrote ‘it has slowed me down to enjoy the countryside and the company of my wife’.

Table 3: Positive Impacts of AS on Participants’ Lives

POSITIVE CATEGORIES	F	%
I exercise more now/ take more care of my health	19	18.6
I have made new relationships, or existing relationships have become closer	18	17.6
I have a sense of strength, achievement and determination	15	14.7
I understand others more now, esp. ill or disabled	12	11.8
I understand myself and my condition more and have developed ways of adapting	11	10.8
I enjoy being a member of NASS/ being involved in research / support group activities.	10	9.8
I have a new, or more positive perspective on life	9	8.8
I don’t rush things as much as I used to, tend to take life more slowly	4	3.9
I have taken up new activities due to AS	3	2.9

2. Patients’ Approach to their Condition and Associations with Coping Style

Summary statistics for each of the health behaviours assessed are shown in Table 4. Scores for the thirteen NASS exercises were highly related to one underlying construct (Cronbach’s $\alpha=.93$). A total score was therefore obtained for ‘NASS exercise’ summing across the 13 exercises. Correlations were conducted between the questions ‘do you attend a support group?’, ‘are there any other exercises you perform

regularly?', 'do you drink?', 'do you smoke', scores on each of the coping dimensions and scores on each of the health outcome measures. Results indicated that smoking was associated with higher scores on the active coping dimension at Time 2. Performing exercises other than those recommended by NASS was associated with lower scores on Avoidance at Time 2, with less depression and greater functional status at baseline. No other significant relationships were revealed (see Table 5).

Table 4: Summary Statistics for Health Behaviours

% participants who regularly perform NASS exercises	80.9
% participants who regularly perform other exercise (eg. swimming, walking, gardening)	72.1
Average time spent exercising per week, M (SD)*	8.5 (10.4)
% of participants who smoke	10.3
Average number of cigarettes smoked per day, M (SD)*	10.3 (8.2)
% of participants who drink alcohol	75
Average number of units of alcohol consumed per week, M (SD)*	9.5 (9.9)
% of participants attending a support group	
• Twice per week	1.5
• Once per week	36.8
• Once per fortnight	20.6
• Once per month	2.9
• Less than once per month	1.5
• Never	36.8

* only participants who indicated that they do exercise/ smoke/ drink were included in means analyses

Table 5: Point-biserial correlations between health behaviours, coping style and health outcomes

	Active coping Time 2	Avoidance Time 2	BASFI	BASG 1 week	BASG 6 mo	HADS
Are there any other exercises you perform regularly?	-	-.276*	-.300*	-	-	-.244*
Do you smoke?	.367**	-	-	-	-	-

* $p \leq .05$

Further analyses were then conducted focusing on participants who responded ‘yes’ to the above questions. Bivariate correlation analyses were performed between the frequency of attendance at support groups, total score for NASS exercise, number of cigarettes smoked per day, number of alcoholic drinks consumed per week, and scores on the coping dimensions and health measures. Among smokers, number of cigarettes consumed was negatively associated with scores on the emotional response dimension at Time 2. Among those who attended support groups, frequency of attendance was positively associated with Time 1 active coping scores, and negatively associated with Time 2 avoidance scores. No other significant associations were revealed (see Table 6).

Table 6: Bivariate correlations between health behaviours, and coping style

	Active coping	Avoidance	Emotional Response
	Time 1	Time 2	Time 2
No. of cigarettes	-	-	-.891*
Freq of support group attendance	.319*	-.327*	-

* $p \leq .05$

3. Correlates of Health at Follow-up

Ninety-four percent of participants were taking medications for AS. Participants reported taking a wide range of medications, the most common of which were NSAID's, reported by 82% of participants. Twenty-nine percent of participants reported that they were taking paracetamol or drugs containing paracetamol (eg. Co-codamol, Paracodal) and 21% listed medications designed to reduce stomach acid, ulcers, reflux and indigestion, symptoms that may be associated with use of NSAID's. Opioids (eg. Tramadol, Ultram, Zydol) were taken by 13% of respondents. A wide range of other medications were reported. Correlation analyses were conducted to investigate relationships between medications taken by participants, demographic (age and gender) and disease-related variables (time since diagnosis, time since first symptoms) and scores on measures of physical and psychological functioning at one-month and three-month follow-up.

Medications: No significant correlations were revealed between the use of NSAIDs and health measures, or between paracetamol use and health measures. Several significant correlations were however revealed for opioids and drugs taken to reduce the side-effects of NSAIDs. At one-month follow-up use of opioids was positively associated with the BAS-G item assessing effects of disease on well-being over the past six-months ($r=.301, p<.05$) and the use of drugs taken to reduce NSAID side-effects was positively associated with the BAS-G item assessing effects of disease on well-being over the past week ($r=.327, p<.05$). The use of drugs taken to reduce side-effects was also associated with greater depression at both one month ($r=.327, p<.05$) and three month follow up ($r=.462, p<.01$).

Demographic and Disease Related Variables: Age was negatively associated with disease activity at both one month ($r= -.423, p<.01$) and three month follow-up ($r= -.413, p<.01$), and with the BAS-G item assessing effects of disease on well-being over the past six months, at both one month ($r= -.399, p<.01$) and three month follow-up ($r= -.498, p<.01$). At three-month follow-up age was also negatively associated with the BAS-G item assessing the effects of disease on well being over the past week ($r= -.355, p<.05$). Time since diagnosis was associated with poorer functional status at one month follow-up.

4. Coping Style, Coping Behaviour and Health Outcomes

Hierarchical regression analyses were employed predicting health at one month and three-month follow-up from coping style. In order to control for the effects of medication, demographics and disease-related factors, variables which correlated significantly with the dependent variable (see above) were entered into the first step. Baseline level of the dependent variable was also entered into the first step. Regression analyses were conducted separately for Time 1 and Time 2 coping. No significant effects were revealed for Time 1 scores. The following associations were revealed for Time 2 coping:

One Month Follow-Up

BASDAI: Age and baseline disease activity explained 54% of the variance in disease activity at one month follow-up ($F_{(2,50)}=29.249, p<.001$). Addition of coping variables in the second step accounted for an additional 7% of the variance ($F\text{-change}_{(3,47)} = 2.692, p=.057$). Beta coefficients indicate that scores on the avoidance dimension are negatively associated with disease activity (see Table 7), indicating that individuals who tend to engage in avoidance coping had lower levels at disease activity at follow-up controlling for age and baseline disease activity.

Table 7: Hierarchical Regression Analysis Predicting BASDAI Scores at 1-month Follow-Up from Baseline Disease Activity, Age and Coping (Time 2)

Step	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	34.122	10.416		3.276	.002
1. Age	-.336	.092	-.353	-3.660	.001
BASDAI (baseline)	.741	.111	.677	6.691	.000
2. Active coping	-.157	.317	-.050	-.494	.623
Avoidance	-1.671	.660	-.290	-2.530	.015
Emotional Response	-.002	.402	.000	-.004	.997

Three Month Follow-Up

BASFI: Baseline functional status accounted for 76% of the variance in Time 3 scores ($F_{(1,36)}=114.021, p<.001$). Addition of coping variables in the second step only explained a further 0.4% of the variance ($F\text{-change}_{(3,33)}=2.208, n.s.$). Beta coefficients however indicated that active coping scores were significantly associated with BASFI scores, emotional response scores were also marginally associated with functional status. Positive Beta coefficients indicate that high scorers on these two coping dimensions tend to have poorer functional status at three-month follow-up.

Table 8: Hierarchical Regression Analysis Predicting BASFI Scores at 1-month Follow-Up from Baseline Functional Status and Coping (Time 2)

Step	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2.885	1.513		-1.906	.065
1. BASFI (baseline)	1.017	.089	.899	11.377	.000
2. Active coping	.101	.049	.174	2.058	.048
Avoidance	-.080	.109	-.069	-.728	.472
Emotional Response	.140	.072	.187	1.943	.061

The above regression analyses were repeated, predicting health outcomes from the aggregate coping scores. No significant associations were revealed for the three-month follow-up. However, significant associations were revealed between relaxation coping and disease activity at one-month (see Table 9), indicating that use of relaxation during the initial seven day recording period was associated with greater disease activity at one month follow-up. Age and disease activity at baseline explained 54% of the variance in disease activity at one month follow-up ($F_{(2,51)}=29.829$ $p<.001$). Addition of coping variables did not result in a significant increase in R^2 ($F\text{-change}_{(7,44)}=1.317$, n.s.).

Table 9: Hierarchical Regression Analysis Predicting BASFI Scores at 3-month Follow-Up from Baseline Functional Status and Coping (Aggregate Scores)

Step	Unstandardized		Standardized		Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta	t	
(Constant)	16.543	6.915		2.391	.021
1. Age	-.261	.100	-.276	-2.601	.013
BASDAI (baseline)	.567	.122	.519	4.639	.000
2. Pain reduction	2.256	3.891	.059	.580	.565
Relaxation	8.534	3.993	.246	2.137	.038
Distraction	1.104	4.561	.026	.242	.810
Redefinition	-1.036	5.825	-.019	-.178	.860
Venting emotions	9.318	5.747	.251	1.621	.112
Emotional support	-9.891	5.994	-.252	-1.650	.106
Spiritual comfort	-2.319	7.552	-.031	-.307	.760

5. Between Persons Associations between Coping, Efficacy, Pain and Mood

Summary statistics for each of the daily measures and relationships with coping dimension scores are shown in Table 10. These reveal that a tendency towards confrontive coping is associated with venting emotions and seeking emotional support in order to cope with daily pain. A tendency to engage in avoidance coping is associated with lower positive mood on a daily basis. Tendency to use avoidance coping in the later stages of stressful encounters is also associated with seeking spiritual support as a coping method. Tendencies to become emotionally aroused in stressful situations are associated with both lower positive mood and higher negative mood on a daily basis.

Table 10: Summary Statistics for the Daily Measures and Associations With Coping Style

	M	SD	Active coping		Avoidance		Emotional Response	
			Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Pain	4.43	1.95	-	-	-	-	-	-
Pain reduction	.72	.32	-	-	-	-	-	-
Relaxation	.58	.35	-	-	-	-	-	-
Distraction	.76	.29	-	-	-	-	-	-
Redefinition	.10	.20	-	-	-	-	-	-
Venting Emotions	.22	.31	.349**	.382**	-	-	-	-
Spiritual Comfort	.19	.29	-	-	-	.256*	-	-
Emotional Support	.06	.16	.416***	.370**	-	-	-	-
Positive Mood	25.95	7.38	-	-	-.307*	-.352**	-.306*	-.311*
Negative Mood	15.14	5.80	-	-	.251*	.261*	.414***	.419***

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

At the between persons level, pain is significantly correlated with both negative mood ($r = .530, p < .001$) and positive mood ($r = -.389, p = .002$) and the two mood variables are also intercorrelated ($r = -.418, p = .001$). Pain is significantly correlated with the use of distraction ($r = .346, p < .005$), redefinition ($r = .272, p = .030$), venting emotions ($r = .431, p < .001$), and seeking emotional support ($r = .384, p = .002$). Venting emotions ($r = .309, p = .013$) and seeking emotional support ($r = .291, p = .018$) are also correlated with negative mood. Positive mood is not significantly associated with daily coping at the between persons level.

6. Within Persons Associations between Coping, Efficacy Pain and Mood

Daily coping efficacy with daily pain coping strategies

Multilevel random effects models were used to examine associations between daily coping and daily coping efficacy. As associations may be confounded by levels of pain experienced that day (ie. more painful days might prompt more coping as well as threaten coping efficacy), level of pain was controlled. Table 11 indicates that coping efficacy was greater on days when participants used relaxation and distraction strategies.

Table 11: Summary of Multilevel Random Effects Analyses Predicting Efficacy from Coping

	B	t
Pain reduction effort	.130	.077
Relaxation	.298	.067***
Distraction	.171	.075*
Redefinition	.074	.112
Venting Emotions	-.091	.093
Seek emotional support	-.032	.099
Seek spiritual comfort	-.167	.117

* $p \leq .05$, *** $p \leq .001$

Daily coping efficacy and daily coping strategies with same-day pain and mood

Multilevel random effects models were also applied to examine how each day's coping strategies and perceptions of coping efficacy corresponded with pain experienced that day. These revealed significant associations for coping efficacy and for five of the seven coping strategies, indicating that on days when pain was great, participants were more likely to use pain reduction, distraction, redefinition, venting emotions and seeking emotional support. On days when pain was great, participants were also more likely to rate their coping as ineffective (see Table 12).

The above analyses were repeated with today's negative mood as the dependent variable, controlling for same day pain. Table 11 shows that on days when negative mood was great, participants were less likely to use pain reduction efforts and distraction, and more likely to vent emotions. Negative mood was also negatively associated with belief in the effectiveness of one's coping efforts. Finally, the analyses were repeated for today's positive mood, controlling for pain and negative mood. Associations were revealed for coping efficacy, and distraction, indicating that on day's when positive mood was high, participants used more distraction and perceived their coping efforts as more effective. Results are shown in the table below.

Table 12: Summary of Within-Persons Relations Associations of Coping and Coping Efficacy, With Same Day Pain, Negative Mood and Positive Mood

	<u>Same-day pain</u>		<u>Same day –ve mood</u>		<u>Same day +ve mood</u>	
	B	t	B	t	B	t
Pain reduction effort	.806	6.030***	-.950	-2.637**	-.377	-.806
Relaxation	.062	.503	-.344	-1.094	-.462	-1.164
Distraction	.343	2.545*	-.784	-2.265*	1.257	2.877**
Redefinition	.445	2.188*	-.091	-.174	-1.121	-1.686
Venting Emotions	.885	5.517***	1.361	3.217***	-1.005	-1.843
Seek emotional support	.982	5.918***	.702	1.565	-.005	-.008
Seek spiritual comfort	-.124	-.585	1.058	1.233	-.596	-.545
Coping Efficacy	-.517	-10.463***	-.959	-6.649***	.736	3.838***

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Daily Coping and Coping Efficacy with Next-day Pain and Mood

The above analyses were repeated, with tomorrow's pain and mood as the dependent variables. To adjust standard errors for serial autocorrelation, today's value of the dependent variable was also entered as a covariate in each model (ie. today's pain was entered when tomorrow's pain was the DV etc). Coping and coping efficacy were not associated with next day pain. However, significant associations were revealed for next day negative mood, and for next day positive mood. Results indicated that participants experienced greater negative mood the day after using relaxation and redefinition strategies, but experienced greater positive mood the day after venting emotions (see Table 13).

Table 13: Summary of Within-Persons Relations Associations of Coping and Coping Efficacy, With Next Day Negative Mood and Positive Mood

	Negative Mood Tomorrow		Positive Mood Tomorrow	
	B	t	B	t
Pain reduction effort	-.088	-.256	.224	.456
Relaxation	.928	3.050**	.267	.624
Distraction	-.449	-1.353	.122	.256
Redefinition	1.042	2.085*	.760	1.059
Venting Emotions	-.218	-.536	1.224	2.193*
Seek emotional support	.028	.054	.037	.063
Seek spiritual comfort	-.632	-.779	-1.346	-1.198
Coping Efficacy	-.106	-.743	-0.006	-.028

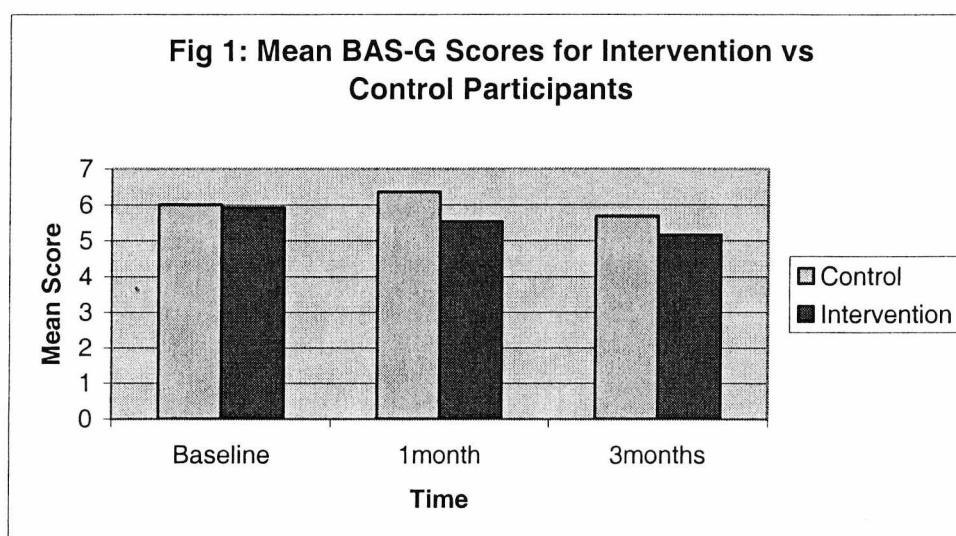
* $p \leq .05$, ** $p \leq .01$

7. Effectiveness of the Intervention

Of the 68 participants, 44 were assigned to the intervention condition and 24 to the control condition. The two groups did not differ with respect to demographic or disease related characteristics (see Table 14). Analyses of covariance were conducted for each outcome measure, entering group (intervention, control) as a fixed factor, and initial level of the DV as a covariate. These analyses revealed differences between intervention and control participants for the BAS-G score relating to global status over the past six months. This difference was significant at one month ($F_{(1,51)} = 4.932$, $p = .031$) and remained marginally significant at three months ($F_{(1,38)} = 3.782$, $p = .059$) post-writing. At both time points, the scores on the BAS-G were lower for intervention participants relative to controls, suggesting that the task was effective in reducing the perceived effects of the disease on health. Mean scores for the intervention and control groups at each time point are shown in figure 1. BAS-G scores decline from baseline to one month follow-up and from one month to three month follow-up for the intervention condition. However, scores for the control condition do not follow this pattern.

Table 14: Sample Characteristics by Group Assignment

	Control (n=24)	Intervention (n=44)
Age, mean (SD)	51.42 (12.51)	52.91 (12.74)
Female %	25	39
Employed full-time %	33.3	43
Employed part-time %	8.3	9.1
Not employed %	16.7	13.6
Years since diagnosis, mean (SD)	13.11 (10.56)	16.38 (11.99)
Years since first symptoms, mean (SD)	25.48 (12.51)	25.90 (13.98)
% of participants taking:		
• NSAID	79	84
• Paracetamol	29	28
• Drugs to alleviate side-effects	17	23
• Opioids	13	14



Analyses of covariance also examined group differences in coping at follow-up relative to baseline. No significant differences were found for any of the seven coping strategies, although there was a trend for intervention group participant to use pain reduction efforts to a lesser extent than controls at one month follow-up ($F_{(1,50)} = 3.234, p=.078$). Alterations in daily pain, positive mood and negative mood were also examined using ANCOVA. No significant differences were revealed.

Effectiveness of the Task and Coping Style

Difference scores were calculated for BAS-G at follow-up relative to baseline (subtracting t1 levels from t2 and t3). Bivariate correlation analyses were then conducted to examine the relationship between change in health after the writing exercise and scores on each coping dimension, focusing on the intervention condition only. Significant correlations were revealed between the difference score at 3 month follow-up and scores on the Time 1 active coping ($r=.404$, $p=.045$) and Time 2 emotional response ($r= -.498$, $p=.011$) dimensions, indicating that individuals who tend to confront stressful situations in the early stages and tend not to become emotionally aroused in the later stages showed the greatest improvement in global status at three months post-writing.

Discussion

The current research provides an insight into what it means to live with a chronic condition such as ankylosing spondylitis. Participants' descriptions indicated that dealing with pain, fatigue and reduced mobility on a daily basis can lead to alterations in mood and personality, strain on relationships, and difficulty performing everyday activities, such as housework. The individual may withdraw from social situations, and refrain from leisure activities that have become too demanding, as their condition has progressed. AS may also impact on career progression and choices regarding family planning. Consistent with previous research (eg. Folkman, 1997) however, participants also reported a range of positive effects of their condition. For example, increased awareness of the need to maintain one's health, a feeling of strength or determination, an increased awareness of others' suffering, and friendship of other AS patients.

The quantitative analyses provide information about the role of coping in ankylosing spondylitis. Coping style assessed at baseline correlated with patients' attempts to improve their own health, and with coping and mood assessed during a subsequent 7-day recording period. The patterns of association are supportive of the relationships between coping and person variables reported in Study III. In particular, the active coping dimension appears to be associated with social modes of coping: scores correlated with frequency of attendance at support groups and with the use of venting emotions and seeking emotional support in order to cope with pain. Associations for avoidance coping are supportive of the notion that avoiders have a more external locus of control; scores on this dimension were negatively correlated with tendency to engage in exercise and frequency of attendance at support groups. Tendencies to use avoidance coping in the later stages of stressful encounters also correlated positively with seeking spiritual support as a coping strategy. Avoidance coping was associated with reduced positive mood and greater negative mood over the initial seven-day recording period, and avoiders' preferred method of coping, seeking spiritual comfort did not appear effective in alleviating negative mood. Finally, tendencies to become emotionally aroused in stressful situations, assessed by the CSSQ emotional response

dimension, were associated with greater negative mood and lower levels of positive mood during the recording period. Overall therefore it would appear that tendencies to cope in a particular manner with everyday experiences do generalise to coping with chronic illness.

Although the methods selected to cope on a daily basis may be influenced by individuals' preferred modes of coping, it is evident that daily fluctuations in mood and pain also play an important role. Multilevel analyses indicated that the majority of daily coping methods were positively associated with pain, suggesting that people tend to 'step-up' their coping efforts when pain becomes unbearable. However, coping efforts tend to be perceived as ineffective on painful days. Relaxation - the strategy perceived as most effective – was not associated with levels of pain, so although in general patients seemed to try harder to cope on painful days they did not try harder to relax. Seeking spiritual comfort to cope with pain also appears unrelated to level of pain experienced. Pain reduction efforts and distraction tended to be used to a lesser extent on days when negative mood was great, whilst venting emotions was used to a greater extent. Distraction was the only strategy to be associated with positive mood, participants tended to distract themselves more when positive mood was great.

Examination of next day measures indicated that the use of relaxation and redefinition strategies tended to increase negative mood the following day, whereas venting emotions was associated with an increase in positive mood the following day. The lack of any significant associations between coping and next day pain, suggests that patients cannot control day-to-day variations in pain by utilising effective coping methods. No significant associations were revealed between coping style and pain across the recording period. Overall therefore, it appears that whilst pain may influence coping, coping does not have an effect on pain. Despite these findings, significant associations were revealed between coping methods and ratings of effectiveness in terms of controlling and reducing pain. Relaxation and distraction were rated as highly effective, regardless of how much pain was experienced that day. It may be that the daily use of relaxation and distraction is associated with an illusion

of control over pain, even though direct effects of coping on pain do not exist. However, it is also possible that coping may have been effective in reducing pain in the shorter-term. That is, although pain the next day was unaffected by coping behaviour, coping may have influenced pain levels on a moment-by-moment basis. For example, taking a pain-killing drug may have implications on pain experienced over the next hour, but may not have any impact on next-day pain. Further research examining fluctuations in pain experienced during the day would allow a consideration of coping at the micro-level and add valuable information to the picture of next-day associations reported here. In the current study participants were required to complete a number of questionnaires over a three-month period. To reduce the burden on participants, questionnaires were returned at the end of each recording period, not at the end of each day. It is possible therefore that some questionnaires were not completed on the date indicated. Future research focusing solely on daily associations between coping, pain and mood should aim to ensure that diaries are completed on the date indicated, and relate to coping pain and mood experienced on that day. Future research could also make use of recent developments in multilevel modelling (MLM). This procedure allows the researcher to investigate the impact of both between-persons (eg. Coping style) and within-persons variables (eg. Daily coping) on the DV, and to further examine possible interactions between these variables (eg. are certain coping strategies more effective for people with an active coping style?). MLM requires the use of specialist software packages that were not available to the researcher. However, future research will aim to extend the current findings by applying multilevel models to data described here. For further information on MLM and other strategies for analysing diary data see Schwartz and Stone (1998).

The regression analyses reported here indicated that coping has important implications for health outcomes. Coping predicted health at one month and three month follow-up even when differences in demographic and disease related variables were controlled. In general, it appears that tendencies to engage in avoidance coping have beneficial impacts on physical health, whereas tendencies to engage in active coping and to become emotionally aroused in stressful situations appear to have detrimental effects. These results seem surprising, given that confronters tend to take

a more active role in maintaining their own health and tend to utilise more social modes of coping, whilst avoiders do very little to help themselves. However, active coping is likely to increase awareness of stressful events, as confronters tend to seek-out stress related information. When stressful events are encountered confronters are also likely to experience pronounced stress-response system activity (see previous study). The detrimental effects of active coping on health outcomes may therefore reflect more frequent activation of stress-response systems. The current results indicated that individuals who confront stressful situations in the late stages are also more likely to smoke. It is possible therefore that confronters experience greater stress on a daily basis and therefore need to reduce levels of arousal by smoking, venting emotions or seeking emotional support. Avoiders may be less aware of stressful events and therefore benefit in terms of physical health, whilst paying the price in terms of increased negative mood. Emotional responders seem to fare the worst; the individual is more likely to experience anger, worry, upset or panic in response to stressful events but is not able to target their emotional arousal into activation of coping behaviours. Emotional response scores are therefore associated with both poorer physical health and increased negative mood on a daily basis.

As discussed above, venting emotions resulted in greater positive mood the following day. This finding suggests that interventions that are aimed at expressing emotions may bring benefits, at least in terms of psychological health. The emotional-expression paradigm employed in this study did appear to be effective in terms of improving global health status. The benefits of disclosure were evident both at one-month and three-months post-intervention. No significant differences were revealed between intervention and control participants in terms of coping strategies used after the writing task, although there was a trend for intervention participants to use pain reduction methods to a lesser extent than controls at one-month follow-up. Future research with larger samples would be useful in order to determine whether venting emotions does have an impact on coping behaviour. The effectiveness of the intervention was associated with participants' coping style. In particular individuals who tend to confront stressful situations in the early stages and tend not to become emotionally aroused in the later stages benefited the most from disclosure.

The association between emotional response scores and effectiveness of the intervention may indicate effects of the task on thought intrusions. As stated in the introduction to this study, previous researchers have suggested that the emotional expression paradigm may have most benefit for individuals who experience high levels of intrusive thoughts after stress. It was also suggested in the previous chapter (see discussion to Study IV) that low emotional responders may experience thought intrusions due to attempts to suppress emotional reactions, and that these thought intrusions may be the cause of prolonged stress-response system activity. It is possible therefore that the disclosure task was particularly effective for low emotional responders as it encouraged a focus on emotions that had previously been suppressed, and therefore alleviated thought intrusions that accompany suppression-attempts (see Chapter II for discussion of associations between suppression and thought intrusions). However, thought intrusions were not assessed in the current study. Future research examining both coping style and thought intrusions before and after emotional expression would allow a greater understanding of the mechanisms via which coping may influence effectiveness of emotional writing. Combining this analysis with examination of stress-hormones such as cortisol would also indicate whether such associations are mediated via physiological processes.

Alternatively, the association between emotional response scores and effectiveness of disclosure may indicate the effects of social support. Schreurs and DeRidder (1997) suggest that individuals who tend to show too little or too much distress are likely to receive a diminution of social support resources; the former due to support providers' experience of vicarious threat and feelings of helplessness at being able to respond to the patient's suffering, the latter due to insufficient communication of need. These results would also explain the association between active coping and effectiveness of the intervention. As discussed previously, confronters prefer social modes of coping and tend to deal with pain by expressing emotions. High confronters may be seen by support providers as expressing too much distress, whereas low emotional responders may express too little distress. In this respect, disclosure could be viewed as a pseudo-social support intervention as individuals are able to express and work through

negative emotions that may be difficult to express to others. This hypothesis appears to be supported by qualitative data. Several participants reported that they did not like to be a worry to their family and felt that others would not understand their experiences. For example, participant 41 wrote ‘I don’t share or tell people about this cause they would think I am a cry baby’, participants 77 wrote ‘People who don’t have AS do not understand the severe pain it causes’ and participant 33 listed ‘worry to my wife and family’ as a negative effect of AS. One participant also wrote in depth about emotional writing in her response to the advertisement placed in NASS. Her letter explained that ‘As a way of coping with the first flare-up 12 months ago, I began a creative writing course. I find this in itself therapeutic as I use the written word to vent my frustrations as I have been made to feel ashamed of displaying any emotion, particularly with regard to pain’ and went on to write ‘I have realised how a lot of sufferers feel isolated and lonely. It is also very difficult to explain, even to loved ones, how awful you feel on bad days. This is why I have found writing about the bad days helpful.’

Although participants in the intervention condition rated the impact of the disease on their health as less severe than controls at follow-up, the writing task did not result in significant alterations in disease activity, functional status or depression. However, the current analyses relied on a relatively small sample of respondents, particularly at the three-month follow-up. Further research focusing on the effectiveness of this intervention for larger groups of AS patients would be beneficial. In addition to the small sample size, the current study was limited in that all analyses refer to self-report measures. Results may therefore indicate associations between participants’ coping styles and their subjective perceptions regarding severity of their condition, rather than disease severity per se. It is also possible that some people tend to both rate their coping and symptoms in a negative (or positive) manner, and this may over-inflate the degree of association between coping and health outcomes. As discussed in the introduction, there is no gold-standard for assessing disease activity or functional status in AS. However, future research focusing on physician-ratings of health status would provide a useful comparison for the current findings. The effectiveness of the intervention may also have been influenced by the design of the experiment. All

participants were required to write about their condition in the baseline questionnaires, even this short writing exercise may have provided participants with the opportunity to disclose negative emotions that are difficult to discuss with friends and family. Future research testing the effectiveness of emotional disclosure tasks should therefore ensure that the study design does not provide alternative opportunities for disclosure (eg. by writing about negative events, or discussing thoughts and feeling with the experimenter or other participants).

In conclusion, the current study has demonstrated a practical application of the coping scale designed in the previous chapter, and has addressed relationships between coping style, coping behaviour and health outcomes. The current study also suggested that writing about stressful experiences might have benefits for AS patients, who may feel isolated in their pain, and unable to communicate their feelings to others. The quantitative analyses reported were bolstered by qualitative data, which provided a picture of what it means to live with a chronic pain condition. It is evident that AS can have negative impacts on all areas of life. Interventions that decrease the impact of AS are therefore extremely valuable. Future research should aim to build on the evidence reported here, in order to investigate relationships between coping, pain and mood at a micro-level, and to determine the mechanisms underlying benefits of emotional writing. The reported associations between avoidance coping and health outcomes are also worthy of future research. Use of avoidance coping may not necessarily be 'maladaptive' when individuals are faced with a chronic incurable condition, and it is possible that interventions aimed at encouraging people to work through their emotions may be inappropriate for those who prefer to rely on distraction or denial. The use of such strategies may however have negative implications for mood, so avoiders may benefit from engaging in distracting pass-times that enhance positive affect, such as watching a humorous film or spending time with friends. Future research examining the effectiveness of alternative interventions for people with different coping styles could lead to individually tailored treatment programs aimed at maximising both physical and psychological well being.

CHAPTER VII

GENERAL DISCUSSION

Summary and Conclusions

The purpose of this project of research has been to develop a valid, reliable measure of coping styles, to investigate associations between coping and psychological and biological variables, and to determine whether coping styles are predictive of the methods individuals use to cope on a daily basis. In order to address these aims the studies presented have used a combination of qualitative and quantitative methods, and coping has been assessed both at an intra- and inter- individual level. Finally coping has been linked to health outcomes in a longitudinal investigation of individuals with a chronic condition and a psychological intervention has been applied. This chapter aims to consider how this research has contributed to our understanding of coping processes and to discuss the wider implications of the findings reported in this thesis.

Development of a valid reliable measure of coping style

Previous methods of measurement have generally been developed according to a ‘top-down’ approach where the important dimensions of coping are specified a-priori and items created to represent these dimensions. This approach has resulted in a number of problems, such as unstable factor structures, ambiguity regarding the intentions underlying coping responses, scenarios that are difficult to imagine, and responses that may be inapplicable to particular situations or particular populations. The empirical studies presented in this thesis therefore adopted a ‘bottom-up’ approach in which scenarios and response options were developed on the basis of descriptions of real-life coping episodes, and dimensions derived from exploratory factor analyses.

This process began by asking participants to describe stressful situations they had experienced and to explain in their own words how they coped with these events. Participants’ descriptions provided a richer picture of coping than quantitative data alone, highlighting the use of different strategies at different stages of stressful encounters and revealing the range of intentions that may underlie use of strategies such as seeking social support. Participants’ descriptions also suggested that coping includes not only behavioural responses to perceived stress, but also emotional, and

cognitive responses. Quantitative analyses in Study II provided support for the situation and response categories identified from qualitative content analysis, suggesting that 18 of the original 19 response options were related to the same underlying construct.

Three coping dimensions were identified using principal components analysis. The *active coping* dimension indicates the extent to which individuals attempt to alter the situation, either through their own efforts, or by calling on others for help. The *avoidance* dimension indicates the extent to which the individual attempts to withdraw from the situation either mentally (eg. by distraction, or denial) or physically (by removing oneself from the situation). The third dimension - *emotional response* – indicates the degree to which individuals become emotionally aroused (eg. panicking, becoming angry or upset). The coping scale was refined throughout Studies II and III by retaining only those scenarios that were perceived as both stressful and imaginable and by excluding items that were not significantly associated with a single coping dimension. Participants' comments on the scale were also considered, and the final version of the questionnaire presented in study VI was designed to meet practical as well as psychometric criteria.

This inductive approach not only resulted in the development of a valid reliable measure of coping but has also addressed a number of conceptual issues that have plagued coping research over the last few decades. As discussed in chapter III, De Ridder (1996) suggested that coping measurement can only be fruitful if one assumes that individuals generalise across situations and apply a limited set of coping strategies to different occasions. However, this assumption has not been rigorously tested. Therefore, in Study II, coping responses were examined with reference to seven different hypothetical scenarios. Factor scores for each scenario were entered into SPSS and Cronbach's alpha was calculated, treating each scenario as a scale item. Although the seven situations varied with respect to controllability and stressfulness, coping dimension scores were highly consistent, suggesting that people do tend to cope in a characteristic manner with different types of events. The results of Study V further suggest that styles of coping with everyday stressful events influence the methods used to cope with the effects of a chronic illness. It would appear therefore that individuals are fairly rigid in their coping behaviour, and tend to cope in the same

way even when coping has important implications. For example, people who tend to distract themselves from thinking about everyday events such as missing a train to work, are also likely to avoid activities which force them to cognitively engage with the reality of illness. The implications of these findings for the development of patient interventions will be considered later in this chapter.

Relationships Between Coping and Person Variables

As discussed in Chapter IV, for the coping concept to be usefully applied it is necessary not only to establish that consistent styles of coping exist, but also to explain why they exist and to examine the implications of these coping styles for health outcomes. These issues were therefore addressed in Studies III to V. Studies III and IV indicated that associations between coping and biological, social and psychological variables depend on the type of coping that is considered and the stage at which coping is assessed. Unlike previous measures of coping, the questionnaire developed in this thesis allows for separate consideration of coping responses elicited by situations that have just occurred, and situations that have been ongoing for some time. This separation was initially intended to investigate whether response categories identified from qualitative data were relevant to both early and later-stage coping. However, empirical findings suggested that initial and later-stage coping might reflect different processes. The former showed stronger associations with outcomes measured following an acute stressor, whereas the latter showed stronger associations with outcomes of a chronic stressor. Bivariate correlations between the three coping dimensions and person variables suggested that belief in one's coping efforts may be a more important predictor of coping in the early than in the later stages, whilst social support may be more important for coping with situations that have been ongoing for a significant period of time. Although previous researchers have argued that coping should be viewed as either a process that changes over time, or a style that remains stable across the stages of a stressful encounter, this thesis would argue that evidence of change does not disprove the existence of stable styles of coping. As discussed in chapter IV (see p. 48), evidence of stability is dependent on the level at which coping is assessed. This is true for all aspects of human behaviour. For example, if we attempt a fine grained analysis of the sets of behaviours individuals engage in when they enter a restaurant, we may conclude that behaviour is wholly determined by the

situation, as people engage in a series of actions that change across of the stages of the event (eg. waiting to be seated, ordering a meal, eating, paying the bill). However, if we observe the same individual across a range of situations, we may be more likely to conclude that behaviour is determined by personality dispositions, as the person displays a relatively consistent manner of responding. The two approaches are not mutually exclusive, and as shown in the current research, it is possible to investigate both person and situation variables simultaneously, using coping style questionnaires to assess dispositional aspects of coping, and stressor-specific coping scales to assess the extent to which the individual uses a range of strategies applicable to that particular stressor.

Regression analyses presented in Study III provided some useful information for considering why individuals tend to cope in a characteristic manner. Results suggested that individuals engage in avoidance coping if they have an external locus of control, are unable to make sense of stressful events or lack adequate social support. These findings are consistent with Holahan and Moos' (1987) suggestion that avoidance coping is a response to threatening situations when personal and contextual resources are scarce.

Tendencies to actively confront stressful situations or become emotionally aroused appear to be associated with the female gender and this association may reflect a role of biological processes in coping (see Study III). Active coping in the early stages of stressful encounters did not appear to be associated with personality or social support, but was predicted by belief in the effectiveness of coping efforts. Active coping in the later stages however was associated with the combined influence of extraversion and social support, suggesting that individuals will continue to take an active approach to coping with stressful situations in the long term if they are able to talk to others about their difficulties, or engage in activities with other people. These results are supportive of previous research suggesting that extraversion is associated with active problem-focused forms of coping. Some researchers have also suggested that extraversion is synonymous with positive emotionality (eg. Watson, David & Suls, 1999) and, as discussed in the introduction to this thesis, positive emotions have been proposed to perform an important adaptive function, undoing the narrowed psychological and physiological preparations for specific action, and allowing the

individual to engage in more creative thought patterns. Ferguson, Matthews and Cox (1999) also suggest that extraversion may be associated with a focus of attention on the situation's potential for growth. In general therefore, it would appear that extraversion/positive emotionality provides the necessary conditions for individuals to draw on their resources and take an active role in confronting ongoing stressful situations.

In addition to gender, emotional response scores were predicted by neuroticism, an external locus of control, inability to make sense of stressful events, and a tendency to appraise events in a negative manner. It was suggested that trait anxiety may result in difficulties forming meaningful representations of stressful events, and that this inability to make sense of the situation prevents the individual from taking an active role in coping. A perception of the event as stressful and uncontrollable may then give rise to negative emotions such as fear, panic, anger or worry. Associations between neuroticism and scores on this dimension are consistent with previous research linking neuroticism to passive, emotion-focused forms of coping. Watson et al (1999) also suggest that neuroticism indicates a tendency toward negative emotionality and Ferguson et al. (1999) further propose that the link between neuroticism and negative emotionality is due to the impact of neuroticism on cognitive processes, resulting in an exaggerated focus on the negative aspects of a situation.

Coping Style, Coping Behaviour and Health

In addition to examining associations between coping and person variables, the current research aimed to determine whether coping styles assessed using a situation-response questionnaire can be used to predict the methods people use to cope on a daily basis. The results of study VI indicated that scores on the three CSSQ coping dimensions were associated with the methods individuals used to cope with the effects of a chronic condition and with psychological and physical well-being. Scores on the Active coping dimension correlated positively with frequency of attendance at support groups and the use of venting emotions and seeking emotional support in order to cope with pain. Avoidance scores were negatively correlated with exercising and attendance at support groups, and positively correlated with seeking spiritual support. Both avoidance and emotional response scores were associated with greater negative

mood and lower positive mood during the recording period. Multilevel analyses using the general linear model revealed that daily coping was also associated with daily fluctuations in pain and mood, suggesting that although individuals tend to select coping strategies that are consistent with their general style of coping, contextual factors must also be considered.

Regression analyses suggested that avoidance coping was positively associated with health outcomes, whereas scores on the other two dimensions are negatively associated with health outcomes. These results suggest that avoidance may not necessarily be a 'maladaptive' style of coping. Instead, the three coping styles appear to be associated with different types of risk. Individuals who repress emotional responses to stress may be at risk of thought intrusions and prolonged stress-response system activity after stress. Individuals at the other extreme of the emotional-response dimension may however be at risk of mood disturbances, and experience more pronounced increases in cortisol following stressful experiences. Individuals who tend to take an active approach to dealing with stressful situations may also be more likely to take an active role in maintaining their own health. These individuals may however, experience greater anxiety as a result of cognitively processing stressful information. Patients who tend to avoid thoughts of stressful situations may be less likely to engage in health protective actions, but may benefit from reduced levels of anxiety in response to daily events and less frequent stress-response system activation. The benefits associated with coping approaches may reinforce such behaviour and therefore contribute to the development of rigid patterns of responding. However, the disadvantages associated with each style of coping can over time outweigh these benefits and result in negative impacts on psychological and physical health. When this occurs psychological interventions may have significant benefits.

Study V tested one such intervention, based on Pennebaker's emotional disclosure paradigm. Results suggested that putting negative thoughts and feelings into words may bring benefits for people with chronic conditions, particularly when it is difficult to talk to friends or family.

Implications

The findings of this research have important implications for the medical context. As discussed in the introduction, the biopsychosocial model of health is becoming increasingly influential. However, psychological variables are unlikely to be incorporated into treatment programs if they are poorly defined and cannot be reliably measured. By addressing issues of conceptualisation and measurement it is hoped that this research will contribute to future examination of the role of coping in the onset and progression of illness, and that this research as a whole will inform clinical practice. The studies presented in this thesis have begun to elucidate mechanisms underlying differences in coping behaviour. Future research should build on these findings in order to develop a more detailed model of coping within which potential barriers to effective coping may be identified and targeted.

In addition to providing a measurement tool for future research, the studies presented in this thesis have also highlighted research methods that may be appropriate for examining coping. The qualitative analyses presented in study I provided a useful starting point by indicating the types of phenomena that ‘belong’ to the coping concept. By starting with qualitative rather than quantitative considerations it was possible to take a fresh look at coping and escape from the circular process of specifying responses from coping dimensions, and dimensions from responses. Hierarchical regression analyses reported in study III provided a useful method of considering stable and more transitory influences on coping simultaneously. As such variables are likely to be interrelated, this approach may be more appropriate for consideration of coping predictors than bivariate correlational approaches alone. Future research applying multivariate methods to the analysis of predictors of endocrine responses to stress would provide a more detailed examination of such processes than could be conducted here. Such research may be constrained by the need for large samples of participants who are willing to complete a stressful and time-consuming task. However, the research presented in this thesis has helped to break down such constraints to some extent by highlighting the styles of coping most likely to show associations with cortisol, and by demonstrating the efficacy of a shortened version of the TSST. The research presented here suggested that qualitative considerations may be useful not only for highlighting variables to be addressed in

quantitative analyses, but also for building up a picture of the individual's experience of adversity. Previous research examining patients' descriptions of their conditions has suggested that individuals construct their own realities and often imbue negative events with a sense of meaning or greater benefit. When considering how an individual copes with stressful circumstances, it is therefore also necessary to consider how the event is constructed. By combining qualitative considerations with quantitative analyses, Study V examined not only how individuals cope but also what they cope with. It is evident therefore that a combination of qualitative and quantitative methods may afford a more detailed conceptualisation of coping than either approach alone.

The methodology selected to combine qualitative and quantitative data adopted in the current research was influenced by the qualitative content analytical approach described by Mayring (2000). In this paper, Mayring pointed out that although calls to combine these approaches have become commonplace such calls do little to tell the researcher how this should be achieved. It is hoped therefore that the current research will act as a demonstration of a practical method for achieving such methodological triangulation. As discussed in the chapter I, the questions '*how?*' and '*what?*' are of equal importance to the consideration of research-focus. That is, it is not only necessary to consider which pieces of the jigsaw fit together, but also to see the picture one is aiming to complete.

Study V also examined coping at both an inter- and intra- individual level. This approach would be beneficial for future examinations of coping with chronic stressors as it is possible to examine the influence of coping styles and variations in symptomatology and mood simultaneously. Future research could add to the findings of this research by considering coping at a micro level, that is determining not only how coping may influence pain and mood the following day, but ways in which coping may influence outcomes on a moment-by-moment basis. The application of MLM procedures could extend the current findings by investigating possible interactions between person and situation variables shaping patients' experience of pain or mood disturbance. As discussed in chapter I, chronic conditions are often associated with pain, mood disturbances, alterations in self-image, and changes in social networks. The traditional biomedical approach offers little respite from such

challenges. Psychology therefore has an important role to play and future research focusing on chronically ill individuals would be extremely valuable.

The disclosure task used in study V, offers a useful paradigm for future research in that it is both mass-oriented and cost effective and unlike medical interventions does not appear to be associated with aversive side effects. This type of intervention could therefore be easily integrated into patient treatment programmes, for example by providing chronically ill patients with information about the potential advantages of diary writing. This intervention can also be seen as a means of targeting the disadvantages associated with particular styles of coping as greatest benefits were observed for highly active copers and for low emotional responders. These individuals may be most in need of an outlet for emotional disclosure as they receive a diminution of social support resources. Future research should aim to examine the efficacy of interventions for individuals who prefer not to rely on social modes of coping and do not tend to repress feelings of anger, panic, worry or upset. The current research suggests that interventions aimed reducing anxiety (eg. relaxation therapies) are most likely to be of benefit to high emotional responders, whilst inactive copers may benefit from interventions aimed at enhancing perceptions of coping efficacy. Interventions for low avoiders are likely to depend upon scores on the active coping and emotional response dimensions. That is, individuals who are aware of negative events and become emotionally aroused when they arise may benefit from relaxation therapies. Individuals who are aware of negative events and tend to take an active role in dealing with them may benefit from disclosure therapies.

Future research testing psychological interventions should aim to consider not only whether the effectiveness of such methods depends on the coping style of the patient, but also if interventions operate via alterations in coping strategies, resources, or appraisals. Study V did not reveal evidence of associations between effectiveness of disclosure and coping behaviour, but suggested that disclosure may have operated as a pseudo-social support resource, allowing individuals to express and make sense of their thoughts and feelings without fear of negative reactions. Future research examining associations between coping style and social resources will be necessary to test this hypothesis. Similarly, interventions aimed at reducing anxiety or improving feelings of self-efficacy should determine whether alterations in such processes are

associated with the degree of improvement in health status observed after intervention, and whether such changes are associated with alterations in coping behaviour. As discussed in chapter III appraisals are likely to both precede and arise from coping. Therefore alterations in appraisal processes may influence health either via coping or directly. It is likely that any alterations in coping will occur gradually and incrementally, as the individual feels able to try different methods of coping and is reinforced by methods that bring the most benefit in the present situation. As discussed above, previous research has also suggested that the ability to free oneself from rigid patterns of responding and adapt one's behaviour to the particular situation may be dependent on the experience of positive emotions during periods of adversity. The research in this thesis has begun to elucidate associations between coping style, coping behaviour, appraisals and mood processes. Future research focusing on interrelationships between these variables may eventually lead to the development of stress-resistance programs, which allow individuals to combat narrowed physiological and psychological preparations for specific action and engage in rational flexible patterns of responding. Although this thesis has focused on the salience of such research for improving coping in the medical context, the implications extend beyond this arena. As discussed in chapter I, inbuilt patterns of responding are often ill-suited to the types of situations experienced in modern life. Being able to perform rationally in stressful circumstances may be particularly important when the individual is responsible for the lives of others (for example, surgeons, pilots, military commanders). The coping concept therefore has much to offer and is likely to remain the emphasis of research interest for many years to come.

Ader, R. (2000). On the development of psychoneuroimmunology. *European Journal of Pharmacology*, 405, 167-176.

Affleck, G., Tennen, H., Croog, S., & Levine, S. (1987). Causal attributions, perceived benefits, and morbidity following a heart attack: An eight-year study. *Journal of Consulting and Clinical Psychology*, 55, 29-35.

Affleck, G., Tennen, H., Urrows, S., & Higgins, P. (1992a). Neuroticism and the pain-mood relation in rheumatoid arthritis: Insights from a prospective daily study. *Journal of Consulting and Clinical Psychology*, 60, 119-126.

Affleck, G., Tennen, H., Urrows, S., & Higgins, P. (1992b). Daily coping with pain from rheumatoid arthritis: Patterns and correlates. *Pain*, 51, 221-229.

Aldwin, C. A., Folkman, S., Schaefer, C., Coyne, J. C., & Lazarus, R. S. (1980). Ways of coping: A process measure. Paper presented at the meeting of the American Psychological Association, Montreal.

Alloy, L. B., Just, N., & Panzarella, C. (1997b). Attributional style, daily life events and hopelessness depression: subtype validation by prospective variability and specificity of symptoms. *Cognitive Therapy and Research*, 21, 321-344.

Alloy, L.B., & Clements, C.M. (1998). Hopelessness theory of depression: tests of the symptom component. *Cognitive Therapy and Research*, 22, 303-335.

Allred, K. D., & Smith, T. W. (1989). The hardy personality: Cognitive and physiological responses to evaluative threat. *Journal of Personality and Social Psychology*, 56, 257-266.

Amir, N., Stafford, J., Freshman, M. S., & Foa, E. B. (1998). Relationship between trauma narratives and trauma pathology. *Journal of Traumatic Stress*, 11 (2), 385 – 392

Amirkhan, J. H., Risinger, R. T., & Swickert, R. J. (1995). Extraversion: a 'hidden' personality factor in coping? *Journal of Personality*, 63, 189-212

Amirkhan, J. J. (1990). A factor analytically derived measure of coping: The Coping Strategy Indicator. *Journal of Personality and Social Psychology*, 59, 1066-1074.

Anderson, C. R. (1977). Locus of control, coping behaviors and performance in a stress setting: a longitudinal study. *Journal of Applied Psychology*, 62, 446-451.

Andersson, S. V., & Ekdahl, E. (1992) Self-appraisal and coping in out-patients with chronic disease. *Scandinavian Journal of Psychology*, 33, 289-300.

Antoni, M. H., Augus, S., LaPerriere, A. R., & Baggett, H. L. (1990). Psychological and neuroendocrine measures related to functional immune changes in anticipation of HIV-1 serostatus notification. *Psychosomatic Medicine*, 52, 496-510.

Arnetz, B. B., Brenner, S. O., Levi, L., Hjelm, R., Peterson, I. L., Wasserman, J., Petrini, B., Eneroth, P., Kallner, A., Kvetnansky, R., & Vidas, M. (1991). Neuroendocrine and immunologic effects of unemployment and job insecurity. *Psychotherapy and Psychosomatics*, 55, 76-80.

Arnold, M. (1960). *Emotion and personality* (2 vols.) New York: Columbia University Press.

Assal, J. (1999). Revisiting the approach to treatment of long-term illness: from the acute to the chronic state. A need for educational and managerial skills for long-term follow-up. *Patient Education and Counseling*, 37, 99-111.

Avero, P., Corace, K. M., Endler, N., & Calvo, M. G. (in press). Coping styles and threat processing. *Personality and Individual Differences*, 34.

Balint, M. (1955). The doctor, his patient and the illness. *Lancet*, i. 683-8.

Balint, M., Hunt, J., Joyce, D., Marinker, M. and Woodcock, J. (1970). *Treatment or Diagnosis: A Study of Repeat Prescriptions in General Practice*. London: Tavistock.

Bar-Tal, Y. (1994). The effect of need and ability to achieve cognitive structure on mundane decision making. *European Journal of Personality*, 8, 45-58.

Bar-Tal, Y., & Spitzer, A. (1999). The effect on coping of monitoring, blunting and the ability to achieve cognitive structure. *Journal of Psychology Interdisciplinary and Applied*, 133, 395-413

Bar-Tal, Y., Kishon-Rabin, L., & Tabak, N. (1997). The effect of need and ability to achieve cognitive structure on cognitive structuring. *Journal of Personality and Social Psychology*, 73, 1158-1176.

Baron, R. S., Cutrona, C. E., Hicklin, D., Russell, D. W., & Lubaroff, D. M. (1990). Social support and immune function among spouses of cancer patients. *Journal of Personality and Social Psychology*, 59, 344-352.

Baum, A. & Poluszny, D. M. (1999). Health psychology: mapping biobehavioral contributions to health and illness. *Annual Review of Psychology*, 50, 137-163

Baum, A. (1990). Stress, intrusive imagery and chronic distress. *Health Psychology*, 6, 653-75.

Baxter, J. D., Frohman, L. A. & Felig, P. (1995). Introduction to the endocrine system. In Felig, P., Baxter, J. D. & Frohman (Eds) *Endocrinology and Metabolism*, 3rd Ed, (pp3-20). New York: McGraw-Hill.

Beck, A. T., (1976). *Cognitive Therapy and the Emotional Disorders*, New York: The New American Library.

Becker, J. & Lissmann, H.-J. (1973). *Inhaltsanalyse - Kritik einer sozialwissenschaftlichen Methode*. Arbeitspapiere zur politischen Soziologie 5. München: Olzog.

- Beisecker, A. E., (1988). Ageing and desire for information and input in medical decisions: patient consumerism in medical encounters. *The Gerontologist*, 28, 330-355.
- Bell, P. A., & Byrne, D. (1978). Repression-sensitization. In H. London & J. E. Exner (Eds.) *Dimensions of personality* (pp. 449-485). New York: Wiley.
- Ben-Porath, Y. S., & Tellegen, A. (1990). A place for traits in stress research. *Psychological Inquiry*, 1, 14-40.
- Benson, J., & Hagtvet, K. A. (1996). The interplay among design, data analysis and theory in the measurement of coping. In M. Zeidner and N. S. Endler (Eds.). *Handbook of coping: theory, research, applications* (pp 83-105). New York: Wiley.
- Bijttebier, P., Vertommen, H. & Steene, G. V. (2001). Assessment of cognitive coping styles: A closer look at situation-response inventories. *Clinical Psychology Review*, 21, 85-104.
- Billings, A. C., & Moos, R. H. (1982). Family environments and adaptation: A clinically applicable typology. *American Journal of Family Therapy*, 10, 26-38.
- Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. *Journal of Behavioural Medicine*, 4, 139-157.
- Biondi, M., & Picardi, A. (1999). Psychological stress and neuroendocrine function in humans: The last two decades of research. *Psychotherapy and Psychosomatics*, 68, 114-150.
- Biondi, M., Pancheri, P., Delle Chiaie, R., Teodori, A., Paga, G., & Falaschi, P. (1985). Personality and the response of FSH, LH, prolactin and cortisol in an experimental frustrating task. Fourth International Symposium on Psychoneuroendocrinology in Reproduction.
- Blank, A. S. (1993). The longitudinal course of posttraumatic stress disorder. In J. R. T. Davidson & E. B. Foa (Eds.), *Posttraumatic Stress Disorder: DSM-IV and beyond*. Washington, DC: American Psychiatric Press Inc.
- Bolger, N. (1990). Coping as a personality process: a prospective study. *Journal of Personality and Social Psychology*, 59, 525-537
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, 36, 129-148.
- Brewin, C. R., Dalgleish, T., & Joseph, S. (1996). A dual representation theory of posttraumatic stress disorder. *Psychological Review*, 103, 670-686.
- Brooks, J. E., Herbert, M., Walder, C.P., Selby, C., & Jeffcoate, W. J. (1986). Prolactin and stress: Some endocrine correlates of preoperative anxiety. *Clinical Endocrinology*, 24, 653-656.

- Brown, L.L., Tomarken, A. J., Orth, D. N., Loosen, P.T., Kalin, N.H., & Davidson, R.J. (1996). Individual differences in repressive-defensiveness predict basal salivary cortisol levels. *Journal of Personality and Social Psychology*, 70, 362-371.
- Bruehl, S., Carlson, C. R., Wilson, J. F., Norton, J. A. (1996). *Journal of Behavioral Medicine*, 19, 129-142.
- Bryant, R. A., & Harvey, A. G. (1995). Processing threatening information in posttraumatic stress disorder. *Journal of Abnormal Psychology*, 104, 537-541.
- Butler, G. & Mathews, A. (1987). Anticipatory anxiety and risk perception. *Cognitive Therapy and Research*, 11(5), 551-565.
- Byrne, A., & Eysenck, M. W. (1993). Individual differences in positive and negative interpretive biases. *Personality and Individual Differences*, 14 (6), 849-851.
- Byrne, D. (1961). The repression-sensitization scale: rationale, reliability and validity. *Journal of Personality*, 29, 334-349.
- Calin, A. (2001). Outcomes research in spondylarthritis: The past and the future. Available on the world wide web: <http://www.rheuma21st.com/archives>
- Calin, A., Garrett, S., Whitelock, H., Kennedy, G., O'Hea, J., Mallorie, P., & Jenkinson, T. (1994). A new approach to defining functional ability in ankylosing spondylitis: The development of the Bath Ankylosing Spondylitis Functional Index. *Journal of Rheumatology*, 21, 2281-5.
- Calin, A., Nakache, J-P., Gueguen, A., Zeidler, H., Mielants, H., & Dougados, M. (1999). Defining disease activity in Ankylosing Spondylitis: is a combination of variables (Bath Ankylosing Spondylitis Disease Activity Index) an appropriate instrument? *Rheumatology*, 26, 975-979.
- Cannon, B., Mulroy, R., Otto, M. W., Rosenbaum, J. F., Fava, M., & Nierenberg, A. A. (1999). Dysfunctional attitudes and poor problem solving skills predict hopelessness in major depression. *Journal of Affective Disorders*, 55, 45-49.
- Cannon, W. B. (1932). *The wisdom of the body*. New York: Norton
- Carney, R. M., McMahan, P., Freedland, K. E., Becker, L., Krantz, D. S. et al (1998). Reproducibility of mental stress-induced myocardial ischemia in the psychophysiological investigations of myocardial ischemia (PIMI). *Psychosomatic Medicine*, 60, 64-70.
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4, 92-100.
- Carver, C. S., Scheier, M. F. & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, 54, 267-283.

Carver, C. S., Scheier, M. F., & Pozo, C. (1992). Conceptualizing the process of coping with health problems. In H. S. Friedman (Ed.), *Hostility, coping, and health* (pp. 167-187). Washington, DC: American Psychological Association.

Carver, C. W., & Scheier, M. S. (1993). Vigilant and avoidant coping in two patient samples. In Krohne, H. W. (Ed). (1993). *Attention and avoidance: Strategies in coping with aversiveness*. (pp. 295-319). Seattle: Hogrefe & Huber.

Carver, C., & Gaines, J. (1987). Optimism, pessimism, and post-partum depression. *Cognitive Therapy and Research*, 11, 449-462.

Caspi, A., Begg, D., Dickson, N., Harrington, H., Langley, J., Moffitt, T. E., & Silva, P. A. (1997) Personality differences predict health-risk behaviors in young adulthood: Evidence from a longitudinal study. *Journal of Personality and Social Psychology*, 73, 1052-1063.

Cassens, G., Roffman, M., Kuruc, A., Orsulak, P. J., & Schildkraut, J. J. (1980). Alterations in brain norepinephrine metabolism induced by environmental stimuli previously paired with inescapable shock. *Science*, 209, 1138-1140.

Cassiday, K. L., McNally, R. J., & Zeitlin, S. B. (1992). Cognitive processing of trauma cues in rape victims with post-traumatic stress disorder. *Cognitive Therapy and Research*, 16, 283-295.

Catley, D., Kaell, A. T., Kirshbaum, C., & Stone, A. A. (2000). A naturalistic evaluation of cortisol secretion in persons with fibromyalgia and rheumatoid arthritis. *Arthritis Care and Research*, 13, 51-61.

Cattell, R. B. (1978). Matched determiners vs. factor invariance: A reply to Korth. *Multivariate Behavioral Research*, 13, 431-448.

Clark, D.M., Ball, S. & Pape, D. (1991). An experimental investigation of thought suppression. *Behaviour Research and Therapy*, 29 (3), 253-257.

Clover, R. D., Abell, T., Becker, L. A., Crawford, S., & Ramsey, C. N. (1989). Family functioning and stress and predictors of influenza-B infection. *The Journal of Family Practice*, 28, 535-539.

Cohen, F. (1987). Measurement of coping. In S. V. Kasl and C. L. Cooper (Eds.), *Stress and health: issues in research methodology* (pp.283-305). New York: Wiley.

Cohen, F., & Lazarus, R. (1979). Coping with the stresses of illness. In G. C. Stone, F. Cohen, & N. E. Adler (eds.) *Health psychology: A handbook* (pp217-254). San Francisco: Jossey-Bass.

Cohen, H., Benjamin, J., Geva, A. B., Matar, M. A., Kaplan, Z., & Kotler, M. (2000). Autonomic dysregulation in panic disorder and post-traumatic stress disorder: application of power-spectrum analysis of heart-rate variability at rest and in response to recollection of trauma or panic attacks. *Psychiatry Research*, 96, 1-13.

Cohen, S., & Edwards, J. R. (1989). Personality characteristics as moderators of the relationship between stress and disorder. In R. W. J. Neufeld (Ed.), *Advances in the investigation of psychological stress* (pp. 235-283). New York, Wiley.

Cohen, S., & Hoberman, H. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology*, 13, 99-125.

Cohen, S., & Williamson, G. M. (1991). Stress and Infectious Disease in Humans. *Psychological Bulletin*, 109, 5-24.

Cohen, S., Doyle, W. J., Skoner, D. P., Fireman, P., Gwaltney, J. M., & Newsom, J. T. (1995). State and trait negative affect as predictors of objective and subjective symptoms of respiratory viral infections. *Journal of Personality and Social Psychology*, 68, 159-169.

Cohen, S., Mermelstein, R., Kamarck, T., & Hoberman, H. (1985). Measuring the functional components of social support. In I. G. Sarason & B. R. Sarason (Eds.), *Social support: Theory, research, and application*. The Hague, Holland: Martinus Nijhoff.

Cohen, S., Tyrell, D. A. J. & Smith, A. P. (1993). Negative life events, perceived stress, negative affect, and susceptibility to the common cold. *Journal of Personality and Social Psychology*, 64, 131-140.

Cohen, S., Tyrell, D. A. J., & Smith, A. P. (1991). Psychosocial stress and susceptibility to the common cold. *N. Engl. J. Med.*, 352, 606-12.

Cole, S. W., Kemeny, M., Taylor, S. E., Visscher, B., & Fahey, J. (1996). Accelerated course of human immunodeficiency virus infection in gay men who conceal their homosexual identity. *Psychosomatic Medicine*, 52, 496-510.

Collins, A., & Frankenhauser, M. (1978). Stress responses in male and female engineering students. *Journal of Human Stress*, 4, 43-48.

Compas, B. E., Barnez, G. A., Malcarne, V., & Worsham, N. (1991). Perceived control and coping with stress: A developmental perspective. *Journal of Social Issues*, 47, 23-34.

Contrada, R. J. (1989). Type A Behavior, Personality Hardiness, and Cardiovascular Responses to Stress, *Journal of Personality and Social Psychology*, 57, 895-903.

Cook, M. L., & Peterson, C. (1986). Depressive irrationality. *Cognitive Therapy and Research*, 10, 293-298.

Cosway, R., Endler, N. S., Sadler, A. J., & Deary, I. J. (2000). The Coping Inventory for Stressful Situations (CISS): Factorial structure and associations with personality traits and psychological health. *Journal of Applied Biobehavioral Research*, 5, 121-143.

Cousins, N. (1976). Anatomy of an illness (as perceived by the patient). *New England Journal of Medicine*, 295, 1458-1463.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334

Cronkite, R. C., & Moos, R. H. (1984). The role of predisposing and moderating factors in the stress-illness relationship. *Journal of Health and Social Behavior*, 25, 372-393.

Crowne, D. P., & Marlowe, D. (1964). *The approval motive: Studies in evaluative dependence*. New York: Wiley.

Dalgleish, T. (1994). The appraisal of threat and the process of selective attention in clinical and sub-clinical anxiety states: Theoretical issues. *Clinical Psychology and Psychotherapy*, 1, 153-164.

Davidson, L. M., & Baum, A. (1986). Chronic stress and posttraumatic stress disorders. *Journal of Consulting and Clinical Psychology*, 54, 303-308.

Davidson, L., Vandogen, R., Rouse, IL., Beilin, L. J., & Tunney, A. (1984). Sex-related differences in resting and stimulated plasma noradrenaline and adrenaline. *Clinical Science*, 67, 347-352.

Davis, P. (1990). Repression and the inaccessibility of emotional memories. In J. L. Singer (Ed.) *Repression and dissociation: implications for personality, psychopathology and health* (pp. 387-403). Chicago, IL: University of Chicago Press

De Kloet, E.R., Oitzl, M. S., & Joels, M. (1999). Stress and cognition: Are corticosteroids good or bad guys? *Trends in Neurosciences*, 22(10), 422-426.

De Ridder, D. T. D. (1997). What is wrong with coping assessment? A review of conceptual and methodological issues. *Psychology and Health*, 12, 417-431.

De Ridder, D. T. D., & Schreurs, K. M. G. (1994). *Coping en Sociale Steun van Chronisch Zieken [Coping and social support in patients with chronic diseases]*. Report for the Dutch Commission for Chronic Diseases. Utrecht: Section of Clinical and Health Psychology.

De Ridder, D. T. D., & Schreurs, K. M. G. (2001). Developing interventions for chronically ill patients: Is coping a helpful concept? *Clinical Psychology Review*, 21, 205-240.

Dell Chaiae, R., De Cesare, G., Biondi, M., & Pancheri, P. (1990). Psychoneuroendocrine reactivity in the aged: A controlled study. In Nappi, G (ed.) *Stress and the Aging Brain*. New York, Raver Press.

Devins, G. M., & Binik, Y. M. (1996). Facilitating coping with chronic illness. In M. Zeidner, & N.S. Endler (Eds). *Handbook of coping: Theory, research, applications*. (pp.6410-697). Oxford, England: John Wiley

Dougados, M. (1995). Diagnostic features of ankylosing spondylitis. *British Journal of Rheumatology*, 34, 301-303.

Dunkel-Schetter, C., Feinstein, L. G., Taylor, S. E., & Falke, R. L. (1992). Patterns of coping with cancer. *Health Psychology, 11*, 79-87.

Dykema, J., Bergbower, K., Peterson, C., (1995). Pessimistic explanatory style, stress, and illness. *Journal-of-Social-and-Clinical-Psychology, 14*, 357-371

Eckenrode, J. & Wethington, E. (1990). The Process of Mobilizing Social Support. In Eckenrode J (Ed.). *Personal Relationships and Social Support*. New York: Plenum.

Edelstein, M. (1988) *Contaminated Communities: The Social and Psychological Impacts of Residential Toxic Exposure*, Boulder, CO: Westview Press.

Edmunds L, Elswood J, Calin A (1991). New light on uveitis in ankylosing spondylitis. *Journal of Rheumatology, 18*, 50-2

Egbert, L. D., Battit, G. E., Welsh, C. E., & Bartlett, M. K. (1964). Reduction of postoperative pain by encouragement and instruction of patients. A study of doctor-patient rapport. *New England Journal of Medicine, 270*, 825-827.

Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy, 38* (4), 319-345.

Ehlers, A., & Steil, R. (1995). Maintenance of intrusive memories in posttraumatic stress disorder: A cognitive approach. *Behavioural and Cognitive Psychotherapy, 23*(3), 217-249.

Eichenbaum, H., Otto, T., & Cohen, N. J. (1992). The hippocampus: What does it do? *Behavioral and Neural Biology, 57*, 2-36.

Elenkov, I. J., & Chrousos, G. P. (1999). Stress hormones, Th1/ Th2 patterns, Pro/ anti-inflammatory cytokines and susceptibility to disease. *Trends in Endocrinology and Metabolism, 10*, 359-368.

Elenkov, I. J., Hoffman, J., & Wilder, R. L. (1997). Does differential neuroendocrine control of cytokine production govern the expression of autoimmune diseases in pregnancy and the postpartum period? *Molecular Medicine Today, 3*, 379-383.

Endler, N. S., & Parker, J. D. A. (1990). Multidimensional assessment of coping: a critical evaluation. *Journal of Personality and Social Psychology, 58*, 844-854

Epstein, S., & Meier, P. (1989) Constructive thinking: A broad coping variable with specific components. *Journal of Personality and Social Psychology, 57*, 332-350.

Esterling, B., Antoni, M. H., Fletcher, M. A., Margulies, S., & Schneiderman, N. (1994). Emotional disclosure through writing or speaking modulates latent Epstein-Barr virus reactivation. *Journal of Consulting and Clinical Psychology, 62*, 130-140.

Evans, G.W., Jacobs, S.V., & Frager, N. B. (1982). Adaptation to air pollution. *Journal of Environmental Psychology, 2*(2), 99-108.

Evans, P. K. (1993). Self-esteem of young children in a camp situation. *Dissertation Abstracts International, 53*, 4197-4198.

- Everson, S. A., Goldberg, D. E., Kaplan, G. A., & Cohen, R. D. (1996). Hopelessness and risk of mortality and incidence of myocardial infarction and cancer. *Psychosomatic-Medicine*, 58, 113-121
- Eysenck, M. W. (1982). *Attention and arousal: Cognition and performance*. Berlin: Springer.
- Eysenck, M. W. (1992). *Anxiety: The cognitive perspective*. Hove, UK: Lawrence Erlbaum Associates.
- Eysenck, M. W., MacLeod, C., & Mathews, A. (1987). Cognitive functioning and anxiety. *Psychological Research*, 49, 189-195.
- Faucheux, B. A., Bourliere, F., Baulon, A., & Dupuis, C. (1981). The effects of psychosocial stress on urinary excretion of adrenaline and noradrenaline in 51 to 55 and 71 to 47 year old men. *Gerontology*, 27, 313-325.
- Feifel, H., & Strack, S. (1989). Coping with conflict situations: Middle-aged and elderly men. *Psychology and Aging*, 4(1), 26-33.
- Feifel, H., Strack, S., & Nagy, V. T. (1987b). Degree of life threat and differential use of coping modes. *Journal of Psychosomatic Research*, 31, 91-99.
- Felton, B. J., & Revenson, T. A. (1987). Age differences in coping with chronic illness. *Psychology and Aging*, 2, 164-170.
- Ferguson, E., Matthews, G., & Cox T. (1999). The appraisal of life events (ALE) scale: Reliability, and validity. *British Journal of Health Psychology*, 4, 97-116.
- Fleishman, J. A. (1984). Personality characteristics and coping patterns. *Journal-of-Health-and-Social-Behavior*, 25, 229-244
- Foa, E. B., & Riggs, D. S. (1993). Post-traumatic stress disorder in rape victims. In J. Oldham, M.B. Riba & A. Tasman (Eds.), *review of psychiatry* (Vol 12). Washington DC: American Psychiatric Press.
- Foa, E. B., & Rothbaum, B. O. (1998). *Treating the trauma of rape. Cognitive behaviour therapy for PTSD*. Ney York: Guilford.
- Foa, E. B., Molnar, C., & Cashman, L. (1995). Change in rape narratives during exposure therapy for posttraumatic stress disorder. *Journal of Traumatic Stress*, 8, 675-690.
- Foa, E. B., Riggs, D. S., & Gershuny, B. S. (1995). Arousal, numbing and intrusion: symptom-structure of PTSD following assault. *The American Journal of Psychiatry*, 152, 116-120.
- Foa, E. B., Rothbaum, B. O., Riggs, D. S., & Murdock, T. B. (1991). Treatment of posttraumatic stress disorder in rape victims: A comparison between cognitive-behavioural procedures and counselling. *Journal of Consulting and Clinical Psychology*, 59, 715-723.

- Folkman, S. (1984). Personal control and coping processes: A theoretical analysis. *Journal of Personality and Social Psychology*, 46, 839-852.
- Folkman, S. (1997). Positive psychological states and coping with severe stress. *Social Science and Medicine*, 45, 1207-1221.
- Folkman, S., & Lazarus, R. S. (1980). An analysis of coping in a middle-aged community sample. *Journal of Health and Social Behavior*, 21, 219-239.
- Folkman, S., & Lazarus, R. S. (1985). If it changes it must be a process: Study of emotion and coping during three stages of a college examination. *Journal of Personality and Social Psychology*, 48, 150-170.
- Folkman, S., & Lazarus, R. S. (1988). *Manual for the ways of coping questionnaire*. Palo Alto. Consulting Psychologists Press
- Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: Cognitive appraisal, coping, and encounter outcomes. *Journal of Personality and Social Psychology*, 50, 992-1003.
- Folkman, S., Lazarus, R. S., Pimley, S., & Novacek, J. (1987). Age differences in stress and coping processes. *Psychology and Aging*, 2, 171-184.
- Francis, M. E. & Pennebaker, J. W. (1992). Putting stress into words: Writing about personal upheavals and health. *American Journal of Health Promotion*, 6, 280-287.
- Francis, V., Korsch, B. & Morris, M. (1969). Gaps in doctor-patient communication: Patients' response to medical advice. *New England Journal of Medicine*, 280, 535-540.
- Frankenhauser, M., Rauste von Wright, M., Collins, A., von Wright, J., Sedvall, G., & Swahn, C G. (1978). Sex differences in psychoneuroendocrine reactions to examination stress. *Psychosomatic Medicine*, 40, 334-343.
- Frederickson, B. L. (2000). Cultivating positive emotions to optimise health and well-being. *Prevention and Treatment*, 3, Available on the world wide web: <http://journals.apa.org/prevention>.
- Frenkel-Brunswik, E. (1949). Intolerance of ambiguity as an emotional and perceptual personality variable. *Journal of Personality*, 46, 103-143.
- Frankenhaeuser, M., (1982). Challenge-control interaction as reflected in sympathetic-adrenal and pituitary-adrenal activity: comparison between the sexes. *Scandinavian Journal of Psychology*, 1, 158-164.
- Frankenhaeuser, M., (1986). A psychobiological framework for research on human stress and coping. In: Appley, M., Trumbull, R. (Eds), *Dynamics of Stress*. Plenum Press, New York, pp. 101-116.
- Freud, S. (1926). *Hemmung, Symptom und Angst*, Internationaler Psychoanalytischer Verlag, Leipzig. In: Freud, S. (Ed.), *Gesammelte Werke*, Bd. 1. Imago, London, pp. 111-205.

Friedman, M. & Rosenman, J.D. (1959). Association of specific behaviour patterns with blood and cardiovascular findings. *Journal of the American Medical Association*, 1959, 1289-1296.

Friedman, S. B., Mason, J. W., & Hamburg, D. A. (1963). Urinary 17-Hydroxycorticosteroid levels in parents of children with neoplastic disease. A study of chronic psychological stress. *Psychosomatic Medicine*, 25, 364-367.

Frommberger, U., Stieglitz, R., Straum, S., Nyberg, E., Schlickewei, W., Kuner, E., & Berger, M. (1999). The concept of "sense of coherence" and the development of posttraumatic stress disorder in traffic accident victims. *Journal of Psychosomatic Research*, 46, 343-348.

Gard, D., Edwards, P. W., Harris, J., & McCormack, G. (1988). The sensitizing effects of pretreatment measures on cancer chemotherapy, nausea, and vomiting. *Journal of Consulting and Clinical Psychology*, 56, 80-84.

Garmezy, N. (1983). Stressors of Childhood. In N. Garmezy & M. Rutter (Eds.), *Stress, coping, and development in children* (pp. 43-84). New York: McGraw-Hill.

Garrett, S. L., Jenkinson, T. R., Whitelock, H. C., Kennedy, L. G., Gaisford, P. & Calin, A. (1994). A new approach to defining disease status in ankylosing spondylitis: The Bath Ankylosing Spondylitis Disease Activity Index (BASDAI). *Journal of Rheumatology*, 21, 2286-91.

Geisser, M. E., Robinson, M. E., & Riley, J. L. (1999). Pain beliefs, coping and adjustment to chronic pain: let's focus more on the negative. *Pain Forum*, 8, 161-168.

Geisser, M. E., Robinson, M. E., Keefe, F. J., & Weiner, M. L. (1994). Catastrophizing, depression and the sensory, affective and evaluative aspects of chronic pain. *Pain*, 59, 79-83.

General Medical Council (1998) *Maintaining Good Medical Practice*. London

Glaser, R., Kiecolt-Glaser, J. K., Bonneau, R. H., Malarkey, W., Kennedy, S., & Hughest, J. (1992). Stress-induced modulation of the immune response to recombinant hepatitis B vaccine. *Psychosomatic Medicine*, 54, 22-29.

Glass, D. C. (1977). *Behavior patterns, stress, and coronary disease*. Hillsdale, NJ: Erlbaum.

Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. De Fruyt, & F. Ostendorf (Eds.), *Personality Psychology in Europe*, Vol. 7 (pp. 7-28). Tilburg, The Netherlands: Tilburg University Press.

Goldmeier, D., & Johnson, A. (1982). Does psychiatric illness affect the recurrence rate of genital herpes? *American Journal of Epidemiology*, 124, 389-401.

Goodman, E., Chesney, M. A. & Tipton, A. C. (1995). Relationship of optimism, knowledge attitudes and beliefs to use of HIV antibody testing by at-risk female adolescents, *Psychosomatic Medicine*, 57, 541-546.

- Graham, N. M. S., Douglas, R. B., & Ryan, P. (1986). Stress and acute respiratory infection. *American Journal of Epidemiology*, 124, 389-401.
- Gran, J. T. & Skomsvoll, J. F. (1997). The outcome of ankylosing spondylitis: A study of 100 patients. *British Journal of Rheumatology*, 36, 766-771.
- Gran, J. T., & Husby, G. (1993). The epidemiology of ankylosing spondylitis. *Seminars on Arthritis and Rheumatism*, 22, 319-334.
- Grant, L. D., Long, B., & Willms, J. D. (2002). *Journal of Health Psychology*, 7, 545-563.
- Greenberg, M. A., Wortman, C. B. & Stone, A. A. (1996). Health and psychological effects of emotional disclosure: A test of the inhibition-confrontation approach. *Journal of Personality and Social Psychology*, 71, 588-602.
- Gruen, R. J., Ehrlich, J., Silva, R. S., Schweitzer, J.W., & Freidhoff, A. J. (2000). Cognitive factors and stress-induced changes in catecholamine biochemistry, *Psychiatry Research*, 93. 55-61.
- Gurvits, T. V., Shenton, M.E., Hokama, H. et al (1996). Magnetic resonance imaging study of hippocampal volume in chronic, combat-related post-traumatic stress disorder. *Biological Psychiatry* 40, 1091-1099
- Haan, N (1977). *Coping and defending: processes of self-environment organization*. New York: Academic Press.
- Harkness, J., Richter, M., Panyi, G., Van de Petter, K., Unger, A., Pownall, R., & Gaddawi, M. (1982). Circadian variation in disease activity in rheumatoid arthritis. *British Medical Journal*, 284, 551-553.
- Harvey, A. G., & Bryant, R. A. (1998). Attempted thought suppression in acute stress disorder. *Behaviour Research and Therapy*, 36, 583-590.
- Harvey, A. G., Bryant, R. A., & Rapee, R. M. (1996). Preconscious processing of threat in posttraumatic stress disorder. *Cognitive Therapy and Research*, 20, 613-623.
- Haynes, S.G., Feinleib, M., Kannel, W.B. (1980). The relationship of psychosocial factors to coronary heart disease in the Framingham study III. *American Journal of Epidemiology*, 111, 37-58.
- Heim, E. (1988). Coping and Adaptivitat: Gibt es geeignetes oder ungeignetes coping? [Coping and adaptation: Is there something as adaptive or maladaptive coping?]. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, 38, 8-18.
- Hewitt, P. L., & Flett, G. L. (1996). Personality traits and the coping process. In M. Zeidner, & N.S. Endler (Eds). *Handbook of coping: Theory, research, applications*. (pp. 410-433). Oxford, England: John Wiley
- Higgins, R. L., & Leibowitz, R. Q. (1999). Reality negotiation and coping: The social construction of adaptive outcomes. In C. R. Snyder (Ed.) *Coping: The Psychology of What Works*. (pp. 20-49). Oxford University Press.

Hill, A., Niven, C. A., & Knussen, C. (1995). The role of coping in adjustment to phantom limb pain. *Pain*, 62, 79-86.

Holahan, C. J., & Moos, R. H. (1985). Life stress and health: Personality, coping, and family support in stress resistance. *Journal of Personality and Social Psychology*, 49, 739-747.

Holahan, C. J., & Moos, R. H. (1986). Personality, coping and family resources in stress resistance: A longitudinal analysis. *Journal of Personality and Social Psychology*, 52, 946-955.

Holahan, C. J., & Moos, R. H. (1987). Personal and contextual determinants of coping strategies. *Journal of Personality and Social Psychology*, 58, 909-917.

Holahan, C. J., & Moos, R. H. (1990). Life stressors, resistance factors, and improved psychological functioning: An extension of the stress resistance paradigm. *Journal of Personality and Social Psychology*, 58, 909-917.

Huether, G. (1996). The central adaptation syndrome: Psychosocial stress as a trigger for adaptive modifications of brain structure and brain function. *Progress in Neurobiology*, 48, 569-612.

Irion, J. C., & Blanchard-Fields, F. (1987). A cross-sectional comparison of adaptive coping in adulthood. *Journal of Gerontology*, 42, 502-504.

Jacobs, S., Mason, J., Kosten, T. R., Wahby, V., Kasl, S. V., & Ostfeld, A. (1987). Bereavement and catecholamines. *Journal of Psychosomatic Research*, 30, 496-498.

Janoff-Bulman, R., & Frieze, I. (1983). A theoretical perspective for understanding reactions to victimization. *Journal of Social Issues*, 39, 1-17.

Jensen, M. P., Turner, J. A., & Romano, J. M. (1992). Chronic pain coping measures: individual vs composite scores. *Pain*, 51, 273-280.

Jensen, M. P., Turner, J. A., Romano, J. M., & Karoly, P. (1991b). Coping with chronic pain: A critical review of the literature. *Pain*, 47, 249-283.

Johnson, J. E. (1984). Psychological interventions and coping with surgery. In A. Baum, S. E. Taylor & J. E. Singer (Eds) *Communicating with Medical Patients*. London: Sage, 264-251

Jones, S. D., Steiner, A., Garrett, S. L., & Calin, A. (1996). The Bath Ankylosing Spondylitis Patient Global Score (BAS-G). *British Journal of Rheumatology*, 35, 66-71.

Kaiser, J., Hinton, J.W., Krohne, H.W., Stewart, R., & Burton (1994). Coping dispositions and physiological recovery from a speech preparation stressor. *Personality and Individual Differences*, 19, 1-11.

Kanner, A. C., Coyne, J. C., Schaefer, C., & Lazarus, R. S. (1981). Comparison of two modes of stress measurement: Daily hassles and uplifts versus major life events. *Journal of Behavioral Medicine*, 4, 1-39.

Karsh, B. M., Gozzi, E. K., & Francis, V. (1968). Gaps in doctor-patient communication: 1. Doctor-patient interaction and patient satisfaction. *Pediatrics*, 42, 855-870

Kaspi, S. P., McNally, R. J., & Amir, N. (1995). Cognitive processing of emotional information in posttraumatic stress disorder. *Cognitive Therapy and Research*, 19, 433-444.

Katcher, A.H., Brightman, V. J., Luborsky, L., & Ship, I. (1973). Prediction of the incidence of recurrent herpes labialis and systemic illness from psychological measures. *Journal of Dental Research*, 52, 49-58.

Keefe, F., Brown, G., Wallson, K., & Caldwell, D. (1989) Coping with rheumatoid arthritis pain: Catastrophizing as a maladaptive strategy. *Pain*, 37, 51-56.

Keefe, F., Caldwell, D. S., Queen, K. T., Gil, K. M., Martinez, S., Crisson, J. E., Ogden, W., & Nunley, J. (1987). Pain coping strategies in osteoarthritis patients. *Journal of Consulting and Clinical Psychology*, 55, 208-212.

Kelly, J. E., Lumley, M. A., & Leisen, J. C. (1997). Health effects of emotional disclosure in rheumatoid arthritis patients. *Health Psychology*, 16, 331-340.

Kiecolt-Glaser, J., Dura, J., Speicher, C., Trask, O., & Glaser, R. (1991). Spousal caregivers of dementia victims: Longitudinal changes in immunity and health. *Psychosomatic Medicine*, 53, 345-362.

Kiecolt-Glaser, J. K., Malarkey, W. B., Chee, M., Newton, T., Cacioppo, J.T., Mao, H., & Glaser, R. (1993). Negative behavior during marital conflict is associated with immunological down-regulation. *Psychosomatic Medicine*, 55, 395-409.

Kiecolt-Glaser, J. K., Malarkey, W. B., Cacioppo, J.T., & Glaser, R. (1994). Stressful personal relationships: Endocrine and immune function. In R. Glaser & J. K. Kiecolt-Glaser (Eds.), *Handbook of human stress and immunity*, pp 321-339. San Diego, CA: Academic Press.

Kiecolt-Glaser, J. K., Newton, T., Cacioppo, J.T., MacCallum, R. C., Glaser, R. & Malarkey, W. B., (1996). Marital conflict and endocrine function: Are men really more physiologically affected than women? *Journal of Consulting and Clinical Psychology*, 64, 324-332.

Kiecolt-Glaser, J. K., Glaser, R., Newton, T., Cacioppo, J.T., MacCallum, R. C., Snydersmith, M., Kim, C & Malarkey, W. B., (1997). Marital conflict in older adults: Endocrinological and immunological correlates. *Psychosomatic Medicine*, 59, 339-349.

Kiecolt-Glaser, J. K., McGuire, L., Robles, T. F., & Glaser, R. (2002). Psychoneuroimmunology and psychosomatic medicine: Back to the future. *Psychosomatic Medicine*, 64, 15-28.

Kiecolt-Glaser, J. K., McGuire, L., Robles, T.F., & Glaser, R. (2002). Emotions, morbidity, and mortality: New perspectives from psychoneuroimmunology. *Annual Review of Psychology*, 53 (1), 83-107.

Kino, T., Kopp, J. B., & Chrousos, G. P. (2000). Glucocorticoids suppress human immunodeficiency virus type-1 long terminal repeat activity in a cell type-specific, glucocorticoid receptor-mediated fashion: direct protective effects at variance with clinical phenomenology, *The Journal of Steroid Biochemistry and Molecular Biology* 75, 283-290

Kirschbaum, C., & Hellhammer, D. H. (2000). Salivary cortisol. *Encyclopedia of Stress*, 3, 379-383.

Kirschbaum, C., Pirke, K. M. & Hellhammer, D. H. (1995). Preliminary evidence for reduced cortisol responsivity to psychological stress in women using oral contraceptive medication. *Psychoneuroendocrinology*, 20, 509-514.

Kirschbaum, C., Strasburger, C. J., & Langkrar, J. (1993). Attenuated cortisol response to psychological stress but not to corticotropin-releasing hormone or bicycle ergometry in young habitual smokers. *Pharmacology, Biochemistry and Behavior*, 44, 527-531.

Kirschbaum, C., Wolf, O. T., May, M., Wippich, W. & Hellhammer, D. H. (1996). Stress and treatment-induced elevations of cortisol levels associated with impaired declarative memory in healthy adults. *Life Sciences*, 58, 1475-1483.

Kirschbaum, C., Wust, S., & Hellhammer, D (1992). Consistent sex differences in cortisol responses to psychological stress. *Psychosomatic Medicine*, 54, 648-657.

Kline, P. (1999). *An Easy Guide to Factor Analysis*. London: Routledge.

Kobasa, S. C. (1979). Stressful life events and health: An inquiry into hardiness. *Journal of Personality and Social Psychology*, 37, 1-11.

Kobasa, S. C. (1982). Commitment and coping in stress resistance among lawyers. *Journal of Personality and Social Psychology*, 42, 707-717.

Kobasa, S. C., & Puccetti, M. C. (1983). Personality and social resources in stress resistance. *Journal of Personality and Social Psychology*, 45, 839-850.

Kobasa, S. C., Maddi, S. R., & Courington, S. (1981). Personality and constitution as mediators in the stress-illness relationship, *Journal of Health and Social Behavior*, 22, 368-378.

Kobasa, S. C., Maddi, S. R., & Kahn, S. (1982). Hardiness and health: A prospective study. *Journal of Personality and Social Psychology*, 42, 168-172.

Korf, J., Aghajanian, G. K, & Roth, R. H. (1973). Increased turnover of norepinephrine in the rat cerebral cortex during stress: role of the locus coeruleus, *Neuropharmacology*, 12, 933-938.

Koss, M. P., Figuerdo, A. J., Bell, I., Tharan, M., & Tromp, S. (1996). Traumatic memory characteristics: a cross-validated mediational mode of response to rape among employed women. *Journal of Abnormal Psychology*, 105, 421-432.

Krippendorff, K. (1969). Models of messages: three prototypes. In G. Gerbner, O.R. Holsti, K. Krippendorff, G. J. Paisly & Ph.J. Stone (Eds.), *The analysis of communication content*. New York: Wiley.

Krohne, H. W. (1986). Coping with stress: Dispositions, strategies and the problem of measurement. In M. H. Appley & R. Trumbull (Eds.), *Dynamics of stress, physiological, psychological, and social perspectives* (pp. 209-234). New York: Plenum.

Krohne, H. W. (1989). The concept of coping modes: Relating cognitive person variables to actual coping behavior. *Advances in Behaviour research and Therapy*, 11, 235-248.

Krohne, H. W. (1990). Personality as a mediator between objective events and their subjective representation. *Psychological Inquiry*, 1, 26-29.

Krohne, H. W. (1993). Vigilance and cognitive avoidance as concepts in coping research. In H. W. Krohne (Ed.), *Attention and Avoidance: Strategies in coping with aversiveness* (pp. 19-50). Seattle, WA: Hogrefe & Huber.

Krohne, H. W., & Egloff, B. (in press). Vigilant and avoidant coping: Theory and measurement. In C. D. Spielberger, & I.G. Sarason. *Stress and Emotion*, Vol. 17. Washington D.C. Taylor and Francis.

Krohne, H. W., Schumacher, A., & Egloff, B. (1992). Das Angstbewältigungs-Inventar (ABI) [The Mainz Coping Inventory (MCI)] (Mainzer Berichte zur Persönlichkeits-forschung). Mainz: Johannes-Gutenberg-Universität, Psychologisches Institut.

Krohne, H. W., Slangen, K., & Kleemann, P. P (1996). Coping variables as predictors of perioperative emotional states and adjustment. *Psychology and Health*, 11, 315-330

Ku, D. N. (1997). Blood flow in arteries. *Annual Review of Fluid Mechanisms*, 29, 399-434

Kubzansky, L. D., Sparrow, D., Vokonas, P., & Kawachi, I. (2001). Is the Glass Half Empty or Half Full? A Prospective Study of Optimism and Coronary Heart Disease in the Normative Aging Study. *Psychosomatic Medicine*, 63, 910-916.

Kudielka, B. M., Hellhammer, D. H., & Kirshbaum, C. (2000). Sex differences in human stress response. *Encyclopedia of Stress*, 3, 424-429.

Kverno, K. S. (2000). Trait anxiety influences on judgments of frequency and recall. *Personality and Individual Differences*, 29, 395-404.

Ladouceur, R., Gosselin, P., & Dugas, M. J. (2000). Experimental manipulation of intolerance of uncertainty: a study of a theoretical model of worry. *Behaviour Research and Therapy* 38, 933-941.

Langer, E. J., Janis, I. L., & Wolfer, J. A. (1975). Reduction of psychological stress in surgical patients. *Journal of Experimental Social Psychology*, 11, 155-165.

Lazarus and Folkman (1984b). Coping and adaptation. In W. D. Gentry (Ed.), *Handbook of behavioral medicine* (pp.282-325). New York: Guilford.

Lazarus, R. S. (1975). A cognitively oriented psychologist looks at biofeedback. *American Psychologist*, 30, 553-561.

Lazarus, R. S. (1982). Thoughts on the relations between emotion and cognition. *American Psychologist*, 37, 1019-1024

Lazarus, R. S. (1993a). Coping theory and research: Past, present and future. *Psychosomatic Medicine*, 55, 234-247.

Lazarus, R. S. (1993b). From psychological stress to the emotions: A history of changing outlooks. In *Annual Review of psychology*, (pp. 1-21). Palo Alto: Annual Reviews.

Lazarus, R. S. (1999). *Stress and Emotion, A New Synthesis*. New York: Springer

Lazarus, R. S., & Folkman, S. (1984a). *Stress, appraisal, and coping*. New York: Springer.

Lazarus, R. S., & Launier, R. (1978). Stress-related transactions between person and environment. In L. Pervin & M. Lewis (Eds.). *Perspectives in international psychology* (pp. 287-327). New York: Plenum.

Lechin, F., van der Dijks, B., Lechin, A., Orozco, B., Lechin, M., Baez, S. et al. (1994). Plasma neurotransmitters and cortisol in chronic illness: role of stress. *Journal of Medicine* 1994, 25, 181-92

Lefcourt, H. M. (1980). Locus of control and coping with life's events. In E. Staub (Ed.), *Personality: Basic issues and current research*. Englewood Cliffs, NJ: Prentice-Hall.

Lepore & Evans (1996). Coping with multiple stressors in the environment. In M. Zeidner and N. S. Endler (Eds.). *Handbook of coping: theory, research, applications*. New York: Wiley.

Lepore, S. J. (1997). Expressive writing moderates the relation between intrusive thoughts and depressive symptoms. *Journal of Personality and Social Psychology*, 73, 1030-1037.

Lerman, C., Rimer, B., Blumberg, B., Cristinzio, S., Engstrom, P. F., MacElwee, N., O'Conner, K. & Seay, J. (1990). Effects of coping style and relaxation on cancer chemotherapy side effects and emotional responses. *Cancer Nursing*, 13, 308-315

Ley H. (1972) Primacy, rated importance, and the recall of medical statements. *Journal of Health and Social Behavior*, 13, 311-7.

Lindheim, S. R., Legro, R. S., Bernstein, L., Stanczyk, F. Z., Vijod, M. A., Presser, S. C., & Lobo, R. A. (1992). Behavioral stress responses in premenopausal and postmenopausal women and the effects of estrogen. *American Journal of Obstetrics and Gynecology*, 167, 1831-1836.

- Litt, M., Tennen, H., Affleck, G., & Klock, S. (1992). Coping and cognitive factors in adaptation to in-vitro fertilization failure. *Journal of Behavioral Medicine*, 15, 119-126.
- Lovallo, W. R., Pincomb, G. A., Sung, B. H., & Wilson, M. F. (1993). Impedance cardiography used to assess patterns of cardiovascular response to behavioral stressors. *Biological Psychology*, 36, 97-105.
- Luborsky, L., Mitz, J., Brightman, V. J., & Katcher, A. H. (1976). Herpes simplex virus and moods: A longitudinal study. *Journal of Psychosomatic Research*, 20, 543-548.
- Lundberg, U., Frankenhaeuser, M. (1980). Pituitary-adrenal and sympathetic-adrenal correlates of distress and effort. *Journal of Psychosomatic Research*, 24, 125-130.
- Lupien, S. J., De Leon, M., De Santi, S. et al (1998). Cortisol levels during human aging predict hippocampal atrophy and memory deficits. *Nature Neuroscience*, 1, 69-73
- Lyne, K., & Roger, D. (2000). A psychometric re-assessment of the COPE questionnaire. *Personality and Individual Differences*, 29, 321-335.
- MacLeod, C., & Hagan, R. (1992). Individual differences in selective processing of threatening information, and emotional responses to a stressful life event. *Behaviour Research and Therapy*, 30, 151-161.
- MacLeod, C., & Rutherford, E. (1992). Anxiety and the selective processing of information: mediating roles of awareness, trait and state variables and personal relevance of stimulus information. *Behaviour Research and Therapy*, 30, 479-491.
- Maes, S., Leventhal, H., & De Ridder, D. T. (1996). Coping with chronic disease. In M. Zeidner & N. S. Endler (Eds.), *Handbook of coping: Theory, research, and applications* (pp. 221-251). New York: Wiley.
- Manne, S., & Zautra, A. J. (1989). Spouse criticism and support: Their association with coping and psychological adjustment among women with rheumatoid arthritis. *Journal of Personality and Social Psychology*, 56(4), 608-617.
- Martin, M. Y., Bradley, L. A., Alexander, R. W., Alarcon, G. S., Triana-Alexander, M., Aaron, L. A., & Albers, K. R. (1996). Coping strategies predict disability in patients with primary fibromyalgia. *Pain*, 68, 45-53.
- Martin, P. (1989). Personality and coping in survivors of myocardial infarction. *Journal of Social Behaviour and Personality*, 4, 587-601
- Mason, J. W. (1968). A review of psychoendocrine research on the pituitary-adrenal cortical system. *Psychosomatic Medicine*, 30, 576-607.
- Mason, J. W. (1975). A historical view of the stress field. *J. Hum. Stress*, 1, 22-36.
- Mathews, A., & McLeod, C. (1994). Cognitive approaches to emotion and emotional disorders. *Annual Review of Psychology*, 45, 479-491.

- Mau, W., Zeidler, H., Mau, R., Majewski, A., Freyschmidt, J., Stangel, W, Deicher, H. (1988). Clinical features and prognosis of patients with possible ankylosing spondylitis. Results of a 10-year follow up. *Journal of Rheumatology*, 15, 1109-14.
- Mayne, T.J., O'Leary, A., McCrady, B., Contrada, R., & Labouvie, E. (1997). The differential effects of acute marital distress on emotional, physiological and immune functions in maritally distressed men and women. *Psychology and Health*, 12, 277-288.
- Mayring, P. (2000). Qualitative Content Analysis [28 paragraphs]. Forum Qualitative Social Research [On-line Journal], 1(2). Available at <http://qualitative-research.net/>
- McAdams, DP. (1994a). *The person: an introduction to personality psychology*. Fort Worth: Harcourt Brace.
- McArthur, L. A. (1970). Luck is alive and well in New Haven: A serendipitous finding on perceived control of reinforcement after the draft lottery. *Journal of Personality and Social Psychology*, 16, 316-318.
- McCrae, R. R. (1982). Age differences in the use of coping mechanisms. *Journal of Gerontology*, 37, 454-460.
- McCrae, R. R. (1984). Situational determinants of coping responses: Loss, threat, and challenge. *Journal of Personality and Social Psychology*, 46, 919-928.
- McCrae, R. R. (1989). Age differences and changes in the use of coping mechanisms. *Journal of Gerontology: Psychological Sciences*, 44, 161-169.
- McCrae, R. R., & Costa, P. (1986). Personality, coping and coping effectiveness in an adult sample. *Journal of Personality*, 54, 385-405
- McDermaid, C. & Mior, S. (2000). Ankylosing spondylitis presenting to a chiropractic office: A report of two cases. *Journal of the Canadian Chiropractic Association*, 44, 87-97.
- McEwen, B. S., & Salpolsky, R. M. (1995). Stress and cognitive function. *Current Opinion in Neurobiology*, 5, 205-216.
- McEwen, B. S., & Stellar, E. (1993). Stress and the individual: Mechanisms leading to disease. *Archives of Internal Medicine* 152, 2093-2101
- McEwen, B. S., (1998). Protective and damaging effects of stress mediators. *New England Journal of Medicine*, 338, 171-179.
- McGuigan LE, Hart HH, Gow PJ, Kidd BL, Grigor RR, Moore TE. Employment in Ankylosing Spondylitis. *Annals of the Rheumatic Diseases*, 43, 604-6
- McLarnon, L. D., & Kaloupek, D. G. (1988). Psychological investigation of genital herpes recurrence: Prospective assessment of cognitive-behavioral intervention for a chronic physical disorder. *Health Psychology*, 7, 231-249.

- McNally, R. J. & Ricciardi, J. N. (1996). Suppression of negative and neutral thoughts. *Behavioural and Cognitive Psychotherapy*, 24, 17-25.
- McNally, R. J., Amir, N., & Lipke, H. J. (1996). Subliminal processing of threat cues in posttraumatic stress disorder? *Journal of Anxiety Disorders*, 10, 115-128.
- McNally, R. J., English, G. E., & Lipke, H. J. (1993). Assessment of intrusive cognition in PTSD: Use of the modified Stroop paradigm. *Journal of Traumatic Stress*, 6, 33-41.
- McNally, R. J., Kaspi, S. P., Riemann, B. C., & Zeitlin, S. B. (1990). Selective processing of threat cues in posttraumatic stress disorder. *Journal of Abnormal Psychology*, 99, 398-402.
- McSherry, W. C., & Holm, J. E. (1994). Sense of coherence: Its effects on psychological and physiological processes prior to, during, and after a stressful situation. *Journal of Clinical Psychology*, 50, 476-487.
- Mendolia, M., Moore, J., & Tesser, A. (1996). Dispositional and situational determinants of repression. *Journal of Personality and Social Psychology*, 64, 856-867
- Metalsky, G. I., & Joiner, T. E. (1992). Vulnerability to depressive symptomology: A prospective test of the diathesis-stress and causal mediation components of the hopelessness theory of depression. *Journal of Personality and Social Psychology*, 63, 667-675.
- Metalsky, G. I., Halberstadt, L. J., & Abramson, L. Y. (1987). Vulnerability for depressive mood reactions: toward a more powerful test of the diathesis-stress and causal mediation components of the reformulated theory of depression. *Journal of Personality and Social Psychology*, 52, 386-393.
- Metalsky, G. I., Joiner, T. E., Hardin, T. W., & Abramson, L. Y. (1993). Depressive reactions to failure in a naturalistic setting: a test of the hopelessness and self-esteem theories of depression. *Journal of Abnormal Psychology*, 102, 101-109.
- Miller (1979b) Coping with impending stress: Psychophysiological and cognitive correlates of choice. *Psychophysiology*, 16, 572-581.
- Miller, S. M. (1980). When is a little information a dangerous thing? Coping with stressful events by monitoring vs. blunting. In S. Levine & H. Ursin (Eds.), *Coping and health* (pp. 145-170). New York: Plenum.
- Miller, S. M., & Kirsch, N. (1987). Sex differences in cognitive coping with stress. In R. C. Barnett, G. K. Baruch, & L. Biener (Eds.), *Gender and stress* (pp. 278-307). New York: Free Press.
- Miller, S. M., & Mangan, C. E. (1983). Interacting effects of information and coping style in adapting to gynaecologic stress: Should the doctor tell all? *Journal of Personality and Social Psychology*, 45, 223-236.

- Miller, S. M., Rodoletzs, M., Buzaglo, J., Bales, T., Mangan, C. E., & Sedlacek, T. V. (1995). A dispositional model of adjustment to chronic medical conditions. Paper presented at the Society of Behavioural Medicine Sixteen Annual Scientific Sessions, San Diego, CA.
- Miller, S. M., Shoda, Y., & Hurley, K. (1996). Applying cognitive-social theory to health-protective behavior: Breast self-examination in cancer screening. *Psychological Bulletin*, 119, 70-94.
- Miller, S. M., Summerton, J., & Brody, D. S. (1988). Styles of coping with threat-implications for health. *Journal of Personality and Social Psychology*, 54, 142-148.
- Miller, T.Q., Smith, T.W., Turner, C.W., Guijarro, M.L., & Hallet, A.J. (1996). A meta-analytic review of research on hostility and physical health. *Psychological Bulletin*, 119, 322-48.
- Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics and invariance in personality structure. *Psychological Review*, 102, 246-268.
- Mitchell, R. E., Cronkite, R. C., & Moos, R. H. (1983). Stress, coping, and depression among married couples. *Journal of Abnormal Psychology*, 92, 433-448.
- Mogg, K., Kentish, J., & Bradley, B. P. (1993). Effects of anxiety and awareness color identification latencies of emotional words. *Behaviour, Research and Therapy*, 31, 559-567.
- Moore, B. S., Sherrod, D. R., Liu, T. J. & Underwood, B. (1979). The dispositional shift in attribution over time. *Journal of Experimental and Social Psychology*, 15, 553-569
- Moorey, S., Greer, S., Watson, M., Gorman, C., Rowden, L., Tunmore, R., Robertson, B & Bliss, J. (1991). The factor structure and factor stability of the Hospital Anxiety and Depression Scale in patients with cancer. *British Journal of Psychiatry*, 158, 255-9.
- Moos, R. H. & Schaefer, J. (1984). The crisis of physical illness: An overview and conceptual approach. In R. H. Moos (Ed.), *Coping with physical illness: New directions* (pp 3-25). New York: Plenum Press.
- Moos, R. H., & Schaefer, J. A. (1993). Coping resources and processes: Current concepts and measures. In L. Goldberger & S. Brenitz (Eds.), *Handbook of stress* (pp. 234-257). New York: Free Press.
- Moynihan, J. A. & Ader, R. (1996). Psychoneuroimmunology: animal models of disease. *Psychosomatic Medicine*, 58, 546-558.
- Muris, P., DeJong, A. D., VanZuuren, F. J., Schenmakers, N. (1996). Monitoring-blunting coping styles and cognitive symptoms of dental fear. *European Journal of Personality*, 10, 35-44.

- Muris, P., VanZuuren, F. J., & Merckelbach, H. (1993). Preparation for a frightening picture: Effects of an imposed monitoring and blunting strategy in relation to habitual coping style. *Journal of Anxiety Disorders*, 7, 119-127.
- Myers, L. B., & Brewin, C. R. (1994). Recall of early experience and the repressive coping style. *Journal of Abnormal Psychology*, 103, 288-292.
- Newman, L. S., & Hedberg, D. A. (1999). Repressive coping and the inaccessibility of negative autobiographical memories: converging evidence. *Personality and Individual Differences* 27, 45-53.
- Niebauer, J. & Cooke, J. P. (1996). Cardiovascular effects of exercise: role of endothelial shear stress. *J. Am. Coll. Cardiol.*, 28, 1652-60.
- Niedhammer, I., Goldberg, M., Leclerc, A., David, S. & Landre, M. F. (1998). Psychosocial work environment and cardiovascular risk factors in an occupational cohort in France. *J. Epidemiol. Commun. Health*, 52, 93-100.
- Nolen-Hoeksema, S., Girgus, J. S., & Seligman, M. E. P. (1986). Learned helplessness in children: a longitudinal study of depression, achievement, and explanatory style. *Journal of Personality and Social Psychology*, 51, 435-442.
- Nolen-Hoeksema, S., Girgus, J. S., & Seligman, M. E. P. (1992). Predictors and consequences of childhood depressive symptoms: a 5-year longitudinal study. *Journal of Abnormal Psychology*, 101, 405-422.
- Nolen-Hoeksema, S., Parker, L. E., & Larson, J. (1994). Ruminative coping with depressed mood following loss. *Journal of Personality and Social Psychology*, 67, 92-104.
- Nowack, K. M. (1989). Coping style, cognitive hardiness, and health status. *Journal of Behavioral Medicine*, 12, 145-158.
- Nunnally, J. (1967). *Psychometric Theory*. New York: McGraw-Hill.
- Nunnally, J. (1978). *Psychometric Theory*. New York: McGraw-Hill.
- Oakland, S., & Ostell, A. (1996). Measuring coping: A review and critique. *Human Relations*, 49, 133-155
- Ogden, J. (1996). *Health Psychology: A Textbook*. Buckingham: Open University Press.
- Olivieri, I. Barozzi, L., Padula, A., De Matteis, M., & Pavlica, P. (1998). Clinical manifestations of seronegative spondylarthropathies. *European Journal of Radiology*, 27, S3-S6.
- Park, C. L., Cohen, L. H., & Murch, R. L. (1996). Assessment and prediction of stress-related growth. *Journal of Personality*, 64, 71-105.

Parker, J. D. A., & Endler, N. S. (1996). Coping and defence. A historical overview: In Zeidner, M., Endler, N.S. (Eds.), *Handbook of coping: theory, research, application*. New York: Wiley.

Parker, J., Endler, N., & Bagby, R. (1993). If it changes, it might be unstable: Examining the factor structure of the Ways of Coping Questionnaire. *Psychological Assessment*, 5, 361-368.

Parkes, K. R. (1986). Coping in stressful episodes: the role of individual differences, environmental factors and situational characteristics. *Journal of Personality and Social Psychology*, 51, 1277-1292

Patterson, S. M., Zakowski, S. G., Hall, M., Cohen, L., Wollman, K. & Baum, A. (1994). Psychological stress and platelet activation: differences in platelet reactivity in healthy men during active and passive stressors. *Health Psychology*, 13, 34-38.

Patterson, S. M., Matthews, K. A., Allen, M. T. & Owens, J. F. (1995). Stress-induced hemoconcentration of blood cells and lipids in healthy women during acute psychological stress. *Health Psychology*, 14, 319-24.

Pearlin, L. I., & Schooler, C. (1978). The structure of coping. *The Journal of Health and Social Behavior*, 19, 2-21.

Pennebaker, J. W. & Beall, S. K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology*, 95, 274-281.

Pennebaker, J. W. Colder, M. & Sharp, L. K. (1990). Accelerating the coping process. *Journal of Personality and Social Psychology*, 58, 528-537.

Pennebaker, J. W., Kiecolt-Glaser, J. K & Glaser, R. (1988). Disclosure of traumas and immune function: Health implications for psychotherapy. *Journal of Consulting and Clinical Psychology*, 56, 239-245.

Pennebaker, J. W., Mayne, T. J., & Francis, M .E. (1997). Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology*, 72, 863-871.

Peterson, C. & Moon, C. H. (1999). Coping with catastrophies and catastrophizing. In C. R. Snyder (Ed.) *Coping: The psychology of what works*. New York: Oxford University Press. (pp. 252-279).

Petrie, K. J., Booth, R., Pennebaker, J. W., Davison, K. P., & Thomas, M. (1995). Disclosure of trauma and immune response to Hepatitis B vaccination program. *Journal of Consulting and Clinical Psychology*, 63, 787-792.

Philips, H. C. (1987a). Avoidance behaviour and its role in sustaining chronic pain. *Behaviour Research and Therapy*, 24, 117-125.

Philips, H. C. (1987b). The effects of behavioural treatment for chronic pain. *Behaviour Research and Therapy*, 25, 365-377.

Phipps, S., & Zinn, A. B. (1986). Psychological response to amniocentesis: II. Effects of coping style. *American Journal of Medical Genetics*, 25, 143-148.

Popplestone, J. A., & McPherson, M. W. (1988). *Dictionary of concepts in general psychology*, New York: Greenwood Press.

Porter, L. S. & Stone, A. A. (1996). An approach to assessing daily coping. In Zeidner, M and Endler, S. (Eds) *Handbook of Coping. Theory, research, applications*. Oxford, England: John Wiley & Sons.

Porter, L. S., Gil, K. M., Carson, J. W., Anthony, K. K & Ready, A. (2000). The role of stress and mood in sickle cell disease. *Journal of Health Psychology*, 5, 53-63.

Power and Dalgleish (1988). *Cognition and Emotion*, Hove, UK. Psychology Press.

Preussner, J., Wolf, O. T., Hellhammer, D. H., Buske-Kirschbaum, A., von Auer, K., Jobst, S., Kaspers, F. & Kirschbaum, C. (1997). Free cortisol levels after awakening: A reliable biological marker for the assessment of adrenocortical activity. *Life Sciences*, 61, 2539-2549.

Quayhagen, M. P., & Quayhagen, M. (1982). Coping with conflict. *Research on Aging*, 4, 364-377.

Rahe, R. H., Karson, S., Howard, N. S., Rubin, R. T., & Poland, R. E (1990). Psychological and physiological assessments on American hostages freed from captivity in Iran. *Psychosomatic Medicine*, 52, 1-16.

Rauch, S. L., Van Der Kolk, B. A., Fisler, R. E., & Alpert, N. M. (1996). A symptom provocation study of posttraumatic stress disorder using positron emission tomography and script-driven imagery. *Archives of General Psychiatry*, 53, 380-387.

Reidy, J. & Richards, A. (1997). Anxiety and memory: a recall bias for threatening words in high anxiety. *Behaviour Research and Therapy*, 35, 531-542.

Rim, Y. (1987). A comparative study of two taxonomies of coping styles, personality and sex. *Personality and Individual Differences*

Rosenman R.H., Brand R.J., Sholts R.I. & Friedman M. (1976). Multivariate prediction of coronary heart disease during 8.5 year follow-up in the Eastern Collaborative Group Study. *American Journal of Cardiology*; 37, 903-10.

Rosensteil, A. K., & Keefe, F. J. (1983). The use of coping strategies in chronic low back pain patients: Relationships to patient characteristics and current adjustment. *Pain*, 17, 33-40.

Ross, C. J. M., & Maguire, T. O. (1995). Informational coping styles: A validity study. *Journal of Measurement*, 145-158

Salkovskis, P. M., & Campbell, P. (1994). Thought suppression induces intrusion in naturally occurring negative intrusive thoughts. *Behaviour Research and Therapy*, 35, 769-774.

Sarason, B. R., Sarason, I. G., & Pierce, G. R. (Eds.). (1990). *Social support: An interactional view*. New York: Wiley.

Savage, R., & Armstrong, D. (1990). Effect of a general practitioner's consulting style on patient satisfaction: A controlled study. *British Medical Journal*, 301, 968-970.

Schaefer, C., & Moos, R. H. (1992). Life crises and personal growth. In B. N. Carpenter (Ed.), *Personal coping: Theory, research, and applications*. New York: Praeger.

Scheier, M. F., & Carver, C. S. (1992). Effects of optimism on psychological and physical well-being: theoretical overview and empirical update. *Cognitive Therapy Research*, 16, 201-28.

Scheier, M. F., Matthews, K. A., Owens, J., Magovern, G. J., Sr., Lefebvre, R. C., Abbott, R. A., & Carver, C. S. (1989). Dispositional optimism and recovery from coronary artery bypass surgery. The beneficial effects on physical and psychological well-being. *Journal of Personality and Social Psychology*, 51, 1257-1264.

Scheier, M. F., Weintraub, J. K., & Carver, C. S. (1986). Coping with stress: Divergent strategies of optimists and pessimists. *Journal of Personality and Social Psychology*, 51, 1257-1264.

Scheier, M.F., Matthews, K.A., Owens, J.F., Schulz, R., Bridges, M.W., Magovern, G.J., Carver, C.S. (1999). Optimism and rehospitalization after coronary artery bypass graft surgery. *Archives of Internal Medicine* 159, 829-35.

Schmale, A. H., & Iker, H. (1971). Hopelessness as a predictor of cervical cancer. *Social Science and Medicine*, 5, 95-100.

Schüssler, G. (1992). Coping strategies and individual meanings of illness. *Social Science and Medicine*, 34, 427-432.

Schwartz, M. D., Lerman, C., Miller, S. M., Daly, M., & Masny, A. (1995). Coping disposition, perceived risk, and psychological distress among women at increased risk for ovarian cancer. *Health Psychology*, 14, 3, 232-235.

Schwartz, J. E., & Stone, A. A. (1998). Strategies for analysing ecological momentary assessment data. *Health Psychology*, 17, 6-16.

Schwarzer, R., & Schwarzer, C. (1996). A critical survey of coping instruments. In Zeidner, M. and Endler, N. S. (Eds.). *Handbook of coping: Theory, research, applications*. (pp.107-132). New York: John Wiley and Sons

Segerstrom, S. C., Taylor, G. F., Kemeny, M. E., & Fahey, J. L. (1998). Relationship of worry to immune sequelae of the Northridge earthquake. *Journal of Behavioral Medicine*, 21, 433-450.

Seligman, M. E. P. (1975). *Helplessness: On depression, development, and death*. San Francisco: Freeman.

Seligman, M. E. P., Maier, S.F., & Solomon, R. L. (1971). Unpredictable and uncontrollable aversive events. In Brush, F. R. (Ed.), *Aversive conditioning and learning*. New York: Academic Press.

Selye, H. (1956) *The stress of life*. New York: McGraw-Hill.

Shaver, K. G. (1970). Defensive attribution: Effects of severity and relevance on the responsibility assigned for an accident. *Journal of Personality and Social Psychology*, 14, 101-113.

Shepperd, J. A., Maroto, J. J., & Pbert, L.A. (1996). Dispositional optimism as a predictor of health changes among cardiac patients. *Journal of Research in Personality*, 30, 517-534.

Shiloh, S., Mahlev, U., Dar, R., & Ben-Rafael, Z. (1998). Interactive effects of viewing a contraction monitor and information-seeking style on reported childbirth pain. *Cognitive Therapy and Research*, 22(5), 501-516.

Silver, R. C., Wortman, C. B., & Crofton, C. (1990). The role of coping in support provision: The self-representational dilemma of victims of life crises: In B. R. Sarason, I. G. Sarason, & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 397-426). New York: Wiley.

Skinner, E. A., Edge, K., Altman, J., & Sherwood, H. (2003). Searching for the structure of coping: A review and critique of category systems for classifying ways of coping. *Psychological Bulletin*, 129, 216-269.

Skosnik, P. D., Chatterton, R. T., Swisher, T., & Park, S. (2000). Modulation of attentional inhibition by norepinephrine and cortisol after psychological stress. *International Journal of Psychophysiology*, 36, 59-68.

Sloan, R. P., Bagiella, E., Shapiro, P. A., Kuhl, J. P., Chernikova, D., Berg, J. & Myers, M. M. (2001). Hostility, Gender, and Cardiac Autonomic Control. *Psychosomatic Medicine*, 63, 434-440.

Smith, T. W., Pope, M. K., Rhodewalt, F., & Poulton, J. L. (1989). Optimism, neuroticism, coping and symptom reports: An alternative interpretation of the life orientation test. *Journal of Personality and Social Psychology*, 56, 640-648.

Smock, C. D. (1955). The influence of psychological stress on the "intolerance of ambiguity." *Journal of Abnormal and Social Psychology*, 50, 177-182.

Smyth, J. M. & Pennebaker, J. W. (1999) *Sharing one's story: Translating emotional experiences into words as a coping tool*. In C.R. Snyder (Ed.) *Coping: The psychology of what works*. New York: Oxford University Press.

Smyth, J. M., Stone, A. A., Hurewitz, A., & Kaell, A. (1999). Effects of writing about stressful experiences on symptom reduction in patients with asthma or rheumatoid arthritis. *Journal of the American Medical Association*, 281, 1304-1309.

Sorlie, R. & Sexton, H. C. (2001). Predictors of the process of coping in surgical patients. *Personality and Individual Differences*, 30, 947-960.

Sowers, J. (1980). *Hypothalamic Hormones*. Pennsylvania: Dowden, Hutchinson and Ross.

Spector, P. E. (1992). *Summated Rating Scale Construction: An Introduction*. California: Sage.

Spielberger, C. D. (1980). *Test Anxiety Inventory*. Preliminary professional manual. Palo Alto, CA: Consulting Psychologists Press

Spielberger, C. D., Gorsuch, R.L., Lushene, R., Vagg, P.R., & Jacobs, G. A. (1983). *Manual for the State Trait Anxiety Inventory*. California: Consulting Psychologists Press.

SPSS Inc. (1999). *SPSS Base 9.0 Applications Guide*. Chicago, IL.

Squire, L. R. (1992). Declarative and nondeclarative memory: Multiple brain systems supporting learning and memory. *Journal of Cognitive Neuroscience*, 4, 232-243.

Stephens, A. (1989). An abbreviated version of the Miller Behavioral Style Scale. *British Journal of Clinical Psychology*, 28, 183-184.

Stephens, A., & O'Sullivan, J. (1986). Monitoring and blunting coping styles in women prior to surgery. *British Journal of Clinical Psychology*, 25, 143-144.

Stephens, A., Cropley, M., Griffith, J., & Kirschbaum, C. (2000). Job strain and anger expression predict early morning elevations in salivary cortisol. *Psychosomatic Medicine*, 62, 286-292.

Sterling, P., & Eyer, J. (1988). Allostasis: A new paradigm to explain arousal pathology. In: Fisher, S., & Reason, J (Eds). *Handbook of life stress, cognition and health*. (pp. 629-649). Oxford, England: John Wiley & Sons

Stone, A. A. & Neale, J. M. (1984) New Measure of Daily Coping: Development and Preliminary Results. *Journal of Personality and Social Psychology*, 46, 892-906.

Stone, A. A., & Neale, J. M. (1982). Development of a methodology for assessing daily experiences. In A. Baum & J. Singer (Eds.), *Advances in environmental psychology, environment and health* (Vol. 4, pp. 49-83). New York: Erlbaum.

Stone, A. A., Kennedy-Moore, E., Greenberg, M., Newman, M. G., & Neale, J. M. (1992). Conceptual and methodological issues in current coping assessments. In B. N. Carpenter (Ed.), *Personal coping. Theory, research and applications* (pp. 15-29). Westport: Praeger.

Strickland, B. R. (1978). Internal-external expectancies and health-related behaviors. *Journal of Consulting and Clinical Psychology*, 46, 1192-1211.

Sullivan, M. J. L., & Neish, N. (1999). The effects of disclosure on pain during dental hygiene treatment: The moderating role of catastrophizing. *Pain*, 79, 155-163.

Suls, J. & Wan, C. K. (1989). The relation between Type A behavior and chronic emotional distress: A meta-analysis. *Journal of Personality and Social Psychology*, 57, 503-512

Summerfeldt, L. J., & Endler, N. S. (1996). Coping with emotion and psychopathology. In: Zeidner, M & Endler, N.S. (Eds). *Handbook of coping: Theory, research, applications*. (pp. 602-639). Oxford, England: John Wiley & Sons.

Suzuki, S., Kumano, H., & Sakano, Y. (2003). Effects of effort and distress coping processes on psychophysiological and psychological stress responses. *International Journal of Physiology*, 47, 117-128.

Sweet, L., Savoie, J. A., & Lemyre, L. (1999). Appraisals, coping and stress in breast cancer screening: A longitudinal investigation of causal structure. *Canadian Journal of Behavioural Science*, 31, 240-253.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using Multivariate Statistics*, 3rd Edition. New York: Harper-Collins.

Tanck, R. H., & Robbins, P. R. (1979). Assertiveness, locus of control, and coping behaviours used to diminish tension. *Journal of Personality Assessment*.

Taylor, S. (1995). *Health psychology* 3rd Edition. London : McGraw-Hill.

Taylor, S. (2003). *Health Psychology* 5th Edition. London: McGraw-Hill.

Taylor, S. E. (1983). Adjustment to threatening events: A theory of cognitive adaptation. *American Psychologist*, 38, 624-630.

Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin*, 103, 193-210.

Taylor, S. E., Helgeson, V. S., Reed, G. M., & Skokan, L. A. (1991). Self-generated feelings of control and adjustment to physical illness. *Journal of Social Issues*, 47, 91-109.

Taylor, S. E., Lichtman, R., & Wood, J. (1984) Attributions, beliefs about control and adjustment to breast cancer. *Journal of Personality and Social Psychology*, 46, 489-502.

Tennen, H., & Affleck, G. (1996). Daily processes in coping with chronic pain: methods and analytic strategies. In M. Zeidner and N. Endler (Eds.). *Handbook of Coping*. New York: Wiley, pp. 151-180.

Tennen, H., & Affleck, G. (1999). Finding benefits in adversity. In C. R. Snyder (Ed.). *Coping: the psychology of what works*. New York: Oxford University Press.

Tennen, H., Affleck, G. & Mendola, R. (1991). Causal explanations for infertility: Their relation to control appraisals and psychological adjustment. In A Stanton & C. Dunkel-Schetter (Eds.). *Intertility: Perspectives from stress and coping research* (pp. 109-132). New York: Plenum.

Tennen, H., Affleck, G., Urrows, S., Higgins, P & Mendola, R. (1992). Perceiving control, construing benefits, and daily processes in rheumatoid arthritis. *Canadian Journal of Behavioral Science*, 24, 186-203.

Teodori, A., Biondi, M., Marino, R., & Pancheri, P. (1989). La personalita come modulatore della reazione psiconeuroendocrina di stress. In Pancheri, P., & Reda, G. C. (eds). *Atti del XXXVII Congresso della Societa Italiana di Psichiatria*. Rome, CIC Edizioni Internazionali.

Terry, D. J. (1994). Determinants of coping: The role of stable and situational factors. *Journal of Personality and Social Psychology*, 66, 895-910.

Thierry, A.M., Javoy, F., Glowinski, J. & Kety, S. S. (1968). Effects of stress on the metabolism of norepinephrine, dopamine and serotonin in the central nervous system of the rat: modification of norepinephrine turnover. *Journal of Pharmacology and Experimental Therapeutics*.

Thompson, S. & Janigian, A. (1988). Life schemes: A framework for understanding the search for meaning. *Journal of Social and Clinical Psychology*, 7, 260-280.

Thompson, S. C. (1981). Will it hurt less if I can control it? A complex answer to a simple question. *Psychological Bulletin*, 90, 89-101.

Thompson, S. C. (1991). The search for meaning forfollowing a stroke. *Basic and Applied Social Psychology*, 12, 81-96.

Thorn, B. R., Rich, M. A., & Boothby, J. L. (1999). Pain beliefs ad coping attempts: conceptual model building. *Pain Forum*, 8, 169-171.

Thorne, A. (1989). Conditional patterns, transference, and the coherence of personality across time. In D. M. Buss & N. Cantor (Eds), *Personality psychology: Recent trends and emerging directions*. New York: Springer-Verlag.

Trinder, H. & Salkovskis, P. M. (1994). Personally relevant intrusions outside the laboratory: long-term suppression increases intrusion. *Behaviour Research and Therapy*, 8, 833-842.

Tublin, S. K., & Weinberger, D. A. (1987). Individual differences in coping processes: a thought sampling approach. Paper presented at the Annual Meeting of the Western Psychological Association, April, Long Beach, CA.

Tuckett , D., Boulton, M., Olson, C., & Williams, A. (1985). *Meetings Between Experts*. Tavistock Publications Limited, London.

Turner, J.A., Jensen, M. P. & Romano, J.M. (2000). Do beliefs, coping and catastrophizing independently predict functioning in patients with chronic pain? *Pain*, 85, 115-125.

Turner-Cobb, J. M., Sephton, S. E., Koopman, C., Blake-Mortimer, J., & Spiegel, D. (2000). Social support and salivary cortisol in women with metastatic breast cancer. *Psychosomatic Medicine*, 62, 337-345.

- Vaillant, G. E. (1977). *Adaptation to life*. Boston: Little, Brown.
- Vaillant, G. L. (1976). Natural history of male psychological health: 5. The relation of choice of ego mechanisms of defence to adult adjustment. *Archives of General Psychiatry*, 33, 535-545.
- Vaillant, G. L., Bond, M., & Vaillant, C.O. (1986). An empirically validated hierarchy of defence mechanisms. *Archives of General Psychiatry*, 42, 597-601.
- Valentiner, D. P., Holahan, C. J., & Moos, R. H. (1994). Social support, event controllability, and coping: An integrative model. *Journal of Personality and Social Psychology*, 66, 1094-1102.
- Van der Kolk, B. A., & Fisler, R. (1995). Dissociation and the fragmentary nature of traumatic memories: overview and exploratory study. *Journal of Traumatic Stress*, 8, 505-525.
- Van Doornier, L. J. P., & Van Blockland, R. (1987). Serum cholesterol: Sex-specific psychological correlates during rest and stress. *Journal of Psychosomatic Research*, 31, 239-249.
- Van Egeren, L. R & Sparrow, A. W. (1990). Ambulatory monitoring to assess real-life cardiovascular reactivity in Type A and Type B subjects. *Psychosomatic Medicine*, 52, 297-306.
- Van Honk, J., Tuiten, A., Van den Hout, M., Putman, P., Haan, E., & Stam, H. (2001). Selective attention to unmasked and masked threatening words: relationships to trait anger and anxiety.
- Van Zuuren, F. J., & Muris, P. (1993). Coping under experimental threat: observable and cognitive correlates of dispositional monitoring and blunting. *European Journal of Personality*, 7, 245-253.
- Vernon, D. T. A. (1971). Information seeking in a natural stress situation. *Journal of Applied Psychology*, 55, 359-363.
- Vernon, D. T. A., & Bigelow, D. A. (1974). Effect of information about a potentially stressful situation on responses to stress impact. *Journal of Personality and Social Psychology*, 29, 50-59.
- Vgontzas, A.N., Bixler, E. O., Papanicolaou, D.A., Kales, A., Stratakis, C.A., Vela-Bueno, A., Gold, P.W., & Chrousos, G. P. (1997). Rapid eye movement sleep correlates with the overall activities of the hypothalamic-pituitary-adrenal axis and sympathetic system in healthy humans. *Journal of Clinical Endocrinology and Metabolism*, 82, 3278-3280.
- Vickers, A. J. & Cassileth, B. R. (2001). Unconventional therapies for cancer-related symptoms. *The Lancet*, 2, 226-232.
- Vitaliano, P.P., DeWolfe, D. J., Maiuro, R. D., Russo, J., & Katon, W. (1990). Appraised changeability of a stressor as a modifier of the relationship between coping

and depression: A test of the hypothesis of fit. *Journal of Personality and Social Psychology*, 59, 582-592.

Vrana, S. R., Roodman, A., & Beckham, J. C. (1995). Selective processing of trauma-relevant words in post-traumatic stress disorder. *Journal of Anxiety Disorders*, 9, 515-530.

Walster, E. (1966). Assignment of responsibility for an accident. *Journal of Personality and Social Psychology*, 3, 73-79.

Warburton, L.A., Fishman, B., & Perry, S. W. (1997). Coping with the possibility of testing HIV positive. *Personality and Individual Differences*, 22, 459-464.

Warren, S., Warren, K. G., & Cockerill, R. (1991). Emotional stress and coping in multiple sclerosis (MS) exacerbations. *Journal of Psychosomatic Research*, 35, 37-47.

Watson, D. (1990). On the dispositional nature of stress measures: Stable and nonspecific influences on self-reported hassles. *Psychological Inquiry*, 1, 34-37.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of Positive and Negative Affect: The PANAS Scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.

Watson, D., David, J. P. & Suls, J. (1999). Personality, affectivity and coping. In C. R. Snyder (Ed.) *Coping: The psychology of what works* (pp119-140). New York: Oxford University Press.

Wegner, D. M., Schneider, D. J., Carter, S. R., & White, T.L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology*, 53, 5-13.

Weidner, G., & Collins, R. L. (1993). Gender, coping and health. In H. W. Krohne, et al. (Eds.). *Attention and avoidance: Strategies in coping with aversiveness*. (pp. 241-265). Goettingen, Germany, Hogrefe & Huber.

Weinberger, D. A., Schwartz, G. E. and Davidson, R. J. (1979). Low-anxious, high anxious, and repressive coping styles: Psychometric patterns and behavioural and physiological responses to stress. *Journal of Abnormal Psychology*, 88, 369-380.

Whisman, M. A., & Kwon, P. (1993). Life stress and dysphoria: The role of self-esteem and hopelessness. *Journal of Personality and Social Psychology*, 65, 1054-1060.

Wiebe, D. J., & McCallum, D. M. (1986). Health practices and hardiness as mediators in the stress-illness relationship. *Health Psychology*, 5, 425-438.

Wilder, R. L. (1995). Neuroendocrine-immune system interactions and autoimmunity, *Annual Review of Immunology*, 13, 307-338.

Williams, J. M. G., Watts, F. N., MacLeod, C., & Mathews, A. (1997). *Cognitive psychology and emotional disorders* (2nd ed.). Chichester: Wiley.

Williams, P. G., Wiebe, D. J., & Smith, T. W. (1992). Coping processes as mediators of the relationship between hardiness and health. *Journal of Behavioural Medicine*, 15, 237-255.

Williams, R. B., Lane, J. D., Kuhn, C. M., Melosh, W., White, A. D., & Schanberg, S. D. (1982). Type A behavior and elevated physiological and neuroendocrine responses to cognitive tasks. *Science*, 218, 483-485.

Williams, R. B., Suarez, E. C., Kuhn, C. M., Zimmerman, E. A., & Schanberg, S. M. (1991). Biobehavioral basis of coronary-prone behavior in middle-aged men. I. Evidence for chronic SNS activation in type As. *Psychosomatic Medicine*, 53, 517-527.

Wolff, C. T., Hofer, M. A., & Mason, J. W. (1964). Relationship between psychological defenses and mean urinary 17-hydroxycorticosteroid excretion rates. II. Methodologic and theoretical considerations. *Psychosomatic Medicine*, 26, 592-609.

Zeitlin, S. B., Netten, K. A., & Hodder, S.L. (1995). Thought suppression: An experimental investigation of spider phobics. *Behaviour Research and Therapy*, 33, 407-413.

Zigmond, A. S., & Snaith, R. P. (1983). 'The Hospital Anxiety and Depression Scale'. *Acta Psychiatrica Scandinavica*, 67, 361-70. Test materials now available from NFER-NELSON, Windsor.

Appendix 1: Stressful Situations Questionnaire

STRESSFUL SITUATIONS QUESTIONNAIRE

Age Years _____ Months _____

Gender M / F (please delete as appropriate)

Occupation _____

Please describe briefly a stressful situation that you have experienced in the past.

How did you cope with this situation?

Please indicate on the scale below how stressful this situation was for you.

Not at all stressful 1 2 3 4 5 6 Extremely Stressful

Please indicate on the scale below how controllable you felt the situation was.

Completely uncontrollable 1 2 3 4 5 6 Completely controllable

How effectively do you think you coped with this situation?

Not at all effectively 1 2 3 4 5 6 Completely effectively

How could you have coped more effectively?

How do you think other people might cope in this sort of situation? (please list as many ways of coping with the situation you can think of)

If you can think of further situations, please complete the following pages

Please describe briefly a stressful situation that you have experienced in the past.

How did you cope with this situation?

Please indicate on the scale below how stressful this situation was for you.

Not at all stressful 1 2 3 4 5 6 Extremely Stressful

Please indicate on the scale below how controllable you felt the situation was.

Completely uncontrollable 1 2 3 4 5 6 Completely controllable

How effectively do you think you coped with this situation?

Not at all effectively 1 2 3 4 5 6 Completely effectively

How could you have coped more effectively?

How do you think other people might cope in this sort of situation? (please list as many ways of coping with the situation you can think of)

If you can think of further situations, please complete the following pages

Please describe briefly a stressful situation that you have experienced in the past.

How did you cope with this situation?

Please indicate on the scale below how stressful this situation was for you.

Not at all stressful 1 2 3 4 5 6 Extremely Stressful

Please indicate on the scale below how controllable you felt the situation was.

Completely uncontrollable 1 2 3 4 5 6 Completely controllable

How effectively do you think you coped with this situation?

Not at all effectively 1 2 3 4 5 6 Completely effectively

How could you have coped more effectively?

How do you think other people might cope in this sort of situation? (please list as many ways of coping with the situation you can think of)

If you can think of further situations, please complete the following pages

Please describe briefly a stressful situation that you have experienced in the past.

How did you cope with this situation?

Please indicate on the scale below how stressful this situation was for you.

Not at all stressful 1 2 3 4 5 6 Extremely Stressful

Please indicate on the scale below how controllable you felt the situation was.

Completely uncontrollable 1 2 3 4 5 6 Completely controllable

How effectively do you think you coped with this situation?

Not at all effectively 1 2 3 4 5 6 Completely effectively

How could you have coped more effectively?

How do you think other people might cope in this sort of situation? (please list as many ways of coping with the situation you can think of)

If you can think of further situations, please complete the following pages

Please describe briefly a stressful situation that you have experienced in the past.

How did you cope with this situation?

Please indicate on the scale below how stressful this situation was for you.

Not at all stressful 1 2 3 4 5 6 Extremely Stressful

Please indicate on the scale below how controllable you felt the situation was.

Completely uncontrollable 1 2 3 4 5 6 Completely controllable

How effectively do you think you coped with this situation?

Not at all effectively 1 2 3 4 5 6 Completely effectively

How could you have coped more effectively?

How do you think other people might cope in this sort of situation? (please list as many ways of coping with the situation you can think of)

Thank you very much for your participation

Appendix 2: Coping with Stressful Situations Questionnaire: Version 1

CSSQ

Coping with Stressful Situations Questionnaire

IMPORTANT INFORMATION PLEASE READ BEFORE COMPLETING THE QUESTIONNAIRE

This questionnaire is part of an on-going research project investigating the ways in which people cope with stressful situations. The questionnaire takes about 20 minutes to complete.

In this questionnaire, you will be asked to imagine a wide range of stressful situations. These include topics such as bereavement, illness, relationship break-up, and moving house. If you have experienced a situation of this type recently and feel that you would be unduly distressed by imagining such a situation, please do not feel obliged to continue.

If you decide to participate

Please take your time to consider carefully each of the situations presented in this questionnaire and indicate how likely you would be to respond in the ways described.

Your answers should indicate how you think YOU as an individual would respond if faced with such a situation in real life, rather than how you would ideally like to respond to the situation, or how you think others would respond.

You are not required to give your name and all responses will be completely confidential.

Thank you for participating.

Imagine that you have to be at work on time for an important meeting. When you arrive at the station however, you hear an announcement that your train has been cancelled. You do not know what time the next train will arrive and do not have any other means of transport available to you.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= immediately after hearing the announcement

Time B= if the situation has not changed after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to find out as much information as possible (eg. Why was the train cancelled, when will the next train arrive etc.)		
Talk to other passengers/ station staff in order to make myself feel better about the situation		
Talk to someone in order to gain practical help (eg. Try to find someone who could give me a lift to work, ask someone if I can borrow their mobile phone)		
Distract myself from thinking about being late (eg. By reading or listening to music)		
Think positive, eg. Tell myself 'I'm sure the train will come soon'		
Hope/ wish for the train to come soon		
Panic		
Become angry		
Become upset		
Ring my boss and tell him/ her that I may be late		
Carry on as normal and imagine there is no problem		
Take the day off and go home		
Pass on any information I have to other passengers		
Provide emotional support to other passengers (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to others (eg. let them use my mobile phone, offer to share a taxi)		
Accept that these things happen and such delays can not be avoided		
Worry about the consequences of being late (eg. It will not reflect well on me, I may let other people down)		
Try to put things into perspective (eg. Think 'No-one will think I am lazy or incompetent just because I am late once', 'they know that I do a good job, and that sometimes these things are unavoidable')		

How Stressful Would This Situation Be For You?*

(0= Not at all stressful, 5=Completely stressful)

0 1 2 3 4 5

How Controllable Would This Situation Be For You?*

(0=Completely Uncontrollable, 5=Completely Controllable)

0 1 2 3 4 5

How Effectively Do You Think You Would Cope?*

(0=Not at all Effectively, 5=Completely Effectively)

0 1 2 3 4 5

How Clearly Are You Able to Imagine This Situation?*

(0=I can not imagine it at all, 5= I can imagine it very clearly)

0 1 2 3 4 5

*Please circle as appropriate

- Imagine that you are following a course of study that will improve your career prospects. You will have to take an exam for this course and have been waiting to be notified of the exam date. You receive a letter today confirming the date of the exam. The letter informs you that the exam will be worth 60% of your mark for this course and you will only have one opportunity to retake the exam if you fail. You have several weeks until the exam.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= soon after receiving the letter

Time B= shortly before the exam

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to obtain as much information as possible about the exam (eg. The content/ structure of the exam, where it will be held)		
Talk to others in order to feel better about the exam (eg. Friends, colleagues, a counsellor)		
Ask others to help me in practical ways (eg. Taking over some of my other commitments so that I can focus on revision)		
Distract myself from thinking about the exam (eg. By reading, listening to music, watching TV, keeping busy with hobbies etc.)		
Think positive, eg. Tell myself 'I'm sure I will do well'		
Hope/ wish for easy questions		
Panic		
Become angry		
Become upset		
Structure my time carefully and commit my energies to revision		
Carry on as normal and imagine I have all the time in the world		
Avoid contact with anyone who will remind me of the exam		
Pass on any information I can to other people in the same situation		
Provide emotional support to other people in the same situation (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to others in the same situation		
Accept that exams are a necessary evil and can not be avoided		
Worry about the consequences of failing the exam (eg. People will think I am stupid, I will not be able to progress in my career)		
Try to put things into perspective (eg. Think 'It wont be the end of the world if I fail one exam', 'I can always retake the exam').		

How Stressful Would This Situation Be For You?* 0 1 2 3 4 5
(0= Not at all stressful, 5=Completely stressful)

How Controllable Would This Situation Be For You?* 0 1 2 3 4 5
(0=Completely Uncontrollable, 5=Completely Controllable)

How Effectively Do You Think You Would Cope?* 0 1 2 3 4 5
(0=Not at all Effectively, 5=Completely Effectively)

How Clearly Are You Able to Imagine This Situation?* 0 1 2 3 4 5
(0=I can not imagine it at all, 5= I can imagine it very clearly)

*Please circle as appropriate

Imagine that you receive a letter to inform you that a someone that you care about has died. This person is a close friend or relative but does not live with you and you will not be responsible for funeral arrangements. This person was not elderly or infirm and the death was not anticipated.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= soon after receiving the letter

Time B= after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. How did they die, when did it happen etc.)		
Talk to others in order to feel better about the death (eg. Friends, relatives, a counsellor)		
Ask others to help me in practical ways (eg. Taking over some of my other commitments while I come to terms with the death)		
Distract myself from thinking about the death (eg. By reading, listening to music, watching TV, keeping busy with hobbies etc.)		
Think positive, eg. Tell myself 'I will cope with this'		
Hope/ wish for my life to get back to normal as soon as possible		
Panic		
Become angry		
Become upset		
Prioritise the incident and do what I have to do to come to terms with it (eg. Take time off work, cancel other commitments, free some time to spend with friends, relatives, or to be alone)		
Carry on as normal and imagine nothing has happened		
Avoid contact with anyone who will remind me of the death		
Pass on any information I can to others who were close to the deceased		
Provide emotional support to other people who are affected by the death (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to others who are affected by the death (eg. Offer to help with the funeral arrangements/ other commitments)		
Accept that bereavement is a part of life and can not be avoided		
Worry about the consequences of the death (eg. My life will never be the same, Other friends/ relatives who were close to the deceased will not be able to cope)		
Try to put things into perspective (eg. Think 'They had a good life', 'At least they did not suffer for a long time').		

How Stressful Would This Situation Be For You?*

(0= Not at all stressful, 5=Completely stressful)

0 1 2 3 4 5

How Controllable Would This Situation Be For You?*

(0=Completely Uncontrollable, 5=Completely Controllable)

0 1 2 3 4 5

How Effectively Do You Think You Would Cope?*

(0=Not at all Effectively, 5=Completely Effectively)

0 1 2 3 4 5

How Clearly Are You Able to Imagine This Situation?*

(0=I can not imagine it at all, 5= I can imagine it very clearly)

0 1 2 3 4 5

*Please circle as appropriate

Imagine that the doctor tells you that you have a serious illness. The illness can be treated but the treatment is not always effective.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= soon after hearing about the illness

Time B= after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. What will the treatment involve, what symptoms/ side-effects will I experience)		
Talk to others in order to feel better about the illness (eg. Friends, relatives, a counsellor, support groups)		
Ask others to help me in practical ways (eg. Taking over some of my other commitments while I am receiving treatment)		
Distract myself from thinking about the illness (eg. By reading, listening to music, watching TV, keeping busy with hobbies etc.)		
Think positive, eg. Tell myself 'I'm sure I will be fine'		
Hope/ wish for the treatment to work		
Panic		
Become angry		
Become upset		
Structure my time so that I am able to focus on doing what I can to get well (eg. Exercising, attending support groups, healthy eating)		
Carry on as normal and imagine nothing has happened		
Avoid contact with anyone who will remind me of the illness		
Pass on any information I can to others who are in the same situation		
Provide emotional support to other people who are in the same situation (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to others who are in the same situation		
Accept that illness is a part of life and can not be avoided		
Worry about the consequences of the illness (eg. I will suffer and may die, My friends/ relatives will not be able to cope, I wont be able to maintain my other commitments)		
Try to put things into perspective (eg. Think 'Things could be worse', 'At least they discovered the illness before it was too late').		

How Stressful Would This Situation Be For You?*

(0= Not at all stressful, 5=Completely stressful)

0 1 2 3 4 5

How Controllable Would This Situation Be For You?*

(0=Completely Uncontrollable, 5=Completely Controllable)

0 1 2 3 4 5

How Effectively Do You Think You Would Cope?*

(0=Not at all Effectively, 5=Completely Effectively)

0 1 2 3 4 5

How Clearly Are You Able to Imagine This Situation?*

(0=I can not imagine it at all, 5= I can imagine it very clearly)

0 1 2 3 4 5

*Please circle as appropriate

Imagine that two close friends/ relatives who you care about have had a major argument and are not speaking to each other. You see these friends/ relatives regularly and the argument is causing a very uncomfortable atmosphere.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= soon after the argument

Time B= if the situation has not changed after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. What was the argument about, how do the two friends/ relatives feel about each other)		
Talk to others in order to make myself feel better about the situation (eg. Friends, relatives, a counsellor)		
Ask others to help me in practical ways (eg. Ask someone else to speak to them and try to resolve the argument)		
Distract myself from thinking about the situation (eg. By reading, listening to music, watching TV, keeping busy with hobbies etc.)		
Think positive, eg. Tell myself 'They will be friends again soon'		
Hope/ wish for the situation to get better		
Panic		
Become angry		
Become upset		
Prioritise the situation and do what I can to change it (eg. Get the two of them together and encourage them to talk, try to make them see sense)		
Carry on as normal and imagine nothing has happened		
Avoid contact with both of them		
Pass on any information I can to each of them (eg. How the other is feeling)		
Provide emotional support to each of them (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to each of them (eg. Passing messages between them, arbitrating)		
Accept that arguments are a part of life and can not be avoided		
Worry about the consequences of the argument (eg. They will never be friends again, I will not be able to spend time with them together)		
Try to put things into perspective (eg. Think 'It's only words', 'They must care about each other if the argument caused such distress').		

How Stressful Would This Situation Be For You?*

(0= Not at all stressful, 5=Completely stressful)

0 1 2 3 4 5

How Controllable Would This Situation Be For You?*

(0=Completely Uncontrollable, 5=Completely Controllable)

0 1 2 3 4 5

How Effectively Do You Think You Would Cope?*

(0=Not at all Effectively, 5=Completely Effectively)

0 1 2 3 4 5

How Clearly Are You Able to Imagine This Situation?*

(0=I can not imagine it at all, 5= I can imagine it very clearly)

0 1 2 3 4 5

*Please circle as appropriate

Imagine that you make a mistake on an important piece of work that will be difficult to rectify.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= initially

Time B= after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to get advice about how to rectify the mistake		
Try to find people who can give me emotional support (eg. Other colleagues who are having difficulties with their work)		
Try to find someone who can give me practical help to rectify the problem		
Distract myself from thinking about the situation (eg. By keeping busy with other tasks)		
Think positive, eg. Tell myself 'I'm sure I can rectify the mistake'		
Hope that no-one will notice the mistake		
Panic		
Become angry		
Become upset		
Structure my time carefully and focus on doing whatever I can to rectify the mistake		
Carry on as normal and imagine there is no problem		
Avoid contact with anyone who may reprimand me		
Provide information to colleagues about my mistake so that they can avoid making the same mistake in their work		
Provide emotional support to other people who are experiencing difficulties with their work (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to other people who are having difficulties with their work		
Accept that mistakes will happen		
Worry about the consequences of the mistake (eg. I will be reprimanded, I will cause problems for other colleagues)		
Try to put things into perspective (eg. Think 'Everyone makes mistakes sometimes', 'At least I noticed the mistake before someone else did').		

How Stressful Would This Situation Be For You?* 0 1 2 3 4 5
 (0= Not at all stressful, 5=Completely stressful)

How Controllable Would This Situation Be For You?* 0 1 2 3 4 5
 (0=Completely Uncontrollable, 5=Completely Controllable)

How Effectively Do You Think You Would Cope?* 0 1 2 3 4 5
 (0=Not at all Effectively, 5=Completely Effectively)

How Clearly Are You Able to Imagine This Situation?* 0 1 2 3 4 5
 (0=I can not imagine it at all, 5= I can imagine it very clearly)

*Please circle as appropriate

Imagine that you are moving house. You have found a house that you like but have not yet found a buyer for your current property.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= initially

Time B= after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to obtain information from other people (eg. Find out whether other people are experiencing difficulties finding a buyer, seek advice on how to attract a buyer)		
Talk to other people in order to make myself feel better about the situation (eg. Friends, relatives, colleagues)		
Talk to someone in order to gain practical help to (eg. Ask someone to help me to decorate/ carry out any necessary repairs)		
Distract myself from thinking about the situation (eg. By keeping busy with other tasks)		
Think positive, eg. Tell myself 'I'm sure I will find a buyer soon'		
Hope/ wish that I do not lose the property I want to buy		
Panic		
Become angry		
Become upset		
Structure my time carefully and focus on doing whatever I can to sell the house		
Carry on as normal and imagine there is no problem		
Remove myself from the situation (eg. By asking someone else to deal with selling the house)		
Provide any information I can to other people in the same situation		
Provide emotional support to other people in the same situation (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to other people in the same situation		
Accept that these problems are an inevitable part of moving house		
Worry about the consequences of not finding a buyer (eg. I will lose the house I want to buy, I may not find another place I like)		
Try to put things into perspective (eg. Think 'I'm not the only one who is having difficulties selling my house', 'These things always take time').		

How Stressful Would This Situation Be For You?* 0 1 2 3 4 5
(0= Not at all stressful, 5=Completely stressful)

How Controllable Would This Situation Be For You?* 0 1 2 3 4 5
(0=Completely Uncontrollable, 5=Completely Controllable)

How Effectively Do You Think You Would Cope?* 0 1 2 3 4 5
(0=Not at all Effectively, 5=Completely Effectively)

How Clearly Are You Able to Imagine This Situation?* 0 1 2 3 4 5
(0=I can not imagine it at all, 5= I can imagine it very clearly)

*Please circle as appropriate

Imagine that you are on a train when a stranger in the same carriage as you starts to behave in a threatening and unpredictable manner. The other people in the carriage are starting to become concerned but no-one is doing anything to change the situation. It is still a long way until your stop.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= initially

Time B= if the situation has not changed after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to keep an eye on the situation (eg. Watch what the man is doing, how other passengers are responding)		
Talk to other passengers in order to feel better about the situation		
Talk to someone in order to gain practical assistance (eg. Ask a guard/ another passenger to try to intervene)		
Distract myself from thinking about the situation (eg. By reading, listening to music)		
Think positive, eg. Tell myself 'He is probably harmless'		
Hope/ wish for the situation to get better		
Panic		
Become angry		
Become upset		
Talk to the stranger and try to calm him down		
Carry on as normal and imagine there is no problem		
Get off at the next stop		
Pass on any information I can to other people in the carriage		
Provide emotional support to other people in the carriage (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to other passengers (eg. Offer to help them to move to another carriage)		
Accept that there is nothing I can do to change the situation		
Worry about the consequences of the stranger's behaviour (eg. I wont be able to get out at my stop, Someone will get hurt)		
Try to put things into perspective (eg. Think 'At least I am not alone in the carriage', 'I will be getting off the train in a while').		

How Stressful Would This Situation Be For You?* 0 1 2 3 4 5

(0= Not at all stressful, 5=Completely stressful)

How Controllable Would This Situation Be For You?* 0 1 2 3 4 5

(0=Completely Uncontrollable, 5=Completely Controllable)

How Effectively Do You Think You Would Cope?* 0 1 2 3 4 5

(0=Not at all Effectively, 5=Completely Effectively)

How Clearly Are You Able to Imagine This Situation?* 0 1 2 3 4 5

(0=I can not imagine it at all, 5= I can imagine it very clearly)

*Please circle as appropriate

Imagine that you arrive home to a note from your long-term partner. The note says that they do not feel that your relationship is working and they have moved out.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= initially

Time B= after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. Why have they left, where are they living)		
Talk to other people in order to make myself feel better about the situation (eg. Friends, relatives, a counsellor)		
Talk to someone in order to gain practical help (eg. Help with tasks that my partner would normally do)		
Distract myself from thinking about the situation (eg. By keeping busy with other tasks)		
Think positive, eg. Tell myself 'I'm sure he/ she will come back'		
Hope/ wish that our relationship can be saved		
Panic		
Become angry		
Become upset		
Speak to my partner and insist that we both do whatever we can to rectify the situation		
Carry on as normal and imagine there is no problem		
Avoid contact with anyone who may ask me about the situation		
Contact other people who are affected by the situation (eg. Relatives) to let them know what has happened		
Provide emotional support to other people who are affected (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to other people who are affected by the situation		
Accept that these things happen and it is not possible to avoid being hurt in life		
Worry about the consequences if the relationship can not be saved (eg. I will not be able to cope on my own, it will totally disrupt my life)		
Try to put things into perspective (eg. Think 'Things could be worse', 'All relationships have rough patches').		

How Stressful Would This Situation Be For You?* 0 1 2 3 4 5
(0= Not at all stressful, 5=Completely stressful)

How Controllable Would This Situation Be For You?* 0 1 2 3 4 5
(0=Completely Uncontrollable, 5=Completely Controllable)

How Effectively Do You Think You Would Cope?* 0 1 2 3 4 5
(0=Not at all Effectively, 5=Completely Effectively)

How Clearly Are You Able to Imagine This Situation?* 0 1 2 3 4 5
(0=I can not imagine it at all, 5= I can imagine it very clearly)

*Please circle as appropriate

Imagine that it is your first day in a new job. You were very pleased to get this job and want to make a good impression. Your boss is not in today but has left instructions for you to complete an important piece of work. You have read these instructions several times but still do not understand what you are supposed to do.

Have you experienced this type of situation in the past? (please tick as appropriate):

Never Once or twice On a few occasions Several times

Please indicate how likely you would be to respond in the ways described below, by entering a number from 0-5 next to each response. Please enter a number in both columns:

(0= extremely unlikely, 1= unlikely, 2= fairly unlikely, 3= fairly likely, 4= likely, 5= extremely likely)

Time A= initially

Time B= after a significant period of time

I would.....	Please insert a number from 0-5	
	Time A	Time B
Try to relax/ calm myself (eg. Using breathing exercises, meditation)		
Ask colleagues for advice		
Talk to other people in order to make myself feel better about the situation (eg. Telephone/ e-mail a friend for emotional support)		
Ask someone for practical help with the task		
Distract myself from thinking about the situation (eg. By keeping busy with other tasks)		
Think positive, eg. Tell myself 'I'm sure I will work it out'		
Hope that the job will get easier		
Panic		
Become angry		
Become upset		
Structure my time so that I can prioritise the task and focus on doing whatever I can to complete it satisfactorily		
Ignore the situation and carry on as normal		
Muddle through and avoid anyone who may reprimand me for getting it wrong		
Provide any information I can to other people who are struggling with their work		
Provide emotional support to other people who are struggling with their work (eg. By listening to their worries, agreeing with their concerns)		
Offer practical assistance to other people who are struggling with their work		
Accept that these things happen and it is not possible to avoid getting in trouble		
Worry about the consequences of not performing the task satisfactorily (eg. My boss will think I am stupid, I will lose my job)		
Try to put things into perspective (eg. Think 'Things could be worse', 'It takes time to learn new skills')		

How Stressful Would This Situation Be For You?* 0 1 2 3 4 5
(0= Not at all stressful, 5=Completely stressful)

How Controllable Would This Situation Be For You?* 0 1 2 3 4 5
(0=Completely Uncontrollable, 5=Completely Controllable)

How Effectively Do You Think You Would Cope?* 0 1 2 3 4 5
(0=Not at all Effectively, 5=Completely Effectively)

How Clearly Are You Able to Imagine This Situation?* 0 1 2 3 4 5
(0=I can not imagine it at all, 5= I can imagine it very clearly)

*Please circle as appropriate

Appendix 3: Information Sheets Distributed to Adult Education Centres

COPING STUDY - CAN YOU HELP?

What's it all about?

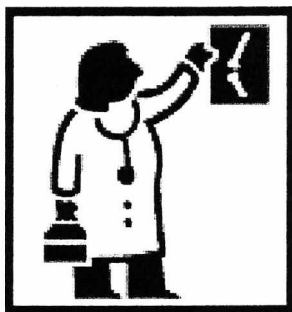
This study is part of a research project based at the University of Kent at Canterbury.

The aim of the study is to gather information from a broad sample of people, in order to understand the ways people cope with stressful situations.

Why does this study matter?

Previous research has presented evidence that people have different styles of coping with stressful situations. These styles have important implications in the medical context.

For example coping style has been related to the experience of side-effects of treatment and the length of time patients need to recover after medical procedures.



In order to help people to cope with highly stressful experiences, we first need to gather background information about the ways people cope with the types of stressful experience encountered in everyday life.



What does the study involve?

This is a questionnaire study in which people will be presented with descriptions of stressful situations and asked to indicate how they would respond.

How can I help?

This research can only take place with the help of willing participants. As an organiser of an adult-education course you could provide very valuable help by handing out questionnaires to members of your group.

There is no obligation for any member to complete a questionnaire and we will not contact you to 'chase-up' the questionnaires after you give them out.

Postage-paid envelopes will be provided so that anyone who completes a questionnaire can

send it back directly. You will not be required to collect-in any questionnaires yourself.

What about confidentiality?

All responses are completely confidential. People will not be asked to write their name on the questionnaire. Once completed questionnaires are received they will be converted into numbers on a computer at the University of Kent. The questionnaire will be securely stored for as long as is required by the Data Protection Act, then it will be destroyed.

Who should I contact?

If you would like to take part in this study please call **Kate Hamilton-West** at the University of Kent on **01227 827658**.



I will then send you questionnaires and postage-paid envelopes to distribute to members of your group. I will be happy to answer any queries you have regarding the study.

KENT
UNIVERSITY OF KENT
AT CANTERBURY ■■■■

Appendix 4: Participant Information Sheets for Study II

COPING STUDY

PARTICIPANT INFORMATION SHEET

KENT
UNIVERSITY OF KENT
AT CANTERBURY ■■■■

What's it all about?

This study is part of a research project based at the University of Kent at Canterbury.

The aim of the study is to gather information from a broad sample of people, in order to understand the ways people cope with stressful situations.

Why does this study matter?

Previous research has presented evidence that people have different styles of coping with stressful situations. These styles have important implications in the medical context.

For example coping style has been related to the experience of side-effects of treatment and the length of time patients need to recover after medical procedures.



In order to help people to cope with highly stressful experiences, we first need to gather background information about the ways people cope with the types of stressful experience encountered in everyday life.



What does the study involve?

The study involves completing a questionnaire (attached). Please read the information on the first page of the questionnaire carefully before completing.

Will my responses be confidential?

All responses are completely confidential. You will not be asked to write your name on the questionnaire. Once completed questionnaires are received they will be converted into numbers on a computer at the University of Kent. The questionnaire will be securely stored for as long as is required by the Data Protection Act, then it will be destroyed.

What if I give the wrong answer?

There are no right or wrong responses to this questionnaire. We are interested in finding out how people **actually** cope with stressful situations.

Why do you need to know my age, occupation etc.?

Your responses will help us to design a coping questionnaire that will be used to assess coping with highly stressful situations. For example, patients coping with chronic illness.

We therefore need to make sure that this questionnaire is relevant to people of all ages and backgrounds.

Queries & further information

If you have any queries, or would like any further information about this study please call **Kate Hamilton-West** at the University of Kent on **01227 827658**.



Appendix 5: Coping with Stressful Situations Questionnaire: Version 2

On the following pages you will be asked to imagine a number of hypothetical situations.

Please take your time to consider each situation carefully and indicate how likely you would be to respond in the ways described, both immediately (time A) and after a significant period of time (time B)

- 0 = Extremely unlikely
- 1 = Unlikely
- 2 = Fairly unlikely
- 3 = Fairly likely
- 4 = Likely
- 5 = Extremely likely

For example, if you think you would be extremely unlikely to panic immediately, but fairly likely to panic after a significant period of time, you would respond as below:

	Time A	Time B
Panic	0	3

Please enter a number in *both* columns next to *every* item (ie. Do not leave any blank)

"Imagine that you have to be at work on time for an important meeting. When you arrive at the station however, you hear an announcement that your train has been cancelled. You do not know what time the next train will arrive and do not have any other means of transport available to you."

Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

How likely would you be to respond in the ways described below?

(please enter a number in **both** columns, for **all** items)

Time A = immediately after hearing the announcement;

Time B = if the situation has not changed after a significant period of time

0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. why was the train cancelled, when will the next train arrive?)		
Talk to other passengers/ station staff in order to make myself feel better about the situation		
Talk to someone in order to gain practical help (eg. try to find someone who could give me a lift to work)		
Distract myself from thinking about being late (eg. by reading or listening to music)		
Think positive (eg. tell myself 'I'm sure the train will come soon')		
Hope/ wish for the train to come soon		
Panic		
Become Angry		
Become Upset		
Ring my boss and tell him/ her that I may be late		
Carry on as normal and imagine that there is no problem		
Take the day off and go home		
Pass on any information I have to other passengers		
Provide emotional support to other passengers		
Offer practical assistance to others (eg. let them use my mobile phone)		
Accept that these things happen and such delays can not be avoided		
Worry about the consequences of being late		
Try to put things in perspective (eg. think 'no one will think I am lazy or incompetent because I am late once', 'they know I do a good job and that sometimes these things are unavoidable')		

Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that you are following a course of study that will improve your career prospects. You will have to take an exam for this course and have been waiting to be notified of the exam date. You receive a letter today confirming the date of the exam. The letter informs you that the exam will be worth 60% of your mark for this course and you will have only one opportunity to retake the exam if you fail. You have several weeks until the exam."

Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

How likely would you be to respond in the ways described below?

(please enter a number in **both** columns)

Time A = soon after receiving the letter **Time B** = shortly before the exam

0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. the content/ structure of the exam, where it will be held)		
Talk to others in order to feel better about the exam (eg. friends, colleagues, a counsellor)		
Ask others to help me in practical ways (eg. taking over some of my other commitments so that I can focus on revision)		
Distract myself from thinking about the exam (eg. by reading, listening to music, watching TV, keeping busy with other activities)		
Think positive (eg. tell myself 'I'm sure I will do well')		
Hope/ wish for easy questions		
Panic		
Become Angry		
Become Upset		
Structure my time carefully and commit my energies to revision		
Carry on as normal and imagine I have all the time in the world		
Avoid contact with anyone who will remind me of the exam		
Pass on any information I can to other people in the same situation		
Provide emotional support to other people in the same situation (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to others in the same situation		
Accept that exams are a necessary evil and cannot be avoided		
Worry about the consequences of failing the exam (eg. people will think I am stupid, I will not be able to progress in my career)		
Try to put things in perspective (eg. think 'it won't be the end of the world if I fail one exam', 'I can always retake the exam')		

Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
 0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
 0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
 0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
 0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that you receive a letter to inform you that someone you care about has died. This person is a close friend or relative but does not live with you and you will not be responsible for funeral arrangements. This person was not elderly or infirm and the death was not anticipated."

Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

How likely would you be to respond in the ways described below?

(please enter a number in **both** columns)

Time A = soon after receiving the letter, **Time B** = after a significant period of time
 0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. when did they die, how did it happen)		
Talk to others in order to feel better about the death (eg. friends, colleagues, a counsellor)		
Ask others to help me in practical ways (eg. taking over some of my other commitments while I come to terms with the death)		
Distract myself from thinking about the death (eg. by reading, listening to music, watching TV, keeping busy with other activities)		
Think positive (eg. tell myself 'I will cope with this')		
Hope/ wish for my life to get back to normal as soon as possible		
Panic		
Become Angry		
Become Upset		
Prioritise the incident and do what I have to do to come to terms with it (eg. Take time off work, cancel other commitments, free some time to spend with friends, relatives, or to be alone)		
Carry on as normal and imagine nothing has happened		
Avoid contact with anyone who will remind me of the death		
Pass on any information I can to those close to the deceased		
Provide emotional support to other people who are affected by the death (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to others who are affected by the death (eg. offer to help with the funeral arrangements/ other commitments)		
Accept that bereavement is a part of life and can not be avoided		
Worry about the consequences of the death (eg. my life will never be the same, other friends/ relatives will not be able to cope)		
Try to put things in perspective (eg. think 'they had a good life', 'at least they did not suffer for a long time')		

Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
 0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
 0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
 0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
 0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that two close friends/ relatives who you care about have had a major argument and are not speaking to each other. You see these friends/ relatives regularly and the argument is causing a very uncomfortable atmosphere."

Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

How likely would you be to respond in the ways described below?

(please enter a number in **both** columns)

Time A = soon after the argument, **Time B** = if the situation has not changed after a significant period of time
 0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. what was the argument about, how do the two friends/ relatives feel about each other?)		
Talk to others in order to feel better about the situation (eg. friends, colleagues, a counsellor)		
Ask others to help me in practical ways (eg. Ask someone to speak to them and try to resolve the argument)		
Distract myself from thinking about the argument (eg. By reading, listening to music, watching TV, keeping busy with other activities)		
Think positive (eg. tell myself 'they will be friends again soon')		
Hope/ wish for the situation to get better		
Panic		
Become Angry		
Become Upset		
Prioritise the situation and do what I can to change it (eg. get the two of them together and encourage them to talk, try to make them see sense)		
Carry on as normal and imagine nothing has happened		
Avoid contact with both of them		
Pass on any information I can to each of them (eg. how the other is feeling)		
Provide emotional support to each of them (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to each of them (eg. passing messages between them, arbitrating)		
Accept that arguments are a part of life and can not be avoided		
Worry about the consequences of the argument (eg. they will never be friends again, I will not be able to spend time with them together)		
Try to put things in perspective (eg. think 'its only words', 'they must care about each other if the argument caused such distress')		

Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
 0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
 0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
 0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
 0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that you make a mistake on an important piece of work that will be difficult to rectify."

Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

How likely would you be to respond in the ways described below?

(please enter a number in **both** columns)

Time A = initially, **Time B** = after a significant period of time

0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to get advice about how to rectify the mistake		
Talk to find people who can give me emotional support (eg. other colleagues who are having difficulties with their work)		
Try to find someone who can give me practical help to rectify the problem		
Distract myself from thinking about the situation (eg. by keeping busy with other tasks)		
Think positive (eg. tell myself 'I'm sure I can rectify the mistake')		
Hope that no-one will notice the mistake		
Panic		
Become Angry		
Become Upset		
Structure my time carefully and do whatever I can to rectify the mistake		
Carry on as normal and imagine there is no problem		
Avoid contact with anyone who may reprimand me		
Pass on any information to colleagues about my mistake so that they can avoid making the same mistake in their own work		
Provide emotional support to other people who are experiencing difficulties with their work (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to other people who are having difficulties with their work		
Accept that mistakes will happen		
Worry about the consequences of the mistake (eg. I will be reprimanded, I will cause problems for other colleagues)		
Try to put things in perspective (eg. think 'everyone makes mistakes sometimes', 'At least I noticed the mistake before someone else did')		

Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5

0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5

0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5

0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5

0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that you are on a train when a stranger in the same carriage as you starts to behave in a threatening and unpredictable manner. The other people in the carriage are starting to become concerned, but no-one is doing anything to change the situation. It is still a long way to your stop."

Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

How likely would you be to respond in the ways described below?

(please enter a number in **both** columns)

Time A = initially, **Time B** = if the situation has not changed after a significant period of time
 0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to keep an eye on the situation (eg. watch what the stranger is doing, how other passengers are responding)		
Talk to other passengers in order to feel better about the situation		
Talk to someone in order to gain practical assistance (eg. ask a guard/ another passenger to intervene)		
Distract myself from thinking about the situation (eg. by reading, listening to music)		
Think positive (eg. tell myself 'he's probably harmless')		
Hope/ wish for the situation to get better		
Panic		
Become Angry		
Become Upset		
Talk to the stranger and try to calm him down		
Carry on as normal and imagine there is no problem		
Get off at the next stop		
Pass on any information I can to other people in the carriage		
Provide emotional support to other people in the carriage (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to others in the same situation (eg. offer to help them to move to another carriage)		
Accept that there is nothing I can do to change the situation		
Worry about the consequences of the stranger's behaviour (eg. I won't be able to get out at my stop, someone will get hurt)		
Try to put things in perspective (eg. think 'at least I'm not alone in the carriage', 'I will be getting off the train in a while')		

Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5

0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5

0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5

0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5

0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that it is your first day in a new job. You were very pleased to get this job and want to make a good impression. Your boss is not in today but has left instructions for you to complete an important piece of work. You have read the instructions several times, but still do not understand what you are supposed to do."

Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

How likely would you be to respond in the ways described below?

(please enter a number in **both** columns)

Time A = initially, **Time B** = after a significant period of time

0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Ask colleagues for advice		
Talk to others in order to feel better about the situation (eg. telephone/ e-mail a friend for emotional support)		
Ask someone for practical help with the task		
Distract myself from thinking about the situation (eg. by keeping busy with other tasks)		
Think positive (eg. tell myself 'I'm sure I will work it out')		
Hope that the job will get easier		
Panic		
Become Angry		
Become Upset		
Structure my time so that I can prioritise the task and focus on doing whatever I can to complete it satisfactorily		
Ignore the situation and carry on as normal		
Muddle through and avoid anyone who may reprimand me for getting it wrong		
Provide any information I can to other people who are struggling with their work		
Provide emotional support to other people who are struggling with their work (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to other people who are struggling with their work		
Accept that these things happen and it is not possible to avoid getting into trouble		
Worry about the consequences of not performing the task satisfactorily (eg. my boss will think I am stupid, I will lose my job)		
Try to put things in perspective (eg. think 'things could be worse', 'It takes time to learn new skills')		

Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
 0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
 0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
 0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
 0=I can not imagine it at all, 5=I can imagine it very clearly

Appendix 6: Advertisement placed in NASS Newsletter

Research into Coping With AS - Can you Help?

Kate Hamilton-West, a researcher at the University of Kent at Canterbury is looking for people to take part in a study focusing on coping with the pain of AS.

What are the aims of the study?

Research suggests that people use a range of different methods to deal with chronic pain. These methods may include for example, taking medications to relieve the pain, exercising, trying to distract oneself from the pain or expressing emotions. The purpose of this study is to investigate which methods people use to deal with the pain of AS and to assess your opinion regarding the effectiveness of these methods.

Who Can Take Part?

You can take part if you are over 18, have received a diagnosis of Ankylosing Spondylitis from a medical practitioner and if you normally experience some pain from your AS on a daily basis.

What Does the Study Involve?

If you decide to take part you will be sent a 'participant information booklet' containing questions about you as a person and about the effects AS has on your daily life. You will also be asked to record the levels of pain you experience each day in a 'daily diary' (this is also provided) for a period of 7 days. The daily diaries take about 5 minutes to complete each day. Following the 7 day recording period you will be asked to keep a more detailed diary for a period of 3 days, which will involve writing about your experiences for 20 minutes per day. Postage paid envelopes will be provided for return of booklets. We will write to you again one month and three months later and ask you to complete a questionnaire assessing your health and well-being.

What Happens to the Information I Provide?

All information you provide will be completely confidential. You will not be asked to write your name on the booklets. Once completed booklets are received they will be converted into numbers on a computer at the University of Kent at Canterbury. The booklets will be securely stored for as long as is required by the Data Protection Act, then they will be destroyed. The results of the study will be reported in the NASS newsletter.

Who Should I Contact?

If you think you may be interested in participating, please complete the form below and send to:

Kate Hamilton-West
Centre for Research into Health Behaviour
Psychology Department
University of Kent at Canterbury
Canterbury
Kent
CT2 7NP



I would be interested in receiving further information about the research project 'Coping with Ankylosing Spondylitis'

Name: _____ Tel (day): _____

Address: _____ Tel (eve): _____

Appendix 7: Information-sheet and consent form



COPING WITH ANKYLOSING SPONDYLITIS

You are being invited to take part in a research study. Before you decide whether or not to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What are the aims of the study? Research suggests that people use a range of different methods to deal with chronic pain. These methods may include for example, taking medications to relieve the pain, exercising, trying to distract oneself from the pain or expressing emotions. The purpose of this study is to investigate which methods people use to deal with the pain of AS and to assess your opinion regarding the effectiveness of these methods.

Who Can Take Part? You can take part if you are over 18, have received a diagnosis of Ankylosing Spondylitis from a medical practitioner and if you normally experience some pain from your AS on a daily basis. You will be required to complete a number of questionnaires, so it is important that you are fluent in English. It is up to you to decide whether or not to take part. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What Does the Study Involve? If you decide to take part you will be sent a 'participant information booklet' containing questions about you as a person and about the effects AS has on your daily life. You will also be asked to record the levels of pain you experience each day in a 'daily diary' (this is also provided) for a period of 7 days. The daily diaries take about 5 minutes to complete each evening, before retiring to bed. Following the 7 day recording period you will be asked to keep a more detailed diary for a period of 3 days, which will involve writing about your experiences for 20 minutes per day.

We will write to you again one month and three months after completion of the study in order to follow up your health status. On each occasion we will send you diaries to complete over 7 days (as above) and a brief questionnaire about your AS. On the final follow-up at three months we will also send you a coping questionnaire (takes about 10 minutes to complete). Postage paid envelopes will be provided for return of all booklets and questionnaires.

What Happens to the Information I Provide? All information you provide will be completely confidential. The information you provide will be converted into numbers on a computer at the University of Kent at Canterbury. The booklets/ questionnaires will be securely stored for as long as is required by the Data Protection Act, then they will be destroyed. No-one other than the researcher will have access to your information. The results of the study will be reported in anonymous form in the NASS Newsletter.

Who is organising and funding this research? This research is funded by the Economic and Social Research Council and the University of Kent at Canterbury. The researcher is Kate Hamilton-West. The research supervisor is Dr Lyn Quine.

Contact for Further Information If you have any questions, or require further information, please contact Kate Hamilton-West at the University of Kent at Canterbury on 01227 827658, or Lyn Quine on 01227 823078.

Thank you for your interest in this research.



Centre Number: :
Study Number:
Patient Identification Number for this trial:

CONSENT FORM

Title of Project: **Coping with Ankylosing Spondylitis**

Name of Researcher: Kate Hamilton-West

Please initial box

1. I confirm that I have read and understand the information sheet dated 6th March 2002. (version 1) for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.

3. I agree to take part in the above study.

Name of Participant

Date

Signature

Researcher

Date

Signature

Appendix 8: Participant Information Booklet

Coping With Ankylosing Spondylitis (AS) Participant Information Booklet

The questions in this booklet are designed to find out more about you as a person, and about the impact AS has on your daily life. The purpose of this information is to allow us to understand the role of demographic and personality factors in AS. The information you provide will not be used to identify you.

All information you provide is completely confidential. If you decide at any point that you do not wish to continue participating in this study you are free to withdraw.

Once completed booklets are received they will be converted into numbers on a computer at the University of Kent. Booklets will be securely stored for as long as is required by the Data Protection Act, they will then be destroyed.

If you have any queries or require any further information, please call Kate Hamilton-West at the University of Kent on (01227) 827658.

Once you have completed the booklet, please return using the postage paid envelope provided. Many Thanks

Section I: Demographic Information

1. How old are you? _____

2. Are you... (please circle as appropriate)

White Indian Bangladeshi Black Pakistani Chinese

Other (please describe) _____

3. Are you...(please circle as appropriate)

Single(not cohabiting) Cohabiting Married Divorced Widowed Separated

4. What is your highest level of education? (please tick the appropriate box)

No academic qualifications GCSE/O-Level/Equivalent

A-Level/Equivalent Degree Level or Higher

Other (please specify) _____

5. Are you...(please tick all boxes that apply to you)

Employed full-time* Employed part-time* Full-time student

Part-time student Not currently employed/ studying

Other, eg. full-time mother, carer (please specify) _____

*If you are employed, what is your occupation? _____

Section II: Physical Health

1. Have you taken any medications in the past month or are you currently taking any medications for your AS? (please circle)

YES NO

If you circled YES, please give details below:

Medication Name	Dosage	When taken/ currently taking
-----------------	--------	------------------------------

.....
.....
.....
.....
.....

2. How important do you feel exercise is for AS? (please circle as appropriate)

Not at all important Fairly Important Important Extremely Important











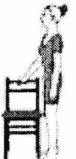

3. Do you exercise? (please circle)

YES NO

If you circled YES please answer questions 4 & 5, if you circled NO, please go on to question 6

4. Attached to the back of this booklet are descriptions of 13 exercises recommended by NASS. Please read the descriptions of these exercises, then indicate how often you perform each exercise by entering a number in each box below.

0 = never, 1 = occasionally (less than once per month), 2 = at least once per month, 3 = at least once per week, 4 = daily

Exercise 1 (see description) <input type="checkbox"/>					
Exercise 2 <input type="checkbox"/> 	Exercise 3 <input type="checkbox"/> 	Exercise 4 <input type="checkbox"/> 	Exercise 5 <input type="checkbox"/> 	Exercise 6 <input type="checkbox"/> 	Exercise 7 <input type="checkbox"/> 
Exercise 8 <input type="checkbox"/> 	Exercise 9 <input type="checkbox"/> 	Exercise 10 <input type="checkbox"/> 	Exercise 11 <input type="checkbox"/> 	Exercise 12 <input type="checkbox"/> 	Exercise 13 <input type="checkbox"/> 

5. Are there any other exercises you perform regularly? (eg. Cycling, swimming, exercise classes)

YES NO

If you circled YES, please list the activities performed below, and indicate how many hours per week you spend on each exercise:

Activity 1: _____ Hours per week: _____

Activity 2: _____ Hours per week: _____

Activity 3: _____ Hours per week: _____

Activity 4: _____ Hours per week: _____

Activity 5: _____ Hours per week: _____

6. Do you attend a support group for Ankylosing Spondylitis? (please circle as appropriate)

YES NO

If you circled YES, please indicate how often you attend (please circle one of the below)

Once per week Once per fortnight Once per month Less than once per month

7. Do you smoke? (please circle as appropriate)

YES NO

If you circled YES, on average how many cigarettes do you smoke per day? _____

8. Do you drink alcohol?

YES NO

If you circled YES, how many drinks of alcohol do you have per week?

_____ glasses of wine _____ pints of beer _____ glasses of spirits

Section III: The Impact of AS on Your Life

1. Please use the space below to explain any ways in which Ankylosing Spondylitis has had a negative impact on your life:

2. Please use the space below to explain any ways in which Ankylosing Spondylitis has had a positive impact on your life:

THE FOLLOWING QUESTIONS ASK YOU TO PLACE A VERTICAL MARK ON A LINE. EXAMPLE:

NONE _____ VERY SEVERE

PLEASE PLACE A MARK ON EACH LINE BELOW TO INDICATE YOUR ANSWER TO EACH QUESTION RELATING TO THE PAST WEEK.

How would you describe the overall level of fatigue/ tiredness you have experienced?

NONE _____ VERY SEVERE

How would you describe the overall level of AS neck, back or hip pain you have had?

NONE _____ VERY SEVERE

How would you describe the overall level of pain/swelling in joints other than neck, back or hips you have had?

NONE _____ VERY SEVERE

How would you describe the overall level of discomfort you have had from any areas tender to touch or pressure?

NONE _____ VERY SEVERE

How would you describe the overall level of morning stiffness you have had from the time you wake up?

NONE _____ VERY SEVERE

How long does your morning stiffness last from the time you wake up? (please indicate time)

HOURS: _____ MINUTES: _____

Please place a vertical mark on the scale below to indicate the effect your disease has had on your well-being over the last week.

NONE _____ VERY SEVERE

Place a vertical mark on the scale below to indicate the effect your disease has had on your well-being over the last six months.

NONE _____ VERY SEVERE

PLEASE DRAW A MARK ON EACH LINE BELOW TO INDICATE YOUR LEVEL OF ABILITY WITH EACH OF THE FOLLOWING ACTIVITIES DURING THE LAST WEEK.

N.B. An aid is a piece of equipment which helps you to perform an action or a movement

Putting on your socks or tights without help or aids (eg. Sock aid)

EASY _____ IMPOSSIBLE

Bending forward from the waist to pick up a pen from the floor without an aid

EASY _____ IMPOSSIBLE

Reaching up to a high shelf without help or aids (eg. Helping hand)

EASY _____ IMPOSSIBLE

Getting up out of an armless dining room chair without using your hands or any other help

EASY _____ IMPOSSIBLE

Getting up off the floor without help from lying on your back

EASY _____ IMPOSSIBLE

Standing unsupported for 10 minutes without discomfort

EASY _____ IMPOSSIBLE

Climbing 12 – 15 steps without using a handrail or walking aid. One foot on each step

EASY _____ IMPOSSIBLE

Looking over your shoulder without turning your body

EASY _____ IMPOSSIBLE

Doing physically demanding activities (e.g. physiotherapy exercises, gardening or sports)

EASY _____ IMPOSSIBLE

Doing a full days activities whether it be at home or at work

EASY _____ IMPOSSIBLE

Section IV: Personality

In the table below are phrases describing people's behaviours. Please indicate how accurately each statement describes you. Describe yourself as you generally are now, not as you wish to be in the future. Describe yourself as you honestly see yourself in relation to other people you know of the same sex as you are, and roughly your same age. Please read each statement carefully and then circle the appropriate number on the scale.

<u>Response Options</u>					
1	2	3	4	5	
Very Inaccurate	Moderately Inaccurate	Neither Inaccurate nor Accurate	Moderately Accurate	Very Accurate	
I complete tasks successfully	1	2	3	4	5
I often feel low	1	2	3	4	5
I feel comfortable around people	1	2	3	4	5
I have a dark outlook on the future	1	2	3	4	5
I believe that my success depends on ability rather than luck	1	2	3	4	5
I am very pleased with myself	1	2	3	4	5
I misjudge situations	1	2	3	4	5
I believe that by working hard a person can achieve anything	1	2	3	4	5
I have little to say	1	2	3	4	5
I just know that I will be a success	1	2	3	4	5
I always know why I do things	1	2	3	4	5
I can't stand on my own	1	2	3	4	5
I excel in what I do	1	2	3	4	5
I dislike myself	1	2	3	4	5
I make friends easily	1	2	3	4	5
I keep in the background	1	2	3	4	5
I feel that my life lacks direction	1	2	3	4	5
I believe that events in my life are determined only by me	1	2	3	4	5
I don't understand things	1	2	3	4	5
I feel comfortable with myself	1	2	3	4	5
I am skilled in handling social situations	1	2	3	4	5
I see difficulties everywhere	1	2	3	4	5
I handle tasks smoothly	1	2	3	4	5
I am often down in the dumps	1	2	3	4	5
I would describe my experiences as somewhat dull	1	2	3	4	5
I look at the bright side of life	1	2	3	4	5
I have little to contribute	1	2	3	4	5
I rarely get irritated	1	2	3	4	5
I am the life of the party	1	2	3	4	5
I believe that unfortunate events occur because of bad luck	1	2	3	4	5
I am sure of my ground	1	2	3	4	5
I have frequent mood swings	1	2	3	4	5
I don't like to draw attention to myself	1	2	3	4	5
I seldom feel low	1	2	3	4	5
I don't see the consequences of things	1	2	3	4	5
I am not easily bothered by things	1	2	3	4	5
I know how to get things done	1	2	3	4	5
I don't talk a lot	1	2	3	4	5
I am often in a bad mood	1	2	3	4	5
I know how to captivate people	1	2	3	4	5
I panic easily	1	2	3	4	5
I come up with good solutions	1	2	3	4	5

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

	Almost never	Sometimes	Often	Almost always
I feel pleasant	1	2	3	4
I feel nervous and restless	1	2	3	4
I feel satisfied with myself	1	2	3	4
I wish I could be as happy as others seem to be	1	2	3	4
I feel like a failure	1	2	3	4
I feel rested	1	2	3	4
I am "calm, cool and collected"	1	2	3	4
I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4
I worry too much over something that really doesn't matter	1	2	3	4
I am happy	1	2	3	4
I have disturbing thoughts	1	2	3	4
I lack self-confidence	1	2	3	4
I feel secure	1	2	3	4
I make decisions easily	1	2	3	4
I feel inadequate	1	2	3	4
I am content	1	2	3	4
Some unimportant thought runs through my mind and bothers me	1	2	3	4
I take disappointments so keenly that I can't put them out of my mind	1	2	3	4
I am a steady person	1	2	3	4
I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4

Please read the statements below and circle the reply which comes closest to how you have been feeling in the past week. Again, do not spend a long time thinking about each item, but give your immediate reaction.

I still enjoy the things I used to enjoy	Definitely as much	Not quite so much	Only a little	Hardly at all
I can laugh and see the funny side of things	As much as I always could	Not quite so much now	Definitely not so much now	Not at all
I feel cheerful	Not at all	Not often	Sometimes	Most of the time
I feel as if I am slowed down	Nearly all the time	Very often	Sometimes	Not at all
I have lost interest in my appearance	Definitely	I don't take as much care as I should	I may not take quite as much care	I take just as much care as ever
I look forward with enjoyment to things	As much as ever I did	Rather less than I used to	Definitely less than I used to	Hardly at all
I can enjoy a good book or radio or TV programme	Often	Sometimes	Not often	Very seldom

Please indicate the extent to which you agree with each of the statements below, by circling a number between 0 (Completely Disagree) and 5 (Completely Agree)

I tend to delay the making of important decisions until the last possible moment, and even then I continue to be troubled by it	0 1 2 3 4 5
It takes me a long time before I commit myself to interpersonal relationships because I can never be sure enough of the attitude of the other person towards me	0 1 2 3 4 5
Usually I see to it that my work is carefully planned and well-organised	0 1 2 3 4 5
I have no problem in meeting deadlines	0 1 2 3 4 5
Even if I make notes of things I have to do, it is hard for me to act upon them	0 1 2 3 4 5
It is easy for me to structure my life when I need it	0 1 2 3 4 5
I tend to hesitate when I have to make an important decision even after thinking a lot about it	0 1 2 3 4 5
Sometimes I am irritated by my hesitation to make a decision	0 1 2 3 4 5
Only seldom do I doubt my own beliefs	0 1 2 3 4 5
Even after I have reached a decision, I continue to think about the pros and cons in order to make sure that I did not make a mistake	0 1 2 3 4 5
When I find myself involved in a discussion, I often do not commit myself to any point of view in case I might be wrong	0 1 2 3 4 5
Usually, I don't have afterthoughts after making a decision	0 1 2 3 4 5
I find myself avoiding new experiences, but I am not comfortable with sticking to the known and experienced	0 1 2 3 4 5
I frequently feel that time just melts away	0 1 2 3 4 5
Sometimes I hesitate to commit myself out of fear of making a mistake	0 1 2 3 4 5
It is easy for me to create a steady routine in my life	0 1 2 3 4 5
I often experience stress when I have to reach a clear-cut decision	0 1 2 3 4 5
Even if I finish my exam early, I stay until the end in case I change my mind	0 1 2 3 4 5
Even when I am bothered by a decision I should make, it is hard for me to make up my mind and free myself from the hassle	0 1 2 3 4 5
Often it is hard for me to decide about relatively simple things, such as how to dress or what to order in a restaurant	0 1 2 3 4 5
Even in new situations, I don't need many cues in order to decide what is the appropriate social behaviour	0 1 2 3 4 5
I do not tend to "dwell" upon important decisions before making them	0 1 2 3 4 5
Sometimes it is difficult for me to decide between two possibilities with similar chances of success or failure	0 1 2 3 4 5
Only rarely do I put something somewhere and cannot find it later	0 1 2 3 4 5

Section IV: Social Support

The scale below is made up of a list of statements each of which may or may not be true about you. For each statement circle 4 (definitely true) if you are sure it is true about you, 3 (probably true) if you think it is true but are not absolutely certain, circle 1 (definitely false) if you are sure the statement is false and 2 (probably false) if you think it is false but are not absolutely certain.

Your answers should indicate the level of support you receive from your friends and family (ie. Not from professional support services, or commercial organisations).

	Definitely False	Probably False	Probably True	Definitely True
If I wanted to go on a trip for a day I would have a hard time finding someone to go with me.	1	2	3	4
I feel that there is no one I can share my most private worries and fears with.	1	2	3	4
If I were ill, I could easily find someone to help me with my daily chores.	1	2	3	4
There is someone I can turn to for advice about handling problems with my family.	1	2	3	4
If I decide one afternoon that I would like to go to the cinema that evening, I could easily find someone to go with me.	1	2	3	4
When I need suggestions on how to deal with a personal problem, I know someone I can turn to.	1	2	3	4
I don't often get invited to do things with others.	1	2	3	4
If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my home (the plants, pets, garden, etc.).	1	2	3	4
If I wanted to have lunch with someone, I could easily find someone to join me.	1	2	3	4
If I was stranded 10 miles from home, there is someone I could call who could come and get me.	1	2	3	4
If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.	1	2	3	4
If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.	1	2	3	4

Section V: Coping

On the following pages you will be asked to imagine a number of hypothetical situations. Please take your time to consider each situation carefully. Indicate whether you have experienced this type of situation before (ie. A similar kind of situation, the details need not be exactly the same) and indicate how likely you would be to respond in the ways described, both immediately (time A) and after a significant period of time (time B).

0=Extremely unlikely, 1=Unlikely, 2=Fairly unlikely, 3=Fairly likely, 4=Likely, 5=Extremely likely

For example, if you think you would be extremely unlikely to panic immediately, but fairly likely to panic after a significant period of time, you would respond as below:

	Time A	Time B
Panic	0	3

Please enter a number in both columns next to every item (ie. Do not leave any blank)

"Imagine that you are on a train when a stranger in the same carriage as you starts to behave in a threatening and unpredictable manner. The other people in the carriage are starting to become concerned, but no-one is doing anything to change the situation. It is still a long way to your stop."

1. Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

2. How likely would you be to respond in the ways described below?

(please enter a number in **both** columns, for **all** items)

Time A = initially, Time B = if the situation has not changed after a significant period of time

0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to keep an eye on the situation (eg. watch what the stranger is doing, how other passengers are responding)		
Talk to someone in order to gain practical assistance (eg. ask a guard/ another passenger to intervene)		
Distract myself from thinking about the situation (eg. by reading, listening to music)		
Think positive (eg. tell myself 'he's probably harmless')		
Panic		
Become Angry		
Become Upset		
Talk to the stranger and try to calm him down		
Carry on as normal and imagine there is no problem		
Get off at the next stop		
Pass on any information I can to other people in the carriage		
Provide emotional support to other people in the carriage (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to others in the same situation (eg. offer to help them to move to another carriage)		
Worry about the consequences of the stranger's behaviour (eg. I won't be able to get out at my stop, someone will get hurt)		

3. Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
 0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
 0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
 0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
 0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that you are following a course of study that will improve your career prospects. You will have to take an exam for this course and have been waiting to be notified of the exam date. You receive a letter today confirming the date of the exam. The letter informs you that the exam will be worth 60% of your mark for this course and you will have only one opportunity to retake the exam if you fail. You have several weeks until the exam."

1. Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

2. How likely would you be to respond in the ways described below?
(please enter a number in **both** columns, for **all** items)

Time A = soon after receiving the letter Time B = shortly before the exam
0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. the content/ structure of the exam, where it will be held)		
Ask others to help me in practical ways (eg. taking over some of my other commitments so that I can focus on revision)		
Distract myself from thinking about the exam (eg. by reading, listening to music, watching TV, keeping busy with other activities)		
Think positive (eg. tell myself 'I'm sure I will do well')		
Panic		
Become Angry		
Become Upset		
Structure my time carefully and commit my energies to revision		
Carry on as normal and imagine I have all the time in the world		
Avoid contact with anyone who will remind me of the exam		
Pass on any information I can to other people in the same situation		
Provide emotional support to other people in the same situation (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to others in the same situation		
Worry about the consequences of failing the exam (eg. people will think I am stupid, I will not be able to progress in my career)		

3. Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that two close friends/ relatives who you care about have had a major argument and are not speaking to each other. You see these friends/ relatives regularly and the argument is causing a very uncomfortable atmosphere."

1. Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

2. How likely would you be to respond in the ways described below?

(please enter a number in **both** columns, for **all** items)

● **Time A = soon after the argument, Time B = if the situation has not changed after a significant period of time**
0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to obtain as much information as possible (eg. what was the argument about, how do the two friends/ relatives feel about each other?)		
Ask others to help me in practical ways (eg. Ask someone to speak to them and try to resolve the argument)		
Distract myself from thinking about the argument (eg. By reading, listening to music, watching TV, keeping busy with other activities)		
Think positive (eg. tell myself 'they will be friends again soon')		
Panic		
Become Angry		
Become Upset		
● Prioritise the situation and do what I can to change it (eg. get the two of them together and encourage them to talk, try to make them see sense)		
Carry on as normal and imagine nothing has happened		
Avoid contact with both of them		
Pass on any information I can to each of them (eg. how the other is feeling)		
Provide emotional support to each of them (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to each of them (eg. passing messages between them, arbitrating)		
Worry about the consequences of the argument (eg. they will never be friends again, I will not be able to spend time with them together)		

3. Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
 0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
 0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
 0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
 0=I can not imagine it at all, 5=I can imagine it very clearly

"Imagine that you make a mistake on an important piece of work that will be difficult to rectify."

1. Have you ever experienced this type of situation before? (please tick)

Never Once or twice On a few occasions Several times

2. How likely would you be to respond in the ways described below?
(please enter a number in **both** columns, for **all** items)

Time A = initially, Time B = after a significant period of time
0= extremely unlikely, 1=unlikely, 2=fairly unlikely 3=fairly likely, 4=likely, 5=extremely likely

	Time A	Time B
Try to relax/ calm myself (eg. using breathing exercises, meditation)		
Try to get advice about how to rectify the mistake		
Try to find someone who can give me practical help to rectify the problem		
Distract myself from thinking about the situation (eg. by keeping busy with other tasks)		
Think positive (eg. tell myself 'I'm sure I can rectify the mistake')		
Panic		
Become Angry		
Become Upset		
Structure my time carefully and do whatever I can to rectify the mistake		
Carry on as normal and imagine there is no problem		
Avoid contact with anyone who may reprimand me		
Pass on any information to colleagues about my mistake so that they can avoid making the same mistake in their own work		
Provide emotional support to other people who are experiencing difficulties with their work (eg. by listening to their worries, agreeing with their concerns)		
Offer practical assistance to other people who are having difficulties with their work		
Worry about the consequences of the mistake (eg. I will be reprimanded, I will cause problems for other colleagues)		

3. Please answer the questions below by circling a number from 0 to 5:

How stressful would this situation be for you? 0 1 2 3 4 5
0=Not at all stressful, 5=Completely stressful

How controllable would this situation be for you? 0 1 2 3 4 5
0=Completely uncontrollable, 5=Completely controllable

How effectively do you think you would cope? 0 1 2 3 4 5
0=Not at all effectively, 5=Completely effectively

How clearly are you able to imagine this situation? 0 1 2 3 4 5
0=I can not imagine it at all, 5=I can imagine it very clearly

Thank you for completing this booklet. Please now read the instructions for the daily diaries.

Appendix 9: Daily Diary – Control Condition

Coping With Ankylosing Spondylitis (AS) Daily Diaries

The following pages contain questions relating to mood, pain and coping, to be completed over seven days. Please set aside a few minutes each evening before retiring to answer these questions. After the seven days you will be requested to write a more detailed diary for three days (instructions are given on page 8). Please set aside twenty minutes each evening to write about your experiences.

Each page relates to one day – please enter the date on each page. Try to complete these diaries on consecutive days (including weekdays and weekends) and try not to miss out any days. If you miss a day by accident, please continue as normal on the following day.

BEFORE COMPLETING THESE DIARIES, PLEASE ENSURE THAT YOU HAVE COMPLETED THE PARTICIPANT INFORMATION BOOKLET.

All information provided on these forms will be completely confidential. If you decide at any point that you do not wish to continue participating in this study you are free to withdraw.

If you have any queries or require any further information, please call Kate Hamilton-West at the University of Kent on (01227) 827658.

Once you have completed all sections, please return using the postage paid envelope provided. Many Thanks

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 2 3 4 5
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	<input type="checkbox"/>
Did something to help me relax	<input type="checkbox"/>
Diverted attention from the pain by thinking about other things or engaging in some other activity	<input type="checkbox"/>
Tried to see the pain in a different light that made it seem more bearable	<input type="checkbox"/>
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	<input type="checkbox"/>
Sought emotional support from loved ones, friends, or professionals concerning my pain	<input type="checkbox"/>
Sought or found spiritual support or comfort	<input type="checkbox"/>

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	<input type="checkbox"/>
Distressed	<input type="checkbox"/>
Excited	<input type="checkbox"/>
Upset	<input type="checkbox"/>
Strong	<input type="checkbox"/>
Guilty	<input type="checkbox"/>
Scared	<input type="checkbox"/>
Hostile	<input type="checkbox"/>
Enthusiastic	<input type="checkbox"/>
Proud	<input type="checkbox"/>

Irritable	<input type="checkbox"/>
Alert	<input type="checkbox"/>
Ashamed	<input type="checkbox"/>
Inspired	<input type="checkbox"/>
Nervous	<input type="checkbox"/>
Determined	<input type="checkbox"/>
Attentive	<input type="checkbox"/>
Jittery	<input type="checkbox"/>
Active	<input type="checkbox"/>
Afraid	<input type="checkbox"/>

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	<input type="checkbox"/>
Did something to help me relax	<input type="checkbox"/>
Diverted attention from the pain by thinking about other things or engaging in some other activity	<input type="checkbox"/>
Tried to see the pain in a different light that made it seem more bearable	<input type="checkbox"/>
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	<input type="checkbox"/>
Sought emotional support from loved ones, friends, or professionals concerning my pain	<input type="checkbox"/>
Sought or found spiritual support or comfort	<input type="checkbox"/>

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	<input type="checkbox"/>
Distressed	<input type="checkbox"/>
Excited	<input type="checkbox"/>
Upset	<input type="checkbox"/>
Strong	<input type="checkbox"/>
Guilty	<input type="checkbox"/>
Scared	<input type="checkbox"/>
Hostile	<input type="checkbox"/>
Enthusiastic	<input type="checkbox"/>
Proud	<input type="checkbox"/>

Irritable	<input type="checkbox"/>
Alert	<input type="checkbox"/>
Ashamed	<input type="checkbox"/>
Inspired	<input type="checkbox"/>
Nervous	<input type="checkbox"/>
Determined	<input type="checkbox"/>
Attentive	<input type="checkbox"/>
Jittery	<input type="checkbox"/>
Active	<input type="checkbox"/>
Afraid	<input type="checkbox"/>

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	<input type="checkbox"/>
Did something to help me relax	<input type="checkbox"/>
Diverted attention from the pain by thinking about other things or engaging in some other activity	<input type="checkbox"/>
Tried to see the pain in a different light that made it seem more bearable	<input type="checkbox"/>
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	<input type="checkbox"/>
Sought emotional support from loved ones, friends, or professionals concerning my pain	<input type="checkbox"/>
Sought or found spiritual support or comfort	<input type="checkbox"/>

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	<input type="checkbox"/>
Distressed	<input type="checkbox"/>
Excited	<input type="checkbox"/>
Upset	<input type="checkbox"/>
Strong	<input type="checkbox"/>
Guilty	<input type="checkbox"/>
Scared	<input type="checkbox"/>
Hostile	<input type="checkbox"/>
Enthusiastic	<input type="checkbox"/>
Proud	<input type="checkbox"/>

Irritable	<input type="checkbox"/>
Alert	<input type="checkbox"/>
Ashamed	<input type="checkbox"/>
Inspired	<input type="checkbox"/>
Nervous	<input type="checkbox"/>
Determined	<input type="checkbox"/>
Attentive	<input type="checkbox"/>
Jittery	<input type="checkbox"/>
Active	<input type="checkbox"/>
Afraid	<input type="checkbox"/>

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	<input type="checkbox"/>
Did something to help me relax	<input type="checkbox"/>
Diverted attention from the pain by thinking about other things or engaging in some other activity	<input type="checkbox"/>
Tried to see the pain in a different light that made it seem more bearable	<input type="checkbox"/>
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	<input type="checkbox"/>
Sought emotional support from loved ones, friends, or professionals concerning my pain	<input type="checkbox"/>
Sought or found spiritual support or comfort	<input type="checkbox"/>

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	<input type="checkbox"/>
Distressed	<input type="checkbox"/>
Excited	<input type="checkbox"/>
Upset	<input type="checkbox"/>
Strong	<input type="checkbox"/>
Guilty	<input type="checkbox"/>
Scared	<input type="checkbox"/>
Hostile	<input type="checkbox"/>
Enthusiastic	<input type="checkbox"/>
Proud	<input type="checkbox"/>

Irritable	<input type="checkbox"/>
Alert	<input type="checkbox"/>
Ashamed	<input type="checkbox"/>
Inspired	<input type="checkbox"/>
Nervous	<input type="checkbox"/>
Determined	<input type="checkbox"/>
Attentive	<input type="checkbox"/>
Jittery	<input type="checkbox"/>
Active	<input type="checkbox"/>
Afraid	<input type="checkbox"/>

We are interested in your experiences of stress. For the next three days, instead of recording your pain, you will be asked to undertake a time-management exercise to reduce stress. Please spend 20 minutes per day before retiring for the evening writing in detail about your plans for the following day.

Please write continuously, allowing your thoughts to flow freely as you write, without worrying about spelling or grammar. You may write about one topic only, or move from one topic to another. The most important thing is that you write about your plans continually for 20 minutes on each day. Please ensure that you have a watch or a clock to hand and record the time you start and finish each day below. [please write on both sides of the following pages; you may attach extra pages if required]

All the information you provide is completely confidential.

DAY 1 Date: _____

Time started writing: _____

Time finished writing: _____

DAY 2 Date: _____

Time started writing: _____

Time finished writing: _____

DAY 3 Date: _____

Time started writing: _____

Time finished writing: _____

Appendix 10: Daily Diary – Experimental Condition Instructions

Coping With Ankylosing Spondylitis (AS) Daily Diaries

The following pages contain questions relating to mood, pain and coping, to be completed over seven days. Please set aside a few minutes each evening before retiring to answer these questions. After the seven days you will be requested to write a more detailed diary for three days (instructions are given on page 8). Please set aside twenty minutes each evening to write about your experiences.

Each page relates to one day – please enter the date on each page. Try to complete these diaries on consecutive days (including weekdays and weekends) and try not to miss out any days. If you miss a day by accident, please continue as normal on the following day.

BEFORE COMPLETING THESE DIARIES, PLEASE ENSURE THAT YOU HAVE COMPLETED THE PARTICIPANT INFORMATION BOOKLET.

All information provided on these forms will be completely confidential. If you decide at any point that you do not wish to continue participating in this study you are free to withdraw.

If you have any queries or require any further information, please call Kate Hamilton-West at the University of Kent on (01227) 827658.

Once you have completed all sections, please return using the postage paid envelope provided. Many Thanks

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	<input type="checkbox"/>
Did something to help me relax	<input type="checkbox"/>
Diverted attention from the pain by thinking about other things or engaging in some other activity	<input type="checkbox"/>
Tried to see the pain in a different light that made it seem more bearable	<input type="checkbox"/>
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	<input type="checkbox"/>
Sought emotional support from loved ones, friends, or professionals concerning my pain	<input type="checkbox"/>
Sought or found spiritual support or comfort	<input type="checkbox"/>

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 2 3 4 5
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	<input type="checkbox"/>
Distressed	<input type="checkbox"/>
Excited	<input type="checkbox"/>
Upset	<input type="checkbox"/>
Strong	<input type="checkbox"/>
Guilty	<input type="checkbox"/>
Scared	<input type="checkbox"/>
Hostile	<input type="checkbox"/>
Enthusiastic	<input type="checkbox"/>
Proud	<input type="checkbox"/>

Irritable	<input type="checkbox"/>
Alert	<input type="checkbox"/>
Ashamed	<input type="checkbox"/>
Inspired	<input type="checkbox"/>
Nervous	<input type="checkbox"/>
Determined	<input type="checkbox"/>
Attentive	<input type="checkbox"/>
Jittery	<input type="checkbox"/>
Active	<input type="checkbox"/>
Afraid	<input type="checkbox"/>

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 2 3 4 5
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1
2
3
4
5
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 2 3 4 5
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

We are interested in your experiences of stress. For the next three days, instead of recording your pain, please spend 20 minutes per day before retiring for the evening writing about any stressful experiences you have encountered over the last month, or any worries or concerns that are currently troubling you. These may be related to your AS or may be unrelated to your AS.

Please write continuously, allowing your thoughts to flow freely as you write, without worrying about spelling or grammar. You may write about one topic only, or move from one topic to another. The most important thing is that you write about your experiences continually for 20 minutes on each day. Please ensure that you have a watch or a clock to hand and record the time you start and finish each day below. [please write on both sides of the following pages; you may attach extra pages if required]

All the information you provide is completely confidential.

DAY 1 Date: _____

Time started writing: _____

Time finished writing: _____

DAY 2 Date: _____

Time started writing: _____

Time finished writing: _____

DAY 3 Date: _____

Time started writing: _____

Time finished writing: _____

Appendix 11: One month follow-up

Coping With Ankylosing Spondylitis: Time 2 Health and Well-being Questionnaire

Thank you for completing and returning the Participant Information Booklet and Daily Diaries.

This booklet will repeat some of the questions you answered before, relating to your health and well-being. You will then be asked to record your pain over a period of seven-days. The purpose of repeating these questions is to build up a picture of your health and well-being over a three month time period. We will write to you again to follow-up your health status in 2-months time.

All information you provide is completely confidential. If you decide at any point that you do not wish to continue participating in this study you are free to withdraw.

Once completed booklets are received they will be converted into numbers on a computer at the University of Kent. Booklets will be securely stored for as long as is required by the Data Protection Act, they will then be destroyed.

If you have any queries or require any further information, please call Kate Hamilton-West at the University of Kent on (01227) 827658.

Please return this booklet as soon as you have completed all sections, using the postage-paid envelope provided.

THE FOLLOWING QUESTIONS ASK YOU TO PLACE A VERTICAL MARK ON A LINE. EXAMPLE:

NONE _____ VERY SEVERE

Please place a vertical mark on the scale below to indicate the effect your disease has had on your well-being over the last week.

NONE _____ VERY SEVERE

Place a vertical mark on the scale below to indicate the effect your disease has had on your well-being over the last six months.

NONE _____ VERY SEVERE

PLEASE PLACE A MARK ON EACH LINE BELOW TO INDICATE YOUR ANSWER TO EACH QUESTION RELATING TO THE PAST WEEK.

How would you describe the overall level of fatigue/ tiredness you have experienced?

NONE _____ VERY SEVERE

How would you describe the overall level of AS neck, back or hip pain you have had?

NONE _____ VERY SEVERE

How would you describe the overall level of pain/swelling in joints other than neck, back or hips you have had?

NONE _____ VERY SEVERE

How would you describe the overall level of discomfort you have had from any areas tender to touch or pressure?

NONE _____ VERY SEVERE

How would you describe the overall level of morning stiffness you have had from the time you wake up?

NONE _____ VERY SEVERE

How long does your morning stiffness last from the time you wake up? (please indicate time)

HOURS: _____ MINUTES: _____

PLEASE DRAW A MARK ON EACH LINE BELOW TO INDICATE YOUR LEVEL OF ABILITY WITH EACH OF THE FOLLOWING ACTIVITIES DURING THE LAST WEEK.

N.B. An aid is a piece of equipment which helps you to perform an action or a movement

Putting on your socks or tights without help or aids (eg. Sock aid)

EASY _____ IMPOSSIBLE

Bending forward from the waist to pick up a pen from the floor without an aid

EASY _____ IMPOSSIBLE

Reaching up to a high shelf without help or aids (eg. Helping hand)

EASY _____ IMPOSSIBLE

Getting up out of an armless dining room chair without using your hands or any other help

EASY _____ IMPOSSIBLE

Getting up off the floor without help from lying on your back

EASY _____ IMPOSSIBLE

Standing unsupported for 10 minutes without discomfort

EASY _____ IMPOSSIBLE

Climbing 12 – 15 steps without using a handrail or walking aid. One foot on each step

EASY _____ IMPOSSIBLE

Looking over your shoulder without turning your body

EASY _____ IMPOSSIBLE

Doing physically demanding activities (e.g. physiotherapy exercises, gardening or sports)

EASY _____ IMPOSSIBLE

Doing a full days activities whether it be at home or at work

EASY _____ IMPOSSIBLE

Please read the statements below and circle the reply which comes closest to how you have been feeling *in the past week*. Do not spend a long time thinking about each item, but give your immediate reaction.

I still enjoy the things I used to enjoy	Definitely as much	Not quite so much	Only a little	Hardly at all
I can laugh and see the funny side of things	As much as I always could	Not quite so much now	Definitely not so much now	Not at all
I feel cheerful	Not at all	Not often	Sometimes	Most of the time
I feel as if I am slowed down	Nearly all the time	Very often	Sometimes	Not at all
I have lost interest in my appearance	Definitely	I don't take as much care as I should	I may not take quite as much care	I take just as much care as ever
I look forward with enjoyment to things	As much as ever I did	Rather less than I used to	Definitely less than I used to	Hardly at all
I can enjoy a good book or radio or TV programme	Often	Sometimes	Not often	Very seldom

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	<input type="checkbox"/>
Did something to help me relax	<input type="checkbox"/>
Diverted attention from the pain by thinking about other things or engaging in some other activity	<input type="checkbox"/>
Tried to see the pain in a different light that made it seem more bearable	<input type="checkbox"/>
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	<input type="checkbox"/>
Sought emotional support from loved ones, friends, or professionals concerning my pain	<input type="checkbox"/>
Sought or found spiritual support or comfort	<input type="checkbox"/>

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	<input type="checkbox"/>
Distressed	<input type="checkbox"/>
Excited	<input type="checkbox"/>
Upset	<input type="checkbox"/>
Strong	<input type="checkbox"/>
Guilty	<input type="checkbox"/>
Scared	<input type="checkbox"/>
Hostile	<input type="checkbox"/>
Enthusiastic	<input type="checkbox"/>
Proud	<input type="checkbox"/>

Irritable	<input type="checkbox"/>
Alert	<input type="checkbox"/>
Ashamed	<input type="checkbox"/>
Inspired	<input type="checkbox"/>
Nervous	<input type="checkbox"/>
Determined	<input type="checkbox"/>
Attentive	<input type="checkbox"/>
Jittery	<input type="checkbox"/>
Active	<input type="checkbox"/>
Afraid	<input type="checkbox"/>

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	<input type="checkbox"/>
Did something to help me relax	<input type="checkbox"/>
Diverted attention from the pain by thinking about other things or engaging in some other activity	<input type="checkbox"/>
Tried to see the pain in a different light that made it seem more bearable	<input type="checkbox"/>
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	<input type="checkbox"/>
Sought emotional support from loved ones, friends, or professionals concerning my pain	<input type="checkbox"/>
Sought or found spiritual support or comfort	<input type="checkbox"/>

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	<input type="checkbox"/>
Distressed	<input type="checkbox"/>
Excited	<input type="checkbox"/>
Upset	<input type="checkbox"/>
Strong	<input type="checkbox"/>
Guilty	<input type="checkbox"/>
Scared	<input type="checkbox"/>
Hostile	<input type="checkbox"/>
Enthusiastic	<input type="checkbox"/>
Proud	<input type="checkbox"/>

Irritable	<input type="checkbox"/>
Alert	<input type="checkbox"/>
Ashamed	<input type="checkbox"/>
Inspired	<input type="checkbox"/>
Nervous	<input type="checkbox"/>
Determined	<input type="checkbox"/>
Attentive	<input type="checkbox"/>
Jittery	<input type="checkbox"/>
Active	<input type="checkbox"/>
Afraid	<input type="checkbox"/>

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

Appendix 12: Three-month follow-up

Coping With Ankylosing Spondylitis: Time 3 Health and Well-being Questionnaire

Thank you for completing and returning the Participant Information Booklet and Daily Diaries.

This booklet will repeat some of the questions you answered before, relating to your health and well-being. You will then be asked to record your pain over a period of seven-days. The purpose of repeating these questions is to build up a picture of your health and well-being over a three month period. This will be the last questionnaire you will receive for this study.

All information you provide is completely confidential. If you decide at any point that you do not wish to continue participating in this study you are free to withdraw.

Once completed booklets are received they will be converted into numbers on a computer at the University of Kent. Booklets will be securely stored for as long as is required by the Data Protection Act, they will then be destroyed.

If you have any queries or require any further information, please call Kate Hamilton-West at the University of Kent on (01227) 827658.

Please return this booklet as soon as you have completed all sections, using the postage-paid envelope provided.

THE FOLLOWING QUESTIONS ASK YOU TO PLACE A VERTICAL MARK ON A LINE. EXAMPLE:

NONE _____ VERY SEVERE

Please place a vertical mark on the scale below to indicate the effect your disease has had on your well-being over the last week.

NONE _____ VERY SEVERE

Place a vertical mark on the scale below to indicate the effect your disease has had on your well-being over the last six months.

NONE _____ VERY SEVERE

PLEASE PLACE A MARK ON EACH LINE BELOW TO INDICATE YOUR ANSWER TO EACH QUESTION RELATING TO THE PAST WEEK.

How would you describe the overall level of fatigue/ tiredness you have experienced?

NONE _____ VERY SEVERE

How would you describe the overall level of AS neck, back or hip pain you have had?

NONE _____ VERY SEVERE

How would you describe the overall level of pain/swelling in joints other than neck, back or hips you have had?

NONE _____ VERY SEVERE

How would you describe the overall level of discomfort you have had from any areas tender to touch or pressure?

NONE _____ VERY SEVERE

How would you describe the overall level of morning stiffness you have had from the time you wake up?

NONE _____ VERY SEVERE

How long does your morning stiffness last from the time you wake up? (please indicate time)

HOURS: _____ MINUTES: _____

PLEASE DRAW A MARK ON EACH LINE BELOW TO INDICATE YOUR LEVEL OF ABILITY WITH EACH OF THE FOLLOWING ACTIVITIES DURING THE LAST WEEK.

N.B. An aid is a piece of equipment which helps you to perform an action or a movement

Putting on your socks or tights without help or aids (eg. Sock aid)

EASY _____ IMPOSSIBLE

Bending forward from the waist to pick up a pen from the floor without an aid

EASY _____ IMPOSSIBLE

Reaching up to a high shelf without help or aids (eg. Helping hand)

EASY _____ IMPOSSIBLE

Getting up out of an armless dining room chair without using your hands or any other help

EASY _____ IMPOSSIBLE

Getting up off the floor without help from lying on your back

EASY _____ IMPOSSIBLE

Standing unsupported for 10 minutes without discomfort

EASY _____ IMPOSSIBLE

Climbing 12 – 15 steps without using a handrail or walking aid. One foot on each step

EASY _____ IMPOSSIBLE

Looking over your shoulder without turning your body

EASY _____ IMPOSSIBLE

Doing physically demanding activities (e.g. physiotherapy exercises, gardening or sports)

EASY _____ IMPOSSIBLE

Doing a full days activities whether it be at home or at work

EASY _____ IMPOSSIBLE

Please read the statements below and circle the reply which comes closest to how you have been feeling *in the past week*. Do not spend a long time thinking about each item, but give your immediate reaction.

I still enjoy the things I used to enjoy	Definitely as much	Not quite so much	Only a little	Hardly at all
I can laugh and see the funny side of things	As much as I always could	Not quite so much now	Definitely not so much now	Not at all
I feel cheerful	Not at all	Not often	Sometimes	Most of the time
I feel as if I am slowed down	Nearly all the time	Very often	Sometimes	Not at all
I have lost interest in my appearance	Definitely	I don't take as much care as I should	I may not take quite as much care	I take just as much care as ever
I look forward with enjoyment to things	As much as ever I did	Rather less than I used to	Definitely less than I used to	Hardly at all
I can enjoy a good book or radio or TV programme	Often	Sometimes	Not often	Very seldom

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1 **2** **3** **4** **5**
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1
2
3
4
5
 Very slightly A little moderately Quite a bit extremely
 Or not at all

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	

- Please enter today's date: _____
- Please indicate on the scale below the amount of pain you have experienced today by circling a number between 0 (no pain at all) and 10 (pain as intense as you could imagine).

0 1 2 3 4 5 6 7 8 9 10

- Please indicate if you used any of the following strategies in order to cope with the pain you experienced today: (please tick all that apply)

Did something specific to try to reduce the pain	
Did something to help me relax	
Diverted attention from the pain by thinking about other things or engaging in some other activity	
Tried to see the pain in a different light that made it seem more bearable	
Expressed emotions to reduce my anxiety, frustration, or tension about the pain	
Sought emotional support from loved ones, friends, or professionals concerning my pain	
Sought or found spiritual support or comfort	

- Based on all the things you did to cope, or deal with your pain today, how much control do you feel you had over it? Please indicate by circling a number between 0 (no control) and 6 (complete control)

0 1 2 3 4 5 6

- Based on all the things you did to cope, or deal with your pain today, how much were you able to decrease it? Please indicate by circling a number between 0 (couldn't decrease it at all) and 6 (could decrease it completely)

0 1 2 3 4 5 6

- In the table below are words describing different feelings and emotions. Please read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you have felt this way today.

Use the following scale to record your answers:

1	2	3	4	5
Very slightly Or not at all	A little	moderately	Quite a bit	extremely

Interested	
Distressed	
Excited	
Upset	
Strong	
Guilty	
Scared	
Hostile	
Enthusiastic	
Proud	

Irritable	
Alert	
Ashamed	
Inspired	
Nervous	
Determined	
Attentive	
Jittery	
Active	
Afraid	