SELF-ESTEEM AND EMOTION-CONTROL IN PHYSICAL AND EMOTIONAL WELL-BEING

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Overview

Self-esteem is a widely assessed personality construct in clinical-health settings although its application in health psychology research has been substantially less developed. This research is aimed, in part, to examine the moderating influence of self-esteem in somatic health processes and psychological well-being. This research also seeks to test the inter-relationship between self-esteem and emotion control processes, particularly the tendency to mentally rehearse or ruminate over emotional upsetting experiences. Further, the independent and interactive effects of self-esteem and emotion-control processes are tested in survey, clinical, and experimental conditions.

The first chapter sets out to establish the emerging trend in personality and health research to implicate self-esteem and self-processes, albeit indirectly, and in a piecemeal fashion in most instances. After reviewing the most prominent personality models in health, including the effects of locus of control, learned helplessness, hardiness, and the Type A behaviour pattern, but to mention a few, each section concludes with the recent trend linking self-esteem to that particular model. Next, the chapter becomes increasingly focused on reviewing and critically discussing the extant literature on self-esteem in health. The chapter concludes with unresolved issues and a programme of empirical study to follow.

The second chapter consists of a review of existing self-report measures of self-esteem and lays the foundation for a new scale for the assessment of self-esteem. The construction and validation of the new scale titled the `York Self-esteem Inventory' follows. The scale attempts to be broad in scope (in contrast

to the restricted construct tapped in the Rosenberg Self-esteem Inventory) and more relevant to clinical and health contexts.

In chapters three and four, examination of the psychological correlates of self-esteem are examined. Further, the independent and cumulative effects of personality on health are tested in prospective examinations; in chapter three a two-phase study over eight weeks; in chapter four, a four-phase study over 16 weeks. In chapter five, three experimental studies are undertaken to address candidate physiological mechanisms underlying the poor health patterns reported in the two preceding chapters. In this way, the `buffering' role of self-esteem is tested in stress reactivity. In each study self-esteem is manipulated situationally and group differences are observed with respect to psychophysiological arousal and state rumination tendencies.

In chapter six, the inter-relationship between self-esteem and emotion-control processes are further tested in depressed and anxiety-disordered populations; populations that, by definition, are expected to show vulnerabilities across these dimensions. The final chapter, chapter seven, provides a summary of the findings and outlines a tentative working model for self-esteem in illness and psychological well-being. Research issues are brought to bear on the accumulated findings in this project and suggestions for future research are outlined.

Abstract

The initial phase of the research was concerned with the construction and validation of a new self-report scale for the assessment of self-esteem. Principal Axis Factoring resulted in a 30-item, unidimensional self-esteem factor possessing good internal and test-retest reliability over an 8-week inter-test interval. A replication study provided further support for the psychometric properties of the York Self-esteem Inventory (YSEI), which was shown to converge with the Rosenberg Self-esteem Inventory (RSE). Finally, the YSEI was examined in relation to the Tennessee Self-concept Scale to highlight the distinction between self-esteem (self-evaluations) and self-concept (self-structure). Self-concept actually showed greater similarity to self-esteem than was expected, but the discussion will focus on the proper use of self-definitions in the theoretical and empirical literatures.

Two prospective studies were undertaken, examining the relationship between self-esteem and selected personality variables in relation to somatic health and psychological well-being were undertaken. In both studies self-esteem was shown to relate to emotion control processes and coping strategies. Subjects with high self-esteem reported less cognitive rumination, inhibiting of emotion, and greater reliance on problem-focused coping and the ability to detach when under stress. These inter-relationships were also shown to influence health outcomes. In the first study conducted over an eight week period, self-esteem was shown to moderate the degree to which students experienced somatic complaints and psychological distress. This effect was greater than other models previously tested, including those pertaining to locus of control and tolerance of ambiguity.

Furthermore, depending on the nature of the outcome, interactive effects were observed between self-esteem, coping, and rumination. These results were replicated and extended in a subsequent prospective study conducted over a 16 week period. In addition to exercising a moderating influence on health, distress, and social and academic adjustment over this period, self-esteem was also found to relate to state coping processes. Combined, the results from these two studies link self-esteem to cognitive, affective, and behavioural concomitants of stress as well as directly influencing health and other outcomes over time. While the results point to the moderating effect of self-esteem on physical health and psychological distress, the studies do not provide support for a `buffering effect'.

In the next series of experiments in chapter five, three studies were conducted to systematically test the moderating influence of self-esteem in laboratory-induced stress. In the first study, manipulation of positive self-esteem led to greater task performance, less subjective stress and reduced state cognitive rumination. In the second study, the experimental manipulation failed to successfully enhance self-esteem in male subjects although post-hoc analyses demonstrated the effects of baseline and state self-esteem on stress outcome measures. The final study showed that manipulation of self-esteem successfully led to greater task involvement and lower heart-rate arousal. Collectively these results highlight the physiological concomitants of self-esteem and the comparative advantage of high self-esteem in stress reactivity.

The role of self-esteem and emotion control processes was tested in 25 depressed and 25 anxiety-disorder patients in the final experimental chapter, chapter 6. The results from this study suggest that self-esteem is significantly

impaired in both disorders, and particularly so in the depressed group. Further, rumination and inhibition of emotion are elevated in depressed but not anxiety disorders when compared with student controls. Finally, differential correlation patterns were observed between self-esteem and cognitive rumination for the two clinical groups; self-esteem appears to be a vulnerability factor for rumination in anxiety disorders, whereas it may be a pathognomic, and independent feature of clinical depression.

Chapter 1

1.0 Literature Review

The tendency in the experimental paradigm to treat self-esteem as a dependent outcome variable is increasingly replaced with models articulating the causal relationship of self-esteem in human cognition, emotion, and behaviour. While one commentator has estimated that over 10, 000 empirical reports exist (Greenberg, Solomon, Pyszczynski et al., 1992) on the study of self-esteem, there is surprisingly little direct application of self-esteem in health psychology.

Personality mechanisms are increasingly seen to be part of the stress-illness relationship (e.g. Lazarus, 1966; Costa & McCrae, 1987; Scheier, Carver, & Bridges, 1994) although existing models seem to account for only part of the story. This review introduces the most widely-researched personality variables purporting to moderate the stress-illness relationship with special attention given to the inherent conceptual and methodological limitations within these approaches.

The review will aim, in part, to demonstrate the convergence on self-processes and self-esteem within these existing frameworks. After prominent personality models have been introduced and the relevant methodological problems discussed, each section will conclude with a brief review of how self-esteem has been shown to relate to aspects of that particular model.

The review will conclude with an examination of the few empirical attempts to directly link self-esteem with stress appraisal, stress reactivity, coping behaviour, and a variety of illness-related outcomes. Finally, this chapter will

conclude with a framework for empirical study of the role of self-esteem in mental and physical well-being.

This introduction will not attempt to provide an exhaustive review of the role of personality in the stress-illness relationship as the literatures are extremely vast and multiple reviews already exist for most personality theories. In this way, to limit the amount of referencing the aim has been to reference either seminal research reports, the most recent research, or recent reviews. Before examining the role of personality in stress and health, a brief introduction to biological, stimulus-based theories are reviewed.

1.1 Biological Models of Stress

The term stress has come to denote a multiplicity of meanings in the scientific community. This variation in definition has, at times, made it difficult to condense findings and draw meaningful conclusions from studies because of the different operationalizations of stress. This was first raised as an issue in the 1960's but is still echoed by prominent researchers in the area in the 1990's (e.g. Monat & Lazarus, 1991). The confusion comes from stress being defined as a stimulus (as something external to the organism), a response (stress as `inside' the person, such as a mental or physical response) and/or an interaction of the two. Given the complexities in the study of stress Lazarus has stated that "stress is not any one of these things; nor is it stimulus, response, or intervening variable, but rather a collective term for study. (Lazarus, 1966, cited in Monat & Lazarus, 1991, p.3).

The term stress initially emerged from a biologically-based model with an

emphasis on physical stressors triggering a pattern of bodily responses. Selye (1982) described how as a medical student he was interested in the "syndrome of just being sick"; the many signs of bodily distress that appeared to be common to most diseases: loss of weight, decreased muscular strength and impairment of motivation. In experimental examination, Selye (1936, cited in Selye, 1982) injected extracts of cattle ovaries into rats to determine if organs would display changes that could not be attributed to any specific hormone. He observed three widespread changes: a) the adrenal glands became enlarged and hyperactive, b) the thymus, spleen, lymph nodes and all other lymphatic structures shrank and c) ulceration of the stomach and upper intestines occurred (Selye, 1982). This three-stage syndrome was observed in response to other toxic substances, as well as cold, heat, infection, trauma, or haemorrhage as the endocrine changes helped the organism to cope physiologically with the threat. Selye, concluded that the syndrome of adrenal enlargement, gastrointestinal ulcers and thymico-lymphatic shrinkage were signs of damage to a body faced with fighting off a disease and was titled the "biological stress syndrome" and later as the "General Adaptation Syndrome (GAS). The GAS stipulates the endocrine changes over time as the organism faces chronic stress. First, is the alarm stage where the organism becomes mobilized to meet threat. Second, over time the organism adapts to the stressor and the heightened activation initiated in the alarm stage begins to subside. Finally, in the third stage, if there is extended exposure the organism eventually falls to "exhaustion" where the adaptive energy of the body is fully depleted leading to immobility and even death. The GAS model then, emphasized the non-specificity of bodily responses to a stressor and the cumulative effects of

stress, where accumulated stressors exceed the power of adaptation and the disease process ensues. In this way, disease is the price the organism must pay for a defense against chronic exposure to threatening agents (Stroebe & Stroebe, 1995).

The physiological mechanisms implicated in Selye's research were twofold. Autonomic Nervous System (ANS) arousal with the releasing of catecholamines, adrenalin and noradrenalin, serves to mobilize the organism for `fight or flight' and had been discussed previously in Walter Cannon's theory of emergency motivation (Phillips, 1991). Second, Selye discussed the contribution of the pituitary-adrenocortical axis whose activation via the hypothalamus causes ACTH to be circulated to the adrenal cortex which then, in turn, produces corticosteroids, thus providing muscles with long-term access to the body's energy stores. Long-term activation of either system, accordingly, led to exhaustion, immunosupression and illness complication.

These two classic neuroendocrine pathways, following from Cannon (1929) and Selye (1950), have received considerable support in experimental studies on stress. For instance early work by Mason (1975) on animals showed that acute stressors increase plasma and ACTH. There is also the suggestion by Rose (1984) of high cortisol secretion rates during stress. Moreover, catecholamine output is increased during stress as is adrenalin noradrenalin (See Jemmott and Locke, 1984 for a review). Animal studies have shown that exposure to electric shock, maternal separation, immersion in cold water, intraperitoneal injection of saline, and loud noise have been shown to suppress aspects of immunity (see Maier, Watkins, and Fleshner, 1994 for a review). A more updated approach on

the (psycho) biological mechanisms in stress can be seen in Frankenhauser's (1980) work on stress and catecholamine production.

As animals were shown to produce `diseases of adaptation' to chronic stressors human beings might be expected to produce bodily reactions to stressful environments. The first extension of Selye's model in humans examined the role of psychosocial stress, in terms of accumulated stressful life events, on disease incidence and risk for mortality.

1.2 Life Events

Holmes and Rahe (1967) first devised a scale, the Social Readjustment Rating Scale (SRRS), (and later the SRE) that included a listing of 43 major `life change events' such as `divorce of spouse' or `loss of job.' Events included in the scale were not just negatively toned but it was assumed that positive experiences would still require change and could be potentially stressful. Each event measured was seen to require social adaptation and therefore could contribute to stress and `diseases of adaptation' (Stroebe & Stroebe, 1995). Early studies generally supported the role of psychosocial stress on illness where greater frequency of major life events were found to relate to upper respiratory-related illness (Belfer, Shader, Mascio, Harmatz, & Nahum, 1968), sudden cardiac death (Rahe & Lind, 1971), myocardial infarction (Rahe, Romo, Bennett & Siltananen, 1974) and chronic illness (Wyler, Masuda, & Holmes, 1971). For instance, Rahe (1968) examined the reported life events of 2500 naval officers 6 months prior to departure for tour of duty and then followed their reported health difficulties over a 6 month time frame whilst they were at sea. Those officers who scored in the

top 30%, that is, experienced considerable life events prior to disembarking showed a 90% greater incidence rate of illness in the first three months as well increased frequency and severity of illnesses month to month.

The early literature on life events suffered from many conceptual and methodological difficulties, however, some of which have been addressed in more recent research while others remain irremediable. For instance, the early retrospective studies were potentially contaminated by the reporting of prior life events after the onset of illness (e.g. Rahe & Lind, 1971). If life events ratings follow after the onset of illness it is possible, if not probable, that people who are ill will report experiencing more (dis)stress. Second, while the implementation of prospective studies may potentially nullify problems associated with retrospective reports, it may still be the case that individuals who report more illness symptoms may also be those who are more likely to report experiencing negative life events. Hence, the relationship between reported life events and illness may reflect response tendencies rather than actual stress and illness behaviours. Third, it has been argued (Delongis, Folkman, & Lazarus, 1988) that employing large time frames between the measurement of life stress and health makes it difficult to unravel the psychobiological and conventional processes. By assessing how stress accumulates across multiple stressors it becomes difficult to know what specific stressors were responsible. For instance, Singer and Davidson (1991) have argued that research on life events has failed to address, and would have difficulties incorporating, evidence on the role of periodic stressors. Fourth, both first generation and subsequent life event scales suffer from reliability and validity shortcomings. For example, Shroeder and Costa (1984) point to the confounding

nature in life event and illness reports where items reported as life events may reflect illness status (e.g. `experienced personal injury or loss'). In this way, the life event score is contaminated with concurrent physical health. In their study Shroeder and Costa (1984) found that the observed correlation between measured life events and physical illness evaporated when the contaminated items were removed from the life events scale. Life event scales also lack comprehensiveness and fail to account for the negative consequences of events that failed to occur, such as securing marriage or obtaining a job promotion (Phillips, 1991). Finally, the direct effects of life events on illness have only been demonstrated for negative events and not positive valenced events (e.g. Vinokur and Selzer, 1975). In light of the inherent difficulties in addressing the cumulative impact of major life events, a fair amount of research has operationalized psychosocial stress in terms of the more day-to-day grind of life and includes scale items that tap experiences of general irritation, frustration, and excessive demands (e.g., Kanner, Coyne, Schaefer, & Lazarus,1981 include 117 hassles with 3-point severity rating). Studies (DeLongis, Coyne, Dakof, Folkman & Lazarus, 1982; Weinberger, Hiner, & Tierney, 1987) have shown how hassles in daily life may be a) stressful and b) significantly impact on health above and beyond major life events. For instance, Kanner et al. (1981) followed 100 middle-aged adults over nine months and found that daily hassles were more strongly related to reported depression and anxiety than were major life events. However, just as the major life events approach appears to suffer from multiple shortcomings a number of methodological difficulties have been noted with the study of the micro-stressor approach of hassles research. Hassle scales tend to

contain many items that may reflect psychological symptoms so that the scale is contaminated with measures of psychological distress (Dohrenwend, Dohrenwend, Dodson, & Shrout, 1984) thus obfuscating the causal direction of life events and distress.

Collectively, research on psychosocial stress as operationalized by the occurrence of major life events and/or daily hassles has demonstrated a link between life strain and a variety of health difficulties although many results have failed to predict this relationship. In attempting to overcome reporting biases associated with the reporting of life events and illness a number of studies have been conducted by including biological markers that verify illness. For instance, Meyer & Haggerty (1962) followed 100 members of 16 families for 12 months. Stressful life events were recorded via diary completion by family members and throat cultures were made every three weeks and during acute illness. Blood samples were also assayed every four months for antibodies. The results indicated that daily life events that proved distressing for the individual were four times more likely to precede new throat infections. In addition, family stress was associated with greater number of new infections and greater severity. In a more recent study (Graham, Douglas, & Ryan, 1986) of verified upper respiratory symptoms, 235 subjects completed daily diary records of experienced life events over a six month period. In addition, major life events were assessed both before the six month trial period and then again six months later. Illness episodes were validated by viral cultures of nose and throat swabs. A high stress group was created comprising those who scored in the upper median based on major life events; daily hassles; and a measure of psychological distress. The findings indicated that those subjects who scored in

the upper median, that is experienced comparatively more stress, were likely to demonstrate more verified episodes and more symptom days of respiratory illness. Interestingly, this study found differential effects for major life events and daily hassles with the former being associated with chronicity of illness episodes and the later with verified new episodes in the study period. Additional prospective studies on verified illnesses have offered further support for life events on such illnesses as influenza, upper respiratory illnesses, herpevirus infections and bacterial infections (see Cohen and Williamson, 1991, for a review). Cohen and Williamson (1991) appear to support the growing acceptance that people exposed to considerable life stress are at greater risk for all of the above mentioned illnesses even though the precise pathways and mechanisms involved in this relationship are not well understood.

The effects of acute stressors on human immune function have generated many reviews (Ader, Felton, & Cohen, 1991; Cohen & Williamson, 1991). The effects of these neuroendocrine sequelae on immunologic functioning include reduced development of cellular immunity such as the development of cytotoxic T cells to an antigen, effectors of humoral immunity, such as the development of antibody to an antigen, and to nonspecific measures such as stimulation of lymphocyte proliferation (Maier, Watkins, & Fleshner, 1994), In short, there is ample support to suggest that psychosocial stress, through sympathetic nervous system activation and hormonal secretions from the pituitary and adrenal cortex, can elicit immunosuppression and increased risk for a) developing a predisposition for infection to a pathogen, b) triggering a process that allows a pathogen that is already in the body to reproduce, and c) maintaining an ongoing

pathogenic process (see updated review by Cohen & Williamson, 1991).

Beyond the limitations already discussed in association with the life events and daily hassles literature several observations suggest that the stimulus-response model, while demonstrating the important effects of threatening situations on organisms, is an imperfect one for explaining the relationship between stress and health. First, in field studies of life events and daily hassles, a considerable number of studies have shown no relationship between reported or objectively verified life stress and reported or verified illness complications. Even when a relationship is found between life events and illness, the variance explained is typically less than 5%. Second, in experimental studies where viruses and bacterial infections have been induced in otherwise healthy subjects, only a fraction of the sample actually become ill. In short, there appears to be a central limitation on the stimulus-response model that fails to accommodate the bulk of recent evidence pointing to the role of inter (not all people respond in the same way to identical stress sources) and intra (same individual may respond to the same stressor differently on different occasions) in perceived stress, subsequent distress and health complications.

1.3 Interactional Model of Stress

There are a number of models that take into account the role of cognitions in stress appraisal (Cox, 1978; Lazarus & Folkman, 1984) although some models have been developed mostly, if not exclusively, for occupational contexts, for instance Cox's interactional model of stress. While these models have made important contributions to the stress field, the interactional model emphasized in

this review and the research to follow, focuses on an American model (Lazarus & Folkman, 1984) because of its emphasis on personality theory and stress independent of specific contexts.

The interactional view of stress (e.g, Lazarus, 1966; Lazarus & Folkman, 1984) focuses on the moderating cognitive factors that lead to the perception and evaluation of threat, that is, the role of individual differences in stress. In the interactional model of stress (also referred to as transactional model of stress) stress refers to "any event in which environmental demands, internal demands, or both tax or exceed the adaptive resources of an individual, social system, or tissue system" (Monat and Lazarus, 1991, p.3). Hence while Selye defined stress as "a state manifested by a syndrome which consists of all nonspecifically induced changes in a biologic system" the interactional perspective views stress not simply within the person, nor elicited from the situation but by the interaction of perceptual (perceived demands of the situation; cognitive appraisal) and one's perceived inner resources to meet the demands (i.e., ability to cope). Nothing is considered to be inherently stressful but rather the degree to which an event is experienced as stressful depends on one's perception of the event, "any stimulus, no matter how noxious or how unpleasant, can be viewed as either desired, interesting, non-threatening, or non-harmful and, if it is so appraised, it will not be considered a stressor (Lazarus, 1991, p.3). In distinction to Selye and the life-events perspective, physical stressors only produce stress responses after they have been defined as threatening. The key issue then in the interactional model is the two-stage appraisal process where first, a stressor is evaluated in terms of its ability to do harm and second, the perceived ability to manage the stress. The

perception of control has been implicated as an important individual difference measure in stress appraisal.

1.4 Control Models:

Studies examining the role of controllability in animal response contingencies have demonstrated very similar physiological consequences to those observed in the exposure to physical stressors. In an early study Mowrer and Vick (1948; cited in Jemmott and Locke, 1984) demonstrated that rats who were exposed to uncontrollable shocks developed more fear than did rats exposed to the same amount of controllable shocks. This finding was replicated with dogs by Overmeier and Seligman (1967) where uncontrollable shock in dogs led to increased fear and passivity. While a great number of studies over the next two decades revealed the role of altering control via classical conditioning and punishment on behaviour, more recent animal work has shown the same physiological mechanisms implicated in loss of control in animals that were shown by Selye with physical stressors. In a study by Hanson and colleagues (Hanson, Larson, & Snowden, 1976), rhesus monkeys were trained to terminate an intense noise by pressing a lever and it was shown that monkeys who were denied a control response reacted with greater plasma cortisol elevation than monkeys who were able to maintain control. A number of studies have also shown that the absence of control in animal-based laboratory studies produces elevations in plasma catecholamines, immunosuppression, increased rate of tumour growth, and increased rate of stomach ulceration (see Phillips, 1989 for a review).

In laboratory based research with human subjects the perception that one

can avoid, reduce, or stop a noxious stimulation has been shown to reduce anticipatory distress, increase tolerance or endurance of pain, and enhances actual performance. In a review of 17 studies on instrumental control Arntz and Schmidt (1989) concluded that overall, studies support the buffering role of control. Human subjects appear to seek control to reduce anticipatory anxiety as well as to reduce the impact of aversive events. Substantial evidence from experimental and field studies suggest that the need for the belief in perceived control is central to human motivation and that the exercise of control, in situations that provide this opportunity, tend to be constructive and adaptive. Moreover, when this control is threatened individuals will engage in desperate efforts to regain it. Subsequently, many trait personality constructs emphasize the importance of perceived control in the primary appraisal process including the locus of control construct, learned helplessness, (and the revised learned helplessness model) as well as the `hardiness' construct. Each will be considered in turn.

1.4.1 Locus of Control (LOC)

Rotter (1966) argued that individuals maintain a characteristic attitude toward the world which serves to influence their perception and behaviours in various life situations. The characteristic attitude is a general expectancy of reinforcement contingencies where some individuals typically perceive consequences of their behaviour as contingent upon their behaviour. Those with an internal LOC are likely to perceive an event as contingent upon her own behaviour or on relatively permanent characteristic. Those individuals who are said to maintain an external

LOC perceive reinforcement as following some action of their own but are not entirely contingent upon their action. Rather, outcomes are seen to be due more to luck, chance, fate, or the result of powerful others and are seen to be unpredictable. The initial measure constructed to assess LOC was the Rotter I-E Locus of Control Scale. As constructed, the scale had low specificity and aimed towards high generality in predicting behaviour across a wide range of situations.

The LOC construct has been examined in hundreds of studies since being introduced (Coombs and Schroeder, 1988). While it was introduced as a general personality construct, it was expected that subjects who had an internal LOC would be less vulnerable to stress because of their general expectancy to consider various stressors as controllable. Conversely, externals with their low expectations for control of stressors, would be likely to meet stress with passivity and feelings of hopelessness. In a review of the role of LOC across many different stressful situations Houston (1988) concluded that the model has typically been supported, with externals reporting more stress than internals. Further, in the limited number of studies that have examined the relationship between LOC and underlying psychophysiological mechanisms have found that subjects with a moderate internal orientation cope most effectively with stress (Krause & Stryker, 1984). However, a recent study (Walsh, Wilding, & Eysenck, 1994) examining the role of LOC (and other individual difference measures) in relation to self-reported and psychophysiological stress as well as task performance found no main effect for LOC on either heart rate or skin resistance, reported stress or arousal, or task performance.

Despite the growing interest in control as a seminal personality variable in

health and well-being, a number of studies have failed to find a positive relationship between LOC and outcome variables. Further, there has been mounting criticism against the reliability and validity of the original Rotter I-E scale. First, the preponderance of supportive studies have been cross-sectional in nature where LOC has been found to correlate with stress indices at one temporal location. A few well-designed prospective studies have failed to find modifier effects of LOC in adversity situations (Ormel & Sanderman, 1989). McFarlane and colleagues (McFarlane, Norman, Streiner, & Roy, 1983) found that while LOC was associated with distress at baseline there was no observed relationship to change in distress at subsequent points in time. It appears that cross-sectional studies have inflated estimates of the relationship of LOC to stress.

Second, the failure of many studies to relate LOC to health and well-being may be the result of weakness in the Rotter I-E scale. A number of early reviews (Phares, 1976) raised doubt over the construct validity of the I-E scale; suggesting that LOC was inherently multidimensional. Subsequent factor analyses of the I-E scale have resulted in a multiplicity of factors ranging from 2 factors to 18 factors with little consistency (Paulhus, 1983). Moreover, LOC as a general expectancy variable has typically failed to predict health behaviours or outcomes in specific-situations. For example, Ormel (1980; cited in Ormel and Sanderman, 1989) undertook an examination of the role of controllability over the occurrence of life events and their consequences. The analysis revealed that the lack of agreement was due to the multifacetedness of events, which seemed to have their own unique level of controllability. This finding, in light of the other life-events studies addressed, suggest that perhaps life events cannot be aggregated and then

examined in relation to LOC as it may predict a favourable outcome with one event while not predicting another. Relatedly, while it was initially assumed that internals coped better with stress independent of situational aspects, more recent studies have suggested that in some situations, particularly where control is not available, or where control is available but the skilled response is absent, internals may actually fare worse. Moreover, some individuals who endorse items representing externality on the I-E scale may be doing so defensively, when, in fact, they are internals. The latter, referred to as `defensives' or incongruent externals, have been shown to be most susceptible to stress (Evans, 1980). In short, scale construction limitations and the multifacetedness of the control construct has resulted in many additional models of control and psychometric measures.

A number of authors have created multidimensional domain-specific scales. For instance, the Multidimensional Health Locus of Control Scale (MHLC; Wallston & Wallston, 1981) is a popular LOC measure in research on health behaviour. This scale measures health-specific LOC beliefs across three dimensions: a) the degree to which individuals believe their health is a consequence of their own actions, b) the extent to which they perceive their health to be determined externally, by powerful others and c) the extent to which individuals believe their health is determined by chance and fate. Consistent with Rotter's I-E framework, the assumption has been that internals will take greater responsibility for their health. However, evidence has been inconsistent on this account with studies finding only a weak relationship between internality and health behaviour (e.g. Waller and Bates, 1992) or no relationship (e.g. Dean

1991). Subsequently, Wallston (1989) has claimed that the relationship between external health LOC beliefs and health behaviour is at best a weak one. Despite continued efforts of those working within the framework of Rotter's formulations a number of other models have been developed that also locate control at the centre but diverge conceptually and psychometrically from Rotter.

1.4.2 Learned Helplessness

Seligman's learned helplessness model more closely situated perceived control in depression. Following Rotter's framework, Seligman argued that the absence or loss of control leads to expectations for lack of control in those similar situations. In a series of experimental studies, first with animals and then with human subjects (Hiroto & Seligman, 1975), it was demonstrated that as the su ject learns that escape from the aversive stimulus occurs independent of their responses, they subsequently fail to try in similar situations where the escape (i.e., control) response is available and similarly fail to learn new responses. Learned helplessness (and its associated sequel, the revised learned helplessness model) has become a leading explanatory model for the passivity and loss of hope seen in people suffering from depression.

The model, however, has recently been tested for its predictive utility in health outcomes. Seligman (Seligman, 1975) demonstrated a moderate relationship between an individuals characteristic style of attributions following either uncontrollable aversive or positive events. Those who make internal, stable, and global attributions for negative events may be at risk for physical illness in early and late adulthood and suffer early mortality. While learned helplessness

and attribution theory have been perceived as models of depression their importance in stress and health research may become even more important as a number of large scale research projects have suggested that depression and negative affect are the seminal precipitants to physical illness, disease and mortality (see further discussion below). In short, while Rotter and those working with the LOC paradigm determine general expectancy for control to be important, especially in ambiguous situations, learned helplessness and attribution theory more closely link perception of control to stable personality processes.

Self-esteem and Control

As reviewed, perceived control or the belief in control appear to be important cognitive mechanisms in the stress-appraisal process. That is, in many instances the belief in control is more important than whether actual control is available. Linked with belief in control is the possibility that individuals maintain an unrealistic or illusory sense of control even when no control actually exists. The importance of illusion in normal human cognition has been well documented (see Fiske & Taylor, 1991) and more recent argument states that illusions typically involve, and are motivated by central aspects of the self (Taylor & Brown, 1988). In an important, yet controversial review, Taylor and Brown (1988) argued that illusion may be adaptive for mental health and well-being. They further argued that central to illusion is the role of unrealistically high positive self-evaluations or self-esteem (and exaggerated perceptions of control as well as unrealistic optimism). In a review of the experimental literature they demonstrated that individuals with low self-esteem and dysphoria appear to be less vulnerable to the

illusion of control (Abramson & Alloy, 1981). Hence, there is support for the inter-dependence of self-esteem and perceived control in health. Further, in disentangling the unique and combined effects of self-processes and control factors, Wallston (1989) concluded that self-processes appear to be much stronger predictors of behaviour than measures of LOC beliefs. This has been supported in empirical examination (Epstein & Katz, 1992) where LOC, attribution style and self-related cognitions and emotions were assessed in relation to a number of `success in living' variables among 181 undergraduates. The results indicated that a global measure of the cognitive-experiential self best correlated with (positively) satisfaction in social relationships, psychological symptoms, physical symptoms, self-discipline problems, and substance abuse. In a number of hierarchial regression analyses measures of the self were the sole significant predictors of the above outcome measures.

Further, a recent study examining the unique effects of helplessness and self-esteem in dysphoria (Whisman & Kwon, 1993) demonstrated the superior role of self-esteem in generating long-term dysphoria whereas it was concluded that helplessness was neither a necessary nor a sufficient condition for subsequent dysphoria. In this study (n=80) subjects completed the following measures: self-esteem, hopelessness scale, depression scale, life stress scale, and the hassles and uplifts scale and then the depression scale again three months later. In a series of regression analyses both life stress and self-esteem predicted time two depression scores but a life stress by self-esteem interaction superseded the main effects in predicting time two depression scores. The interaction term demonstrated the greater moderating influence of self-esteem under conditions of

low (vs. high) life stress. In this way, high self-esteem buffers against stress in times of low stress, but those low in self-esteem are more likely to experience depression even in times of low stress. Helplessness was related to dysphoria but not independently of self-esteem.

1.4.3 Hardiness

In contrast to LOC which was developed as a general personality measure and learned helplessness theory which was developed within the context of depression, the hardiness construct (Kobasa, 1979) represents a model of personality comprising perceived control (as assessed by Rotter's I-E Scale) as well as two other related factors, commitment and challenge (comprising newly generated items plus some borrowing of items from the Self-alienation Test). As such the hardiness construct represents a composite of these three dimensions and it was developed specifically for health-related applications.

Following Rotter, control reflects the degree to which individuals typically believe and act as if experiences were predictable and controllable. Commitment reflects the tendency for individuals to get involved in activities and view these activities as interesting, purposeful, and meaningful. Finally, challenge refers to the disposition of an individual to perceive potentially stressful events as an opportunity for growth and development, opposed to a threat (Wiebe & Williams, 1992). There are two hypothesized routes by which hardiness can buffer the stress-illness relationship: by reducing the likelihood that a given event is appraised as stressful (primary appraisal) and thus likely to reduce physiological arousal in aversive situations and second, by influencing the cognitive, emotional

and behavioural coping strategies employed to respond to the perceived stressor (secondary appraisal). In the early study on male executives, Kobasa (1979) found that individuals identified as high on hardiness (n=86) were less likely to report either physical or mental distress than were individuals (n=75) identified as low on hardiness. High hardy individuals appear to report experiencing the same types of life events as low hardy individuals but they rate these experiences more positively and controllable than do low hardy individuals (see Wiebe & Williams, 1992 for a review). Further, in terms of appraisal of potentially stressful situations, Wiebe (1991) found that high hardy males perceived an evaluative threat task as less threatening and more controllable than low hardy individuals. In terms of psychosocial stress as measured by life events, a number of studies have shown that high hardiness is negatively correlated with appraisal of hassles. Banks and Gammon (1988) found that hardiness interacted with daily hassles but failed to moderate the relationship with major life events. In terms of hardiness moderating health coping behaviours, consistent with the previous findings from research on LOC and learned helplessness theory, high hardy individuals utilize more problem-focused coping approaches to potentially stressful situations whereas subjects identified as low in hardiness are more likely to engage in denial and avoidance. In a review of the literature on hardiness, coping and health Wiebe and Williams (1992) point to the superiority of high hardy individuals in a) choosing and practising better health behaviours in general, e.g. more exercise, b) the less likelihood of departing from their healthy routine during periods of increased stress, c) greater participation in education programmes to improve health practices, particularly after the onset of illness, and d) greater perseverance

when faced with alleviating, changing, or escaping potential stressors and appear to be more sensitive to contextual features when they develop a particular coping response (see Wiebe and Williams, 1992 for a review).

Finally, hardiness has been assessed directly in laboratory studies to determine its influence on psychophysiological reactivity. This avenue of research is important, not only in terms of demonstrating that hardiness and health are not just subjective response biases (i.e., high hardy individuals as less likely to report a) appraised stress, b) symptom complaints, c) poor coping practices), but to directly support Kobasa's (Kobasa, Maddi, Puccetti, & Zola, 1985) model that hardiness influences long-term health status via the tendency of low hardy individuals to experience chronic sympathetic arousal. Several studies, in fact, support this claim. In a study by Wiebe (1991) main effects for hardiness were observed for perception of threat and psychophysical responding for males although no relationship between hardiness and health was observed for females. High hardy males were more likely to perceive stressful stimuli as controllable, and were typically more likely to respond to the stressor with greater arousal. In the second study published in this report, Wiebe (1991) manipulated conditions so that the three hardiness components were more or less congruent with the situational demands and therefore made hardiness appraisals more or less likely. Subjects exposed to situations where high hardiness appraisals were more likely, displayed diminished arousal, lower heart rate and skin conductance, and smaller decreases in finger pulse volume. This pattern, however, was again only observed in male subjects. More recently, Wiebe (1991) argued that the failure of hardiness to show the predicted results in females is due to the nature of the laboratory tasks

which tend to be achievement-based and less relevant for female subjects. In this latter study she utilized an achievement task, mental arithmetic, and a more socially oriented condition (i.e., dating behaviour), and found the expected main effects for perceived stress and subsequent arousal in both conditions, for males and females.

Despite the supporting evidence for the hardiness construct in health and illness, there are studies that have not observed a relationship between hardiness and health outcomes and, moreover, failed to demonstrate the buffering hypothesis where hardiness effects should increase in stressful situations and be relatively absent in non-stressful situations. Finally, separate components of the hardiness construct have been found to have differential predictive validity in relation to health outcomes. For instance, six studies reviewed in Wiebe and Williams (1992) point to some effect for the control and commitment components but no influence of the challenge component. While Kobasa (1979) argue that the three components comprise a single construct and should not be assessed for their individual variance, a number of factor analytic reports on the original hardiness construct have not supported this empirically. Subsequently, the field has been further confused with new measures of hardiness (see Maddi, 1990 for review) of which the majority of studies have not reported reliability estimates or construct validity (Carver, 1989). Wiebe and Williams (1992), in their well balanced review of the hardiness literature concluded that support for the model is, at best, inconsistent and highlights the methodological shortcomings suggesting that research is plagued with poor construct validation and by "weak and ambiguous tests of the hypothesized model." (p.257).

Self-esteem and Hardiness

In addition to the operationalization of control with Rotter's I-E scale which is problematic for reasons discussed, many items comprising the challenge and commitment components were borrowed from the Self Alienation Test. Borrowed items include `I think my participation is important', `I feel threatened by this task' and `life is empty and has no meaning in it for me'. These items appear related to items tapping state and trait self-esteem (see chapter two for self-esteem scale items) and suggests that a more robust, higher order factor such as self-esteem may underlie the commitment and challenge components. In addition to the possibility that the failure of commitment and challenge components to consistently predict health outcomes is due to the fact they represent poor measures of self-esteem, it may still be that the sensitivity of self-evaluative items embedded within these factors allow these dimensions to account for some of the personal meaning of stress appraisal (e.g. Wiebe, 1991).

While control appears related to the primary appraisal process there is converging evidence pointing to the inter-dependence of perceived control with self-esteem and the superior role of self-processes in determining whether or not a situation is perceived as benign, a challenge, or threatening and stressful. Research on self-perception has demonstrated that the individual is an active, constructive information processor. Markus (1977) has argued that self-schemata which are cognitive generalizations about the self derived from past experience, organize and guide the processing of self-related information in social experience. In this way, self-schemas function as a selective mechanism, filtering out

information, determining what information is attended to and how it is structured and how much importance is given to it and what decisions and judgments are made regarding behavioural action. Thus research on the role of the self in perception is consistent with the belief that self-processes would be fundamental to the primary appraisal process.

In addition to control as a candidate psychological factor in stress, two global individual difference constructs have been implicated in the stress-illness relationship: the Type A Behaviour Pattern and Neuroticism.

1.5 The Type A Behaviour Pattern

In contrast to the personality models of control previously discussed, the Type A Behaviour Pattern (TABP) was not conceptualized as a personality trait, but rather as a pattern of behaviour evoked by certain environmental demands in susceptible individuals (Dembroski & Costa, 1987). While control is not directly implicated in the TABP construct it is believed to be a concomitant, with Type A individuals tending to be inappropriately controlling of others across various interpersonal contexts such as work, family, and social situations.

TABP has been defined as "an action-emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time, and if required to do so, against the opposing efforts of other things and other persons" (Friedman & Rosenman, 1974, p.67). In a landmark study, Friedman and Rosenman (1959) assessed 3400 healthy men living in the San Francisco Bay area in California for the incidence, prevalence and mortality for Coronary Heart Disease (CHD) in an

eight-and-half year follow-up study. In addition to the classic risk factors of CHD, including cholesterol, blood pressure, diet, medical history, and smoking behaviour, the TABP was assessed. Those men identified as Type A (high on the above dimensions) versus those who were identified as Type B (low on the above dimensions) were twice as likely to develop symptoms of CHD; to have a first heart attack; to have second heart attack and to have died from CHD. Hence, they concluded that they had identified a behaviour pattern that was considered coronary prone and introduced a method for its assessment.

In a later study, Haynes and colleagues (Haynes, Feinleib, & Kannel, 1980), in the Framingham heart study, sought to determine whether TABP is a good predictor of cardiovascular diseases over an 8-year period. Consistent with Friedman and Rosenman's findings, they observed a higher incidence of CHD and myocardial infarctions in white-collar men who had been identified as Type A. However, this study also demonstrated for the first time that Type A women were twice as likely to suffer from CHD and angina when compared to Type B women over this time period. These early epidemiological studies led the National, Heart, Lung and Blood Institute in the United States to conclude that Type A behaviour was as important a risk factor for CHD as were high blood pressure, high blood cholesterol and smoking. Despite the promising beginnings for the TABP as a risk factor for CHD, more rigorous studies that included appropriate comparison groups and better separated the causes and consequences of CHD have failed to demonstrate the expected relationship between TABP and CHD. For instance, in a well controlled prospective study with over three-thousand subjects across eight different health centres in the U.S., it was observed that global TABP was

not related to any clinical signs of CHD (Schekelle, Hulley, Neaton, Billings et al., 1985, reported in Dembroski and Costa, 1987).

The preponderance of recent research has shown that whereas global TABP fails to predict CHD status the sub-dimension `potential for hostility' is significantly related to CHD severity (Dembroski, MacDougall, Williams, Haney, et al., 1985; MacDougall, Dembroski, Dimsdale, & Hackett, 1985; Arrowood, Uhrich, Gomillion, Patterson et al., 1982). Dembroski and colleagues (e.g. Dembroski et al., 1985) have subsequently argued that `potential for hostility' is the principal `toxic' factor of TABP so that individuals who demonstrate facets of the TABP may only be at increased risk for CHD if they are elevated on hostility as well. And past studies may have failed to demonstrate this seminal role for hostility because the primary scale for assessing TABP is the Jenkins Activity Scale (JAS: Jenkins, 1978) which fails to adequately measure the hostility component (Dembroski & Costa, 1987). More recent attempts to assess TABP have moved away from self-reports and towards structured interviews where observation of vigorous voice characteristics (e.g. loud, explosive and rapid) proves to be the best marker.

While the veracity of the TABP in predicting CHD has been suspect, more recent attempts in the study of TABP have focused on its impact on general quality of life and its broader role as a personality style in moderating stress. The Type A pattern has been found to covary with marital dissatisfaction, work performance, and typically more dissatisfaction in interpersonal relationships. In general, the life style of the Type A person leads to higher levels of reported stress (Rosenberger & Strube, 1986). A number of other studies have also shown physiological effects with Type A opposed to Type B individuals showing

increases in systolic blood pressure and pulse rate when exposed to a potentially stressful situation (e.g. Pitner & Houston, 1980; Contrada, Glass, Krakoff, Krantz et al., 1982) although some other studies have found no physiological differences (e.g. Walsh, Wilding, & Eysenck, 1994).

Self-esteem and Type A

As interest has shifted to TABP as a maladaptive personality orientation, the focus of study has shifted to determine the underlying cognitive mechanisms that may predispose individuals to Type A behaviour. Frameworks from Price (1982), Strube and colleagues (e.g. Strube, Bolan, Manfredo, & Y Al-Falaij, 1987) and Kuiper and colleagues (e.g. Kuiper & Martin, 1989) all converge on the central role of self-evaluative tendencies in promoting TABP. Type A individuals are said to have dysfunctional attitudes that centre on unrealistic and rigid contingencies for evaluating self-worth where one must constantly prove oneself by personal accomplishments. The focus on achievement is likely to lead to excessively high performance standards for self-evaluation and it is this unrealistic quality of the goals that increase the probability of failed expectations and associated negative affect. Consequently, the individual is ever constantly driving hard, competitive and aggressive in attempts to reach unrealistic goals (Yuen & Kuiper, 1992). Consistent with the findings that hostility may be the toxic factor of TABP, because Type A's have an underlying fear of negative evaluation, social criticism often leads to self-directed and other-directed hostile feelings and behaviour (Williams, Davison, Nezami, & DeQuattro, 1992). Further, Type A individuals are more likely to engage in maladaptive coping such as denial and avoidance and, in

general, have difficulty managing affect. In a recent commentary on coping behaviour in Type A individuals Williams and colleagues (1992) stated "while these types of coping statements may be hypothesized to help protect Type B individuals from illness, the coping style here may be the result of a third variable, self-esteem, which both attenuates Type B's responses to criticism and protects them from heart disease" (p. 26) Kuiper and Martin (1989) in their self-worth contingency model of TABP found that TABP correlates negatively with self-esteem and positively with depressive affect. In short, self-esteem is increasingly seen as the underlying mechanism both motivating the health-risk behaviours of TABP and mediating interpersonal behaviour and emotion regulation, that collectively lead to stress and the higher incidence of illness.

1.6 Neuroticism

In contrast to the personality models discussed which are hypothesized to moderate the stress illness relationship via cognitive appraisal and health behaviours, neuroticism has been a candidate variable that is directly implicated in stress and illness in light of the underlying autonomic nervous system arousal and reactivity associated with individuals scoring on high on this personality trait. Neuroticism is a well-established personality trait that can be defined simply as individual differences in the tendency to experience emotional distress. Neuroticism (N) is measured by numerous scales but the two most popular have been the Eysenck Personality Inventory (EPI; Eysenck, 1964) and its successor the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975) and the NEO-PI inventory (Costa & McCrae, 1985). N is arguably multidimensional (Roger

& Nesshoever, 1987; Epstein & Katz, 1992; Scheier et al., 1994) and includes a wide range of aversive mood states, such as anxiety, hostility, and depression that collectively form a general distress factor. While N has been most directly connected as a risk factor for psychopathology, both conceptually and empirically, individuals who score high on measures of neuroticism are also likely to report a host of health complaints at any given time, and particularly when under stress (e.g. see Friedman & Booth-Kewly, 1987; Costa & McCrae, 1987; Watson & Pennebaker, 1989 for reviews). In a recent study, Ormel and Wohfarth (1991) reported that high N individuals were more likely to experience distress than low N individuals over a six year period and the influence of N was greater on psychological distress within this period than either specific long-term problems or life event changes. Further, a recent study has suggested that high N individuals are more likely to create negative events for themselves, especially negative interpersonal events (Magnus, Diener, Fujita, & Pavot, 1993). The authors concluded that negative life events are not always exogenous shocks but are in part endogenous variables related to stable personality constructs.

It is argued that high N individuals are more likely to suffer from physical illness, disease and early mortality because of the pernicious consequences of prolonged physiological activation associated with negative affectivity (as reviewed). A review by Herbert and Cohen (1993) points to the effects of negative affective states on T-lymphocytes, natural killer cells, and B-cell production of antibody--where all are significantly reduced during averse emotional states.

Despite the demonstrated relationship between N and somatic complaints and between N and physiological reactivity, surprisingly there is little evidence to

link N with actual physical illness and disease (Costa & McCrae, 1987; Watson & Pennebaker, 1989). Hence, N now appears to be recognized as a pervasive contaminator of the relationship between personality and self-reported psychological distress and somatic complaints. In perhaps the best controlled study conducted on the influence of N on health, Cohen and colleagues have just recently (Cohen, Doyle, Skoner, Fireman, et al., 1995) studied the independent effects of trait negative affect (N) and more state, situationally-dependent negative affectivity. While N is seen to be a reporting bias in somatic complaints, state negative affect has been found to mediate actual illness as in an early study by Cohen and colleagues (1993) where increases in state affect just before viral exposure was found to provide greater risk for developing upper respiratory infections. In this most recent study by Cohen (Cohen et al., 1995) healthy adult subjects were exposed to either a rhinovirus or influenza virus and then followed daily for reported symptoms and actual virus markers via mucus samples. The findings pointed to the independent effects of trait and state N, where trait N was related to greater complaints (not disease specific either) but not objective illness markers and state N was observed to be related to objective markers for both rhinovirus and influenza.

The findings suggest that while negative affectivity is related to physiological arousal and illness, reported trait N appears to be related to the perception of physical problems but is independent of illness process. Larson (1992) has argued that the problem in the literature is that studies have used retrospective reports of illness where it is well-established that negative emotional states are known to facilitate access to memories about negative experiences

such as illness. The confounding effects of N, therefore, could be minimized in health research by utilizing concurrent health reports (Larson, 1992; Cohen et al., 1995). For instance, Larson (1992) collected concurrent and retrospective health reports and found that N was related only to the retrospective reports and the concurrent reports were uncontaminated.

It has become customary to control statistically for N in personality and health research that utilizes self-reported health complaints to rule out the `general distress factor of N' as a potential third variable confound. However, a number of criticisms have been launched at the conceptual and methodological developments of N that raise some doubt as to the meaning of correlations obtained between N and health outcomes. For instance, Carver (1989) and Scheier et al. (1994) argue that N is multifaceted and the forcing of various concepts into a unitary measure clouds the meaning of results obtained: when N predicts health outcomes, it is unclear which dimension of N may be accounting for the observed correlation. For instance, in the Cohen study (1995) reported above N was operationalized by items tapping six different dimensions including anxiety, hostility, depression, vulnerability, impulsiveness and self-consciousness. Likewise, even though EPI (and EPQ) N are treated as unidimensional measures, Roger and Nesshoever (1987) found in a factor analysis that a two-factor solution best accounted for the scale items with 10 items representing `emotional sensitivity' and 9 items representing hypochondriasis. In light of the fact that N measures typically contain items tapping hypochondriasis and perceived health it may well be that observed correlations between N and health are exaggerated because of the shared similarity in the items. Costa and McCrae (1987) have

acknowledged this problem and removed hypochondriacal components when studying the relationship between N and health, although the preponderance of research utilizing N has not done so to date. The same problem may occur for items of N that tap distress which are associated with non-personality measures of distress but where there is considerable variance shared in the supposed cause and consequence. Finally, despite these difficulties in measuring N with self-report scales, there does appear to substantive evidence pointing to the role of negative emotions in health. Recent theory and research has emphasized the role of cognition in the origin and maintenance of negative mood states. This is particularly true for self-related thoughts where the cognitive content (e.g. habitual self-evaluative thoughts; self-schemas) directly impacts on emotional experience, and second, indirectly on influencing stress appraisal and coping behaviours. With respect to the later Epstein and Katz (1992) have argued that "because a major path through which coping ability influences symptoms is negative emotions, the widely recommended practice of partialling self-reported negative affect out of relations among coping, stress, and symptoms is often inappropriate...what should be partialled out, of course, is the negative reporting bias independent of the negative affect" (p. 823).

In contrast to the shortcomings associated with the trait neuroticism approach to the study of emotion on health, a parallel literature focusing on individual differences in emotional experiencing and emotional expression, such as the effects of emotional inhibition and rumination over past emotionally upsetting events may offer a viable alternative to the study of individual differences in emotions and health.

1.7 Emotion Control

In parallel to global, multifaceted trait measures of emotionality (N) another approach has been to study more unidimensional facets of stimulus intensity control. A growing literature points to individual differences in the degree to which emotion is expressed or inhibited and it has been suggested (e.g. Roger & Nesshoever, 1987) that the tendency to inhibit the expression of emotional responses may serve to prolong the arousal associated with the emotion and this process may place the individual at greater risk of illness and disease due to the pernicious consequences of persistent physiological arousal. In a recent study by Gross & Levenson (1993) emotional suppression was found to produce a mixed pattern of physiological changes, including widespread sympathetic nervous system activation. They concluded that suppressors (or internalizers, inhibitors) habitually use emotion-regulation strategies that place them at risk for health complications. From the clinical context, Pennebaker and colleagues (see Pennebaker, 1993 for review) have shown that writing about upsetting emotions or traumas has significant health benefits particularly for those who use a higher proportion of negative emotion words than positive emotion words. In a series of studies it has been shown that writing brings about a) enhanced immune function, b) improved liver enzyme function, c) reduced physician visits for students and reduced health centre visits for adults and d) fewer absentee days.

In addition to the role of emotion inhibition as an emotion control mechanism implicated in the stress-illness relationship, recent work by Roger and colleagues (Roger, 1988; Roger & Jamieson, 1988) have pointed to the important role of additional emotion-control pattern in stress, namely the tendency to

ruminate or rehearse emotional events. In a newly created personality measure to assess emotion-control styles in health research (cognitive rehearsal, emotion-inhibition, aggression control and benign control) (ECQ; Roger & Najarian, 1989; see chapter three for discussion of scale properties) significant patterns have been found in experimental applications linking cognitive rehearsal to delayed recovery from emotional arousal. For instance, in a study investigating the differential role of neuroticism and emotion control in a laboratory-induced stressor (Roger & Jamieson, 1988) heart rate recovery following the stressful task was associated with cognitive rehearsal whereas there was no observed relationship with N. In addition to the demonstrated neuroendocrine concomitant of cognitive rehearsal, Roger (1988) implicates adrenocortical hormones as well. In this study student nurses (n=34) gave urine samples on two occasions, immediately following a challenging exam and then again two weeks later. The samples were assayed for free cortisol and an index of the difference in cortisol levels from time one to time two was derived. The results demonstrated that nurses scoring higher on rehearsal were more likely to have cortisol elevations.

In addition to the potential superior role of emotion-control measures versus N in predicting arousal associated with emotional experiencing, correlational studies between N and cognitive rumination and emotion-inhibition point to the relatedness of the constructs but also to their empirical discriminability (Roger & Nesshoever, 1987; Roger & Najarian, 1989; Nolen-Hoeksema, 1993). For instance Roger has found that rehearsal correlates with N in the moderate range (roughly 25% of the variance explained) but only for non-hypochondriacal items. That is, while cognitive rumination may relate to items tapping

psychological distress it is relatively independent (less than 5% of shared variance) of the items typically associated with the confounding of the stress-illness relationship. Nolen-Hoeksema and her colleagues (Nolen-Hoeksema, Parker, & Larson, 1994) have constructed a measure of ruminative coping that assesses the degree to which people respond to the negative emotions aroused by stressful events by focusing passively and ruminatively on those emotions and is thus conceptually similar to Roger's emotion-control factor rehearsal. Nolen-Hoeksema (1993) has found that ruminative coping is not significantly correlated with negative affectivity scores and only moderately with N (less than 10% of shared variance). Moreover, similar to Roger's findings in the health context, Nolen-Hoeksema (1993) found that ruminative coping was a significant predictor of changes in depression scores over a three-week period after controlling for N.

However, when the partialling was reversed, N was not found to be a significant predictor after controlling for rumination.

Self-esteem and Emotion

Self-esteem is increasingly seen to be an important mediator in the experience of negative mood. The definition of self-esteem itself as a general sense of self-worth and the degree to which positive self-evaluations are maintained almost by necessity implicates positive and negative feelings. In this way, some construe global self-esteem as a global feeling state (e.g. Pelham & Swann, 1989). In a study directly linking self-esteem to chronic mood states, Pelham & Swann (1989) had 486 subjects complete measures of self-esteem, positive and negative affectivity, self-attribute questionnaire, and a self-ideal

discrepancy test. The correlations were robust, with self-esteem correlating inversely with negative affectivity (-.49) and positively with positive affectivity (.47) and these correlations were greater than correlations with the other self-indices.

Further, emotions of anger and hostility are often instigated by threats to self-esteem. The resulting anger displayed may be attempts to ward off negative self-feelings and restore diminished self-esteem. Kernis, Grammernan & Barclay (1989) attempted to examine the role of self-esteem in hostility and anger and a range of positive and negative emotions. They hypothesized that individuals with low self-esteem and unstable self-esteem would be more likely to show high levels of anger and hostility. Forty-five undergraduates were tested for self-esteem and trait anger and hostility, and then one month later they were followed daily for one week where twice daily they were paged randomly and asked to rate their emotions. The emotion questionnaire consisted of 20 positive (e.g. confident, happy, free) and 20 negative (e.g. unsure, frustrated, useless) emotions. The highest correlation observed in the study was between level of self-esteem and the expressiveness of anger over the one week period. Second, amongst high/low, stable/unstable self-esteem groups, unstable high self-esteem individuals reported the most anger and hostility. This relationship between self-esteem and hostility would appear to be important especially when considered in relation to the Type A pattern, with the hostility/anger dimension best predicting CHD and other health outcomes (Dembroski & Costa, 1987).

Finally, in a study by Brown and Mankowski (1993) the relationship between mood, self-appraisals and global self-esteem were examined. In the first of three laboratory experiments 22 individuals identified as having low self-esteem

(LSE) and 29 individuals having high self-esteem (HSE) were exposed to a mood inducing experience (positive, neutral, negative) and then given the opportunity to make state self-appraisals. The findings were declarative: LSE subjects showed greater variation in their self-appraisals across mood conditions than did HSE subjects. In terms of direct comparisons, self-esteem groups did not differ in the positive mood condition and differed slightly in the neutral condition but then diverged significantly in the negative mood condition. Hence, this study demonstrated that self-esteem differences widen as moods become increasingly negative and dysphoric. In a second study to address the mechanism of the self-esteem-mood relationship, they demonstrated that once negative mood states arise they are more closely tied to self-evaluations of LSE opposed to HSE subjects. Finally, in study three, in an attempt to generalize findings outside of the laboratory, Brown and Mankowski had 45 HSE and LSE subjects complete a mood and self-appraisal measure on numerous occasions over a six week period. Summing across the six week period, LSE subjects reported less positive mood and more negative mood than did HSE subjects. Second, individuals with LSE consistently appraised themselves less positively. Third, the correlations were higher between self-esteem and mood states for LSE compared with HSE subjects. In short, these studies have converged on the overlap between self-esteem and negative mood, and demonstrate the bi-directional causality in this relationship. Yet in the only study knowing to assess the role of negative affect and self-evaluations independently, Epstein & Katz (1992) found that people who engaged in negative thinking directed against themselves, in contrast to general negative thinking, were particularly prone to have stress-produced

physical symptoms even for those subjects who had negative self-evaluations but did not report experiencing negative emotions.

Finally, self-esteem may be intimately linked to emotion control patterns, particularly cognitive rumination. It has been demonstrated that individuals with low self-esteem are more prone to self-focused attention. Because the self is the richest and most elaborate knowledge structure stored in memory (Kihlstrom & Cantor, 1984) individuals with low self-esteem may be more prone to ruminate over primarily negatively-toned experiences that are easily accessible.

Thus far the discussion has focused on personality trait variables most directly implicated in the cognitive-affective components of primary appraisal in stress. There is a voluminous literature addressing the role of the secondary appraisal process, coping, in the stress-illness relationship.

1.8 Coping Styles

In contrast to the static model of trait-neuroticism in health outcomes, coping research has detailed the bi-directional influence of personality and physical and psychological health. Coping can be defined as the constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984). Coping initially referred to the role of unconscious processes, defense mechanisms, in managing intrapsychic conflict whereas coping now refers to the person's conscious attempts to manage stress. Coping is seen to be a `person' variable that is relatively stable over time and influences day-to-day demands where people do not meet each situation anew but typically bring to the

situation a familiar method of coping. While a large number of relatively enduring coping styles have been identified in past research the two most persistently identified and predictive styles have been problem-focused coping and emotion-focused coping, where the former represents the active cognitive and behavioural strategies to manage a stressful situation and the latter refers to change in the relational meaning of what is happening which mitigates the stress even though the actual conditions of the relationship have not changed (Lazarus, 1993). Situational demands are important in determining what kind of coping mechanisms are important, and most individuals display a variety of ways of coping although there appears to be considerable evidence pointing to the long-term stability of the degree to which people engage in either problem-focused or emotion-focused coping independent of the specific circumstances. Recent reviews of the literature (Endler, Parker, & Summerfeltd, 1993; Lazarus, 1993) demonstrate the mediating role of coping processes between life events and somatic complaints and between perceived stress and psychopathology, although the results are less than definitive and there appears to be greater predictive validity in emotion-oriented coping. The research has most consistently pointed to the deleterious effects of emotion-oriented coping on physical symptoms, psychological distress, psychophysiological measures and psychopathology. In contrast, problem-focused coping has shown either slightly positive effects on reducing stress and illness or no relationship. Thus, while the coping research is aimed at demonstrating the role of personality style in mediating the relationship between stress and illness, the bulk of findings primarily demonstrate how coping styles worsen rather than ameliorate stress and illness. For instance, Aldwin & Revenson (1987) conducted a longitudinal

community survey on the relationship between coping strategies and psychological symptoms. The sample was comprised of 291 adults whose prior mental health history was known which allowed the authors to address causal directionality: whether coping affects mental health independently of prior mental health status or whether poor mental health initially determines maladaptive coping attempts. Coping was assessed across a wide range of reported stressful situations including financial and health problems, interpersonal difficulties and work-related problems. Using the Ways of Coping Scale (where eight factors were derived: four factors reflecting emotion-focused strategies; escapism, self-blame, minimization and seeking meaning; and three problem-focused strategies; instrumental action, exercised caution, and negotiation; one final factor included problem and emotion-focused items), an emotion-oriented coping practice, escapism, was most predictive of psychological symptoms accounting for 19% of the variance in residualized symptoms. Problem-focused coping was by-and-large unrelated to symptom status. The results also pointed to the bi-directional causal relationship between coping and mental health where those who were initially poorer in mental health experienced more stressful live events and coped in less successful ways.

In a recent cross-sectional report (Kohn, Hay, & Legere, 1994) the moderating effects of coping styles on the adverse impact of hassles were examined in student and adult populations. Measures included in this study tapped: daily hassles, task-oriented, emotion-oriented, and avoidance-oriented coping, perceived stress, psychiatric symptomatology and minor physical ailments. Kohn et al. (1994) hypothesized that problem-focused coping would diminish the

adverse impact of hassles on perceived stress, psychiatric symptoms, and physical ailments whereas emotion-oriented coping would exacerbate the adverse impact of hassles on these outcome indices. In the student population (n=186) task-focused coping did not diminish the impact of hassles on psychiatric symptoms or physical ailments and while it did influence perceived stress this was only true when hassles were at relatively low levels. Likewise, emotion-oriented coping did not increase the adverse effects of hassles although it directly influenced perceived stress and psychiatric symptom reports. Third, when the interaction effects of hassles were examined the increased variance for coping beyond hassles on psychiatric symptomatology was quite small (.09) and zero (.00) for physical ailments. The results were nearly identical in the adult sample (n=165) in terms of no effects for task-oriented coping although emotion-oriented coping did exacerbate the effects of hassles on psychiatric symptomatology but again, not physical ailments. Finally, the additional contributions of coping and a coping by hassles interaction over and above the impact of hassles were insignificant or zero in the case of minor physical ailments.

The failure of coping styles to mediate the stress-illness relationship has been criticized on methodological grounds (Endler & Parker, 1990). For instance, despite the presence of over 20 scales measuring coping styles, the bulk of them suffer from internal consistency and reliability difficulties. In contrast to the widely used Ways of Coping Questionnaire (Folkman & Lazarus, 1988), there are two new scales which show the role of avoidance coping in psychopathology (Endler & Parker, 1990) and detached coping in the role of health (Roger, Jarvis, & Najarian, 1993) (see chapter three for greater discussion of this newly constructed

coping styles scale).

Self-esteem and Coping

Finally, and consistent with the trends in research in personality models thus far discussed, there is movement towards linking coping styles more centrally with self-processes. Endler (Endler et al., 1993) in a recent review placed emphasis in his definition of coping on the importance of personal capacity and competence. And after decades of research in the area Lazarus (1993) commented "I am confident that personal meanings are the most important aspects of psychological stress with which the person must cope, and they direct the choice of coping strategy". Bednar and colleagues (Bednar, Wells, & Peterson, 1989) argue that self-esteem is founded upon coping responses that seek to either cope with or avoid that which one fears. Avoidance, accordingly, generates negative self-evaluations because of the inherently undesirable qualities of this behaviour which create bad feelings and failure to obtain personal growth. Although a number of pathways by which self-esteem may influence task-oriented, emotion-oriented and avoidant strategies, converging theoretical discussion linking self-esteem to coping patterns still remains to be empirically validated.

Summary

The personality models discussed have been hypothesized to moderate the stress-illness relationship by influence on cognitive, emotional and behavioural systems. These are multidimensional trait models which, despite their theoretical advantages, have not always held up to empirical scrutiny. That is, the locus of

control construct; the hardiness construct; neuroticism and coping styles contain multiple components that appear to relate to physical and psychological health variables differentially.

In contrast to this global, multidimensional trait personality approach, one alternative method to the study of personality and health research is to focus on more concentrated cognitive, emotional, and behavioural personality processes in health. In addition to the indirect impact of self-esteem on health, the remainder of this review will focus on existing research that implicates self-esteem directly in well-being.

1.9 Self-esteem and health

Linville (1987), in perhaps the first large scale study addressing the relationship between self-processes and physical health, hypothesized that individual differences in vulnerability to stress are due, in part, to differences in cognitive representations of the self. Linville's previous work (1985) had demonstrated that individuals with low self-complexity tended to have more extreme affective and self-appraisal reactions to threat. Self-complexity refers to the extent to which the self is represented by multiple cognitive self-aspects and the distinctions among these self-aspects. In this way, greater self-complexity would moderate the impact of stress on illness and depression because the individual that has multiple, independent self-aspects is able to maintain positive feelings in self-dimensions when other dimensions are threatened. For the individual with low self-complexity negative events trigger negative thoughts and feelings associated

with various self-aspects and these in turn, produce heightened negative affect, low self-appraisal, depression and other stress reactions. The assumption of the model is that individuals high in self-complexity are not immune to physical and mental health but rather that self-complexity will reduce the adversity of negative events when they do occur. To test the self-complexity-affect-extremity model, Linville (1987) in a prospective study over a two week period had 106 undergraduates complete a card sort exercise to determine self-complexity and then report experienced life events in the past two weeks. In addition, at both time one and then two weeks later, students completed a questionnaire measuring depressive symptoms, physical symptom ratings, and a measure of perceived stress. Finally, subjects reported illnesses experienced over the two-week period. The results indicated the expected buffering role for self-complexity on physical health. At time one in the low stress condition self-complexity was not related to perceived stress, physical symptoms or depression (or reported life events) but at time two (where all time one scores were partialled), self-complexity (at time one) was found to relate to physical symptoms (.28). Further, significant self-complexity by stress interactions were observed for time two ratings of illness, flu, aches, and cramps which accounted for more variance than illness ratings at time one, total stress at time one or self-complexity at time one. The findings supported the buffering role of self-complexity on health although the small sample and the modest relationship (5% of the variance of physical health attributed to self-complexity) suggest the need for replication. The time lag of experienced life events and outcome measures by only two weeks is also potentially problematic. A more informative prospective study would include a longer time period to assess

the relationship of self-processes and illness. Finally, this study did not directly test the assumptions of the model: that is, while self-complexity appeared to buffer the adverse consequences of stress and illness, the process by which this occurs was not tested. Higher global self-esteem has been observed to relate highly with increased self-complexity, or stated differently, more specific, stable self-concepts (see chapter two for discussion). While this study did not purport to test self-esteem it may have being doing so unwittingly. Notwithstanding this study was important in so far as it demonstrated the moderating influence of the self in health.

DeLongis and colleagues (DeLongis, Folkman, & Lazarus, 1988) did assess the mediating role of self-esteem, as well as social support on the impact of daily hassles on health and mood. Seventy-five married couples completed a battery of questionnaires (hassles [day-to-day experiences of general irritation, frustration, and excessive demands] and uplifts scales [day-to-day positive experiences]; daily health record; Rosenberg self-esteem inventory; emotional support report) and were interviewed once monthly during a six month period for repeated assessment of these variables. During periods of four days between each of the six monthly interviews, participants completed the hassles and uplifts scale and the daily health record at the end of each day. Hence, there were 20 assessments of stress and illness plus six assessments of the other variables. DeLongis hypothesized that self-esteem would moderate the impact of stress on illness through its influence on coping processes. They reasoned that people who have positive views of themselves should be less likely to feel overwhelmed by stressful situations because they have confidence to cope with an array of

problems. The results reflected a positive relationship between hassles and physical symptoms across the six months, although this relationship was moderated by self-esteem. Self-esteem moderated the impact of daily hassles on same-day reported symptoms (-.19) as well as next-day reported symptoms (-.25). This moderating role of self-esteem was greater than the impact of emotional support or network size on the hassles-symptom relationship, although self-esteem did not appear to moderate the relationship between hassles and reported daily mood whereas emotional support did do so. However, this study also demonstrated that self-esteem and social support were not entirely independent and this has been demonstrated in previous research as well. For instance, self-esteem is built into models of social support (Cobb, 1976; Cohen & Wills, 1985) so that when social support demonstrates a moderating impact on mental and/or physical illness (e.g., Cohen & Wills, 1985) it is unclear as to whether this buffering role is due to the quantity or quality of support or the underlying personality mechanisms (Stroebe & Stroebe, 1995, pp. 215-228). The research to follow in this project is to focus on the underlying personality component, namely, self-esteem.

In terms of method, the hassles scale utilized in this study removed potentially confounding items with measures of stress. It also used a prospective design that controlled for initial values. One major limitation on this study, however, is reflected in the sampling. The lower and upper limits of the Rosenberg self-esteem scale is 10 and 40, respectively. The mean score in this sample was 35 with a mode of 40. It may be that the modest effects of self-esteem in this study were due to the attenuated range of self-esteem (as well as

emotional support). Hence this study represented a conservative test of the moderating influence of self-esteem.

In addition to the moderating role of self-esteem on negative life events and daily hassles, a study by Brown and McGill (1989) examined the relationship between self-esteem and stress associated with positive life events. As reviewed previously, positive life events have consistently failed to predict health outcomes. Following from Brown's identity disruption model of stress, positive life events may be particularly adverse for health amongst individuals who have low self-esteem, because positive events force the person with low self-esteem to change the way they think about themselves and according to Brown the greater the disruption in identity the greater the person's risk for developing illness. This occurs by two possible paths: a) disruption in identity disrupts the processing of personal information and the forming of clear plans and goals and more energy is exerted to maintain a life course and thus leaving the person more depleted and vulnerable to illness, b) disruption of identity leads to decreased personal control. As postulated these changes do not occur for the individual with positive self-esteem because they are by definition used to thinking of themselves as successful. To test this model Brown and McGill (1989) conducted two studies. In the first study 261 female high-school students completed self-reported life events, self-esteem, and a measure of physical well-being at the beginning of the school year. Four-months later all measures were reassessed again. The analyses of health were limited to illness with a short incubation period such as: colds, sore throats, sinus and ear infections, and laryngitis. The results indicated that a total summed measure of positive life events was unrelated to illness scores

at either testing period. The results indicated a positive life-events by self-esteem interaction prediction of illness ratings at time two while controlling for time one initial illness scores, however. As predicted, high levels of life events were linked to increases in self-reports of illness only among subjects with low self-esteem and this finding was independent of main effects or any interaction effects with negative life events. In the second study a more objective indicator of illness was recorded: physician visits. One-hundred and seven (n=107) undergraduates were tested in a similar fashion to study one from the fall semester to the spring semester. The results corroborated the initial findings where after time one scores were statistically controlled, time two health centre visits were only predicted by the interaction between positive life-events and self-esteem, again even after controlling for negative events. These studies, however, utilized 12-month retrospective accounts of life events which could be contaminated by recall biases (as previously discussed). Second, examination mean illness reports in study one and the mean physician visits in study two reflect that the preponderance of the sample was very healthy and floor effects may have obscured the relationship between the independent and dependent variables.

Lyons and Chamberlain (1994) in a most recent study assessed the moderating role of self-esteem and dispositional optimism in the impact of daily hassles on health. Optimism is a conceptually related construct to self-esteem although they have been found to empirically discriminable (Scheier et al., 1994). They are also conceptually distinguishable where self-esteem focuses on one's sense of self-worth and acceptance whereas optimism focuses more on the belief about obtaining outcomes (Note that this would also appear to differentiate self-

esteem from self-efficacy (Bandura, 1977) where self-efficacy refers to the confidence in reaching goals. This, of course, is only part of self-esteem, as it is not uncommon to see very successful people, in terms of achievement, suffering from low self-esteem). While self-acceptance may be related to positive and negative successes, is not solely dependent on outcomes for maintenance (see chapter two for discussion for facets in addition to achievement that constitute self-esteem). Central to optimism is the belief that optimists are more likely to persist to reach goals because they see desired outcomes as within their reach than pessimists. Optimists have been found to suffer less distress following stressful experiences than do pessimists (Scheier & Carver, 1987). A number of studies have found that Optimism impacts on health through its moderating influence on coping styles where pessimists are more likely to engage in denial, distancing, and avoidance coping (reported in Stroebe & Stroebe, 1995, p.213). In this study by Lyons & Chamberlain (1994) 169 undergraduate students were first assessed for health status, optimism, self-esteem, and minor life events and then re-assessed two weeks later. In this study self-esteem and optimism were moderately, positively related (.57). At time one self-esteem was not related to hassles but was related to uplifts (.35) and interpersonal uplifts in particular (.35) and these relationships held at time two as well. In terms of health outcomes, self-esteem was related to self-rated health (.28), total symptom reports (-.22), upper respiratory symptoms (-.19) as well as non-respiratory symptoms (-.27). These relations were all significant at time two excluding the correlation between respiratory symptoms (-.18ns). However, no self-esteem by hassles or uplifts interactions were observed for health reports where optimism did interact with both

of these measures on symptoms. Self-esteem may moderate the stress-health relationship particularly when events are relatively valenced and have personal relevance. As the authors note in this study, the tapped daily hassles may not have reached this threshold. In contrast to these superior findings for optimism on physical health a most recent large scale study (Study 1, n=4,309) by Scheier and colleagues (Scheier et al., 1994) self-esteem was found to better predict the number and intensity of symptoms and depression ratings (although differences may not be statistically different) and when self-esteem was partialled the significance between optimism and the number of symptoms became non-significant and the intensity of symptom ratings, while remaining significant (.12) fell considerably to be only a marginally meaningful relationship. This study also demonstrated positive correlations between self-esteem and the following coping practices: active coping (.25), planning (.20), denial (-.20), mental disengagement (-.17), and behavioural disengagement (-.38). Finally this study showed a positive relationship between self-esteem and the ability to make successive re-appraisals to reduce stress and growth (.33). These later correlations link self-esteem to coping and stress appraisal.

There are two recent laboratory studies that link self-evaluative processes directly to the perception of stress and the subsequent physiological concomitants. Greenberg and colleagues (Greenberg et al., 1992) conducted three laboratory experiments to test the buffering effect of self-esteem against anxiety. While the framework of the study was the assessment of the relationship between self-esteem and anxiety, the use of conditions which included threatening scenes of death on a video (study one) and threat of shock (studies two and three) could be

arguably better operationalizations of laboratory stress than anxiety. Similarly state arousal as measured by skin conductance measures have been used to gauge stress reactions. In contrast to previous studies, this study manipulated self-esteem levels in subjects through bogus personality feedback and therefore could better unravel the causal relationships between self-esteem and outcome measures. In the first study, high self-esteem subjects did not report experiencing anxiety even when exposed to the most aversive video presentation. In the two remaining studies utilizing high and neutral self-esteem groups again, when exposed to threat of shock, high self-esteem subjects exhibited less autonomic arousal. Most importantly in the third study, the mediation of self-esteem on threat and arousal was not accounted for by changes in affectivity. The self-esteem manipulation had no effect on positive affect and the later did not impinge on the self-esteem-arousal relationship.

Strauman and colleagues (Strauman, Lemieux & Coe, 1993) have recently conducted an investigation of self-evaluations on stress appraisal and physiological arousal. In this study, in contrast to all studies reported thus far, an individually tailored acute stressor was presented. Thirty-eight subjects participated in two sessions one week apart. Based on depression and anxiety scores, subjects were divided into dysphoric, anxious and control groups. Subjects were told that during each session they would be given a booklet containing open-ended questions about personality traits. The content of the questions in the booklet constituted the experimental manipulation. Each booklet asked questions about the persons perception of themselves and as unknown to the subject, the booklet contained either self-guide (self-rated ideal self) attributes that the subject

had listed six weeks earlier (self-referential priming) or the self-guide attributes of another subject (yoked control priming). The self-referential booklet for each distressed group contained some of their own self-guide attributes from the self-guide domain of interest, that is, an ideal or ought (characteristics one should have) attribute and included any attributes that were discrepant with an actual self-attribute. The dependent measures were negative emotional content written in the booklets, plasma cortisol levels, and assayed immune measures. Based on the model, it was expected that the anxious group would have greater actual-ought discrepancies and dysphoric individuals would have greater actual-ideal discrepancies and these discrepancies would lead to decreased NK cytotoxicity.

The results indicated that the pattern of actual-ought and actual-ideal discrepancies for the anxious and dysphoric groups, respectively, were supported. In terms of the negative affect content of written responses, group differences were observed for dysphoric and anxious content during self-referential priming but not during yoked control priming and the content reflected group membership: so that anxious group members demonstrated more anxiety and the dysphoric group relayed more dysphoric content. Further, in terms of cortisol measures, cortisol tended to be higher following self-referential priming than following yoked control priming and differences in NK toxicity were observed in the expected direction, but only for the anxious group and the relationship held even after controlling for life events. Finally, when the control group was exposed to self-referential priming there was trend towards increase NK cytotoxicity suggesting that positive, self-evaluations may have stress-buffering, immune enhancing effects. Although the external validity of this study is compromised by the few

subjects and the multiple analyses which capitalize on chance, the study points to the important role of self-evaluation in the perception of stress and the subsequent catecholamine and cortisol consequences. Finally, in contrast to Greenberg et al's., (1992) formulations, Strauman et al. (1993) suggest that self-evaluations moderate stress appraisal through negative affectivity so that individuals characterized by chronic negative self-evaluations are more vulnerable to acute exacerbations of negative affect in situations that trigger self-evaluative cognition. However, the sample in Strauman's study was pre-selected for its tendency to experience negative affectivity and so replication is much needed in normal populations.

1.10 Summary and Research Outline

The accumulated literature, despite its brevity, is suggestive of a stress-buffering role of self-esteem in psychosocial stress and laboratory-induced stressors. Individuals with low self-esteem may be more likely to maintain negative affective arousal that places them at direct risk for illness and disease because of the chronic arousal associated with chronic negative self-evaluations. Second, individuals with self-esteem may be more likely to show exaggerated, negative arousal in response to negative events when they occur. Third, individuals with low self-esteem may be more likely to appraise even benign experiences as more threatening. Relatedly, individuals with low self-esteem may be at greater risk for health-related complications in response to positive life events. Fourth, individuals with low self-esteem may employ non-effective and even counter-productive coping strategies that inadvertently prolong the pernicious effects of acute

stressors. The research that follows is an examination of the relationship between self-esteem and psychosocial stress, psychophysiological, and psychopathology.

In chapter two, a new measure for evaluating self-reported self-esteem is developed. Virtually all studies examining self-esteem utilized a single operationalization of self-esteem, namely, the Rosenberg Self-esteem Inventory (RSE:Rosenberg, 1965). As will be described in the next chapter the RSE fails to tap life domains that have been shown to relate to global self-esteem and, correspondingly, life stress. As such, there are serious challenges to the validity of the RSE and its continued use as an operationalization of phenomenological self-esteem in health research. The chapter outlines the shortcomings in the RSE; shortcomings with other multidimensional self-esteem scales; the confounding of self-concept and self-esteem measures, and finally presents a new measure of self-esteem that is constructed specifically for clinical-health research and practice.

In chapter three the buffering role of self-esteem is examined in a group of students over an eight-week period and in chapter four, a more process-oriented approach is undertaken whereby the bi-directional influence of self-esteem and coping on health and distress is investigated over the academic year of first year university students.

In chapter five, a series of laboratory experiments will attempt to address the causality of self-esteem in stress reactivity by manipulating self-esteem levels in different groups and then exposing them to relatively stressful situations. In this way, the psychophysiological concomitants of self-esteem will be examined.

In Chapter six, the nature and function of self-esteem is assessed in a

group of patients diagnosed with depression or anxiety-related spectrum disorders and who are undergoing psychological treatment. This chapter will explicitly test the interactive influence of self-esteem and emotion-control in patients perhaps most susceptible to difficulties in each of these domains.

Finally, the concluding chapter will attempt to summarize the findings and provide a tentative model for self-esteem in health and well-being, with an emphasis on the interaction with coping and emotion-control processes.

Chapter 2

2 The Construction and Validation of The York Self-esteem Inventory

2.1 Introduction

The term self-esteem has been used since the late 17th century, although the pioneering efforts of the American Psychologist, William James (1890/1950) defined it more precisely as a central psychological construct. The academic developments in the study of self-esteem over the past century are well beyond the scope of the present author's objectives, but a short review is presented that gives the necessary background and relevance for the development of a new measure of self-esteem. Not too long ago Wylie (1974) stated that "it has recently become widely fashionable and acceptable to write about such hypothetical constructs as the self-concept and self-esteem without seriously attempting to define such terms" (p.316). There is still, currently, the sense that research on self-esteem lacks theoretical clarity and methodological sophistication and prominent self-theorists (Gergen, 1983; Wylie, 1979) have argued that self-esteem must first be clearly defined and operationalized before initiating experimentation. This chapter presents the construction of a new global measure of self-esteem to be utilized in clinical health research.

2.1.1 Background

There has been a plethora of conceptual and methodological approaches to the study of self-esteem since James (1890/1950) first attempted systematically

to delineate its structure and function. He saw the self as comprised of two dualistic parts; the conscious, experiencing `I' and the empirical self or `me', the object of reflection for the experiencing `I.' The `me' is equivalent to what is currently considered the self-concept and was said by James to include "the sum total of all that he can call his, not only his body and his psychic powers, but his clothes and his house, his wife and children, his ancestors and friends, his reputation and works, his land and horses, and yacht and baok account." (1890 in Donnelly, 1992, p.176). James suggested that self-concepts emerged from one of three principle self-relevant categories: the material self (objects and possessions considered to be one's personal property) , the social self (a persons reputation or share of recognition) and the spiritual self.

The experiencing, process-oriented `I' reflects what we currently view as self-esteem, and this received much less attention in James' deliberations. Self-esteem was seen to be dependent on the goodness-of-fit between one's aspirations in a specific self-domain and the realized potential in that self-domain. Thus, according to James, self-esteem was linked directly to achievement in important, chosen self-concept areas. In James's account, self-esteem was seen to be a stable trait with some fluctuation due to successful and failed experiences, but at the same time always returning to an "average tone" that is independent of objective feedback (Bednar et al., 1989).

Two fundamental distinctions arise from James's early formulations that have influenced subsequent attempts to measure and examine self-esteem. First, self-concept and self-esteem are distinguished conceptually as the former represents the descriptive, static, categorical structure-like aspects of the self

whereas the latter represents the non-static process by which we actively employ self-evaluations and maintain a sense of self-worth. To the present, there is confusion about this distinction in the empirical literature despite the general agreement that conceptually, self-concept and self-esteem are not identical constructs (Gergen, 1984; Wylie, 1974, 1979).

Several authors who have developed scales to measure multidimensional self-concept (e.g., Shavelson, Hubner, & Stanton, 1976; Flemming and Watts, 1980; Marsh, Smith, Barnes, & Butler, 1983; Roid & Fitts, 1991) have argued that the self is comprised of both descriptive (self-concept) and evaluative (self-esteem) elements that are not empirically distinguishable. In this way, global self-esteem is usually derived by summing the various descriptive self-components, despite the absence of the important evaluative component. This problem is reflected in the widely-used Tennesseee Self-concept Scale (TSCS, 3rd Edition: Roid & Fitts, 1991). The TSCS purports to measure independent multiple self-concept factors and utilizes many sophisticated scoring summaries to arrive at a host of psychological health indices. Yet summing across all of the independent, descriptive factors is also operationalized as a global measure of self-esteem. The absence of consistent evaluative items mitigates this simplistic reduction of description to self-evaluation. For example, this is clearly seen in TSCS items, "I understand my family as well as I should", "I try to please people but not overdo it", "I am as religious as I want to be", or "I try to be careful about my appearance", but to name a few. These items are not assessing self-evaluations.

Recent examination of the relationship between self-concept and self-esteem has demonstrated only a modest relationship between specific self-

concepts and global self-esteem (Marsh, 1986; Pelham & Swann, 1989). In this later study Pelman and Swann found that individuals with low global self-esteem tended to have fewer positive self-concepts but they were not equivalent. Marsh (1986) found that specific self-views only accounted for approximately 50% of the variance of global self-esteem. In short, recent evidence appears to lend empirical support to the conceptual distinction between self-concept and self-esteem. Despite this advance recent attempts to measure the self still witness the conflation between self-concept and self-esteem (e.g., Beck, Steer, Epstein, & Brown, 1990; Roid & Fitts, 1991). For instance, Beck et al. (1990) in the development of the Beck Self-Concept Inventory comments that in his discussion of self-esteem instruments, Demo (1985) "indicated that there are too many poorly validated self-concept scales in the psychological literature", and further, "operational definition and evaluation of the self-concept is important because persons with low self-esteem are more vulnerable to the development of psychiatric disorders than persons with high self-esteem." (p.23). The lack of precision in self definitions continues to plague developments in self-esteem research, in the newly standardized TSCS (Roid & Fitts, 1991), for example, it is argued that the total scale score on the TSCS can be taken as a global measure of self-esteem or alternatively as an index of total self-concept.

Gergen (1984) has argued that not only is it important for theoretical developments in self theory to recognize the distinction between self-as-structure versus self-as-process but that research efforts should move away from its current emphasis on mechanistic models of self-concept and focus on the process elements of self. The emphasis on process and feedback models is consistent

with other models attempting to conceptualize and measure the relationship between personality, stress and well-being (as reviewed in chapter one) and reflects the interest in the relationship between person variables and situation variables in studies to follow.

The second relevant issue emerging from James's perspective was that the self-concept is multidimensionsional. It has long been accepted that the self-concept is comprised of multiple domains such as interpersonal relations, academic achievement, family relations, to name a few, and empirical measures have included these dimensions in their item ratings. Consistent with the above discussion about the distinction between self-concept and self-esteem, recent research has begun to assess the level of self-esteem related to each specific self-concept and then arriving at a global measure of self-esteem by summing the component sub-scores. This scoring technique is a return to a view that global self-esteem is multidimensional as it relates to specific self-concepts. However, by measuring individual, specific self-concepts and deriving separate self-concept scores and then correlating these totals with a global self-esteem measure would still seem to leave the self-evaluation component relevant to that specific self-domain missing (e.g., examining family self-concept in relation to core global self-esteem instead of global self-esteem with family-relevant self-evaluations). In this way, the process-oriented self-evaluations are being extracted from the relevant self-domains. It would appear that there is room for development of a new measure of self-esteem that takes into account important, multiple domains of self-esteem in the rating measure. Several multidimensional self-esteem measures are already in current use. However, these scales include self-evaluations

relevant to only a restricted number of self-domains, particularly the academic domain that may not be relevant for a wider subject panel (e.g., Shavelson et al., 1976; Coopersmith, 1967). Second, there is a confusion between self-description and self-evaluation in these multidimensional scales (as previously mentioned,) (e.g., Flemming and Watts, 1980; Marsh et al., 1983).

For example, the most widely used scale of multidimensional self-esteem is the Coopersmith Self-esteem Inventory (Coopersmith, 1967). However, it contains only three dimensions (social, academic and home), and while it has been used successfully for many years in the educational arena its clinical utility has been questioned (Anastasi, 1988, p. 638). Furthermore, the inventory was constructed and standardized exclusively with young primary school children, and so items are most reflective of this developmental period.

Just as existing measures of multidimensional self-esteem suffer from construct limitations, the most widely used measure of global self-esteem, the Rosenberg Self-Esteem Inventory (RSE; Rosenberg, 1965) suffers from several limitations. It consists of 10 items coded in a 4-point likert format, with items tapping core self-esteem such as "all in all I am a person of self-worth." The scale has been shown to possess very good reliability and validity. However, the RSE measures self-esteem independent of important self-domains and fails to capture the developmental nature of self-esteem. While it is generally accepted that self-esteem fluctuates somewhat across time and situations, the RSE has been shown to be rather impervious to situationally-based manipulations directed at influencing self-esteem (Heatherton and Polivy, 1991). Collectively, these limitations point to the restricted breadth of the RSE and its insensitivity to

situational fluctuations.

In summary, currently existing multi-dimensional self-esteem scales tap too few self-esteem domains and have not been found suitable for clinical contexts but rather offer advantages for school-based samples. Second, scales that do assess multiple life domains focus on the descriptive relevance of each domain and not the important evaluative component. Third, the most widely used measure of self-esteem, the Rosenberg, taps only the personal domain of self-esteem and, is therefore, not a truly global measure. A valid global self-esteem scale for research and practice in stress would not only comprise the important domains that have been shown in the literature to contribute to self-esteem, but also the domains which have been sources of threat and stress. There is a need for a measure of self-esteem that is related to important self-esteem dimensions and reflects the specific evaluative component that constitutes self-esteem and differentiates it from self-concept and other phenomenal aspects of the self. A brief review of the literature on the structure and function of self-esteem will follow with the aim of demonstrating the important domains relevant to self-esteem and a valid measure for stress research.

2.1.2. Current Clinical and Empirical Evidence Relating to Self-esteem Measurement

Individual differences in self-esteem have been shown to reflect differences in "cognitive access" to affectively positive versus affectively negative knowledge about the self (Greenwald, Bellezza, & Banaji, 1988). Consistent with self-esteem as a cognitive-affective construct, self-esteem can be seen as attitude toward the

self that is based on an elaborated set of beliefs about oneself with different beliefs having differential valence of evaluations. These self-evaluations have been theorized to develop very early in childhood (Coopersmith, 1967; Bowlby, 1969; Kegan, 1982). Individual differences in self-esteem emerge very early in childhood and seem dependent on the degree of closeness and love from caregivers. Additional studies have shown that parental style influences childhood self-esteem. Parents who offer their children strong expectations for goal-directed behaviour; provide adequate rules and guidelines for behaviour; communicate to the child their acceptance and belonging in the family and respect the child's individuality, are more likely to have children with high self-esteem (Sroufe, 1983). It has been suggested that early parental relations are central not just to childhood self-esteem but predict adult self-esteem as well (Rosenberg, 1986; Roberts and Bengton, 1993). Moreover, adolescent self-esteem is seen to be relatively stable into adulthood contrary to the view that adolescence is a time of turmoil for the self (Savin-Williams & Devo, 1984). Roberts and Bengton (1993) conducted a 14 year longitudinal study to measure the relationship between familial relations and self-esteem. Baseline rates of parent-child relations were obtained, including measures of self-esteem (RSE), psychological health (Centre for Epidemiological Studies-Depression-CES-D) and a qualitative measure of parental affection. The average age of the child and parent at the baseline period was 19 and 44, respectively. The results showed that baseline affection was the best predictor of self-esteem at 14-year follow-up. Subsequent analyses matched parent-child age cohorts and found no differences in the correlations between parental affection and self-esteem thus suggesting that age is not a powerful proxy for reducing the

contribution of parent-child affection to a young adult's self-esteem. The general conclusions of this important study suggest that greater parent-child affection early in a child's life contributes to later well-being in adulthood (Roberts and Bengton; 1993). Finally, this study also pointed successfully to the distinction between self-concept and self-esteem. Even though the family role-identity was shown to decrease during young adulthood the evaluative component established early was important to later global self-esteem.

While Rosenberg (1965) argued that adolescence is a time of storm and stress, Savin-Williams and Devo (1984) argue that this is true only for a percentage of adolescents. They argue that if an adolescent experiences uncertainty and turmoil in self-understanding then this may be characteristic of his or her entire life course. Rosenberg (1979) observed that adolescents with inconsistent self-concepts showed greater psychological distress and increased predisposition to antisocial behaviour than those with a firm understanding of self-worth. Collectively, these studies suggest that ambiguity in self-worth may be an important component of self-esteem and there may be stability in this instability throughout the life span. Hence uncertainty or ambiguity in self-evaluations may be an important component of self-esteem.

The symbolic interactionists, Cooley (1902) and Mead (1934) attempted to define the self much more in terms of the social sphere. Like James, Cooley argued that the self is multidimensional but that the social self was the important component. In this way people learn to define themselves by their perceptions of the way others define them., as Cooley stated "we always imagine, and in the imagining share the judgments of the other mind" (Cooley, 1902, p.152). This is

what Cooley referred to as the "looking-glass self", the self developing according to: a) the individual's perception of how he or she must appear to the other person, b) the individual's interpretation of how the other person evaluates him or her on the basis of that interpreted perception and c) the individual's personally experienced affective response to the perceived judgment (Bednar et al., 1989).

Mead (1934) similarly followed Cooley's emphasis on the social aspect of self-concept and self-evaluation and emphasized the development of the self via language and interpersonal experience. Together, Cooley and Mead suggested that self-esteem is fundamentally dependent on the view others have of us so that to achieve high self-esteem we need to be highly esteemed by significant others. In addition to these important theoretical developments, self-conceptions and evaluations have been shown to derive from social comparison and social interaction with others (Markus & Wurf, 1987; Marsh, 1986) and scales exist that measure social self-esteem exclusively of other dimensions, for example the Janis-Field Feelings of Inadequacy Scale (JPI; Janis & Field, 1959). Relatedly, research on self-presentation has shown that physical attraction is highly related to global self-esteem. Physical attraction is a valued commodity in western culture which may have direct effects on level of self-esteem in the first instance, and it has been shown that people who are attractive are treated more favourably, are assumed to possess numerous positive qualities, and are given more opportunities to succeed (Snyder, Tanke, & Berscheild, 1977), which may all contribute to opportunities for positive self-evaluation in the second instance. Further, Sabini states that more attractive people possess more confidence to practice social skills and are therefore more likely to obtain positive feedback about themselves.

Following James's formulations that self-esteem is directly linked to successes or achievement in important self-concept domains, there have been numerous empirical studies showing a positive relationship between expectations for achievement, actual achievement and self-esteem on the assumption that academic achievement is an important dimension of self-concept (e.g., Shavelson et al., 1976). The best known self-concept measures have also routinely included a large proportion of items tapping academic achievement (e.g., Piers-Harris Self-concept Scale (Piers & Harris, 1969), as have multidimensional measures of self-esteem (e.g., Coopersmith, 1967). Moreover, self-esteem has also be related to other social-cognition processes that mediate achievement. For example, Midkiff and Griffen (1992) found that self-esteem mediated students' causal attributions for achievement-related outcomes. Multidimensional scales of self-concept have invariably included academic achievement as a core aspect of the self as have the several existing multidimensional measure of self-esteem.

2.1.3 A new self-esteem scale

As has been shown, the argument against a unidimensional, atemporal, adevelopmental self-concept has been responded to by self-concept scale constructionists. However, existing global self-esteem measures have failed to incorporate the same methodological advancements obtained in the self-concept area. As described, research has returned to examining global self-esteem in relation to self-concept domains. Because self-evaluations are primarily rooted in social experience, a valid and reliable measure of global self-esteem would need to take into account the accumulated emphasis in the literature on the importance

of the family, interpersonal relations, achievement, and physical attractiveness as well as the ambiguity within these evaluative realms. There is no existing self-esteem scale that attempts to assess these dimensions. The remainder of this chapter will be devoted to reporting the validation results of a new scale for measuring self-esteem.

2.2 Method

2.2.1 Subjects

Subjects were recruited from a research panel comprised of first year students at the University of York who agreed to volunteer for research throughout the academic year. Two-hundred and twenty-four (224) were contacted via the internal university mail for the questionnaire survey and 183 returned the forms for a response rate of 82%. Of the 183 subjects in this study, 72 were male (mean age = 19.6, SD = 7.1) and 110 female (mean age = 20.0, SD = 4.26), one subject declined to provide their sex. Subjects received no financial or academic credit for their involvement.

2.2.2 Scale Construction

Initially, a 60-item questionnaire, entitled the `York Self-esteem Inventory' (YSEI) was created. The new scale used a 5-point likert scale score format for each individual item, ranging from 1 `strongly disagree' to 5 `strongly agree'. Scale items were generated to reflect the following self-esteem domains: personal-core self-esteem, social, family, achievement, attractiveness and ambiguity in self-evaluation across these domains. In addition to these central aspects of global

self-esteem, various other items were included that were thought to be related to self-esteem, such as negative emotionality, poor coping patterns, and frequency of common health complaints. The inclusion of the latter variables operated as a preliminary test of the inter-relationship between self-esteem and health related variables. Finally, subjects also received a measure (Reynolds, 1982) to assess the degree of social desirability in scale responses,

The first analysis involved the assessment for response frequencies, including a check on the distribution of individual items for extreme skewness or kurtosis (<1) and all variables were found to be within this acceptable range. The 60-item scale was next subjected to principal-axis factoring, using oblimin rotation. The latter method was used based on the assumption that factors were likely to be intercorrelated. Sixteen Factors with Eigenvalue > 1 (Cattell, 1966) initially emerged from the analysis. Of the original 60 items, 49 loaded on the first factor, with the highest loading being question 55, `I am comfortable with myself'. Nineteen of these items were then removed, owing to item redundancy or if they were questions that measured health status thus leaving a scale of 30 items for additional analyses.

This was an important consideration because the scale was being constructed to assess the relationship with stress, coping and health, and therefore the scale needed to be free of these items so as to reduce statistical confounding with other health-related measures. As was discussed in the previous chapter the confounding of personality and health has presented difficulties in the measurement of neuroticism, and life events research. The items were included in the analyses to provide an initial test of the relationship between

self-esteem and health status. Some examples of the non-retained loadings included: emotionality (Items loading: "I am nervous" (-.39), "I worry too much (-.28), "I am cheerful"(.69), and "I am moody" (-.30); health status ("I am sick frequently" (-.33), "I have a good deal of energy" (.45), and self-evaluated coping status ("I cope well under pressure" (.41)).

After the scale had been reduced to 30 items (The 30 item YSEI can be seen in Appendix A1) it was re-submitted to principal axis factoring using oblimin rotation and the same criteria for extraction. Seven factors with Eigenvalue > 1 criteria emerged. Despite the multiple factors the scree test suggested a one-factor solution (see Appendix A2) or possibly a two-factor solution as 8 items also loaded on a second factor (Eigenvalue = 2.13, 7.6% of explained variance). However, each of these items on the second factor double loaded on the first factor with the majority of these items showing the opposite valence to the item loadings on the first factor. The analysis was, therefore, re-run restricting the factor extraction to 1 and a factor-loading criterion of .30. The analysis demonstrated that all 30 items loaded significantly on factor 1 (Eigenvalue = 8.55, explaining 28.5% of the variance). As seen in Table 2.1, the two highest loadings were on item 29 `I am comfortable with myself' (.74) and item 11 `I wish I were different' (-.73). The removal of the 19 items to reduce the scale to 30 items, provided a more valid construct, measuring global self-esteem, whilst not artificially inflating the reliability of the scale. That is, the internal alpha reliability of the scale decreased with the reduction of items (from .94 to .86) but this loss in internal consistency was felt necessary to preserve the purity of the self-esteem

Table 2.1

Item Loadings From Factor Analysis (PAF) for The York Self-esteem Inventory

	Loadings		
Item	Total	Males	Females
1.	-.59	-.62	-.56
2.	.51	.52	.48
3.	.49	.50	.48
4.	.34	.14	.47
5.	-.36	-.35	-.36
6.	-.44	-.55	-.35
7.	.47	.40	.52
8.	.65	.55	.69
9.	-.50	-.55	-.35
10.	-.44	-.31	-.48
11.	-.73	-.65	-.75
12.	.63	.50	.69
13.	-.60	-.70	-.58
14	.55	.62	.54
15	.41	.43	.43

Table 2.1 Continued

	Loadings		
Item	Total	Males	Females
16.	-.48	-.44	-.49
17.	-.37	-.17	-.51
18.	.57	.45	.69
19.	.45	.49	.43
20.	-.38	-.29	-.43
21.	.57	.57	.57
22.	.53	.51	.54
23.	.48	.66	.53
24.	.40	.42	.39
25.	.47	.49	.48
26.	-.67	-.66	-.67
27.	-.48	-.42	-.50
28.	-.34	-.43	-.24
29.	.74	.71	.79
30.	.39	.29	.46

construct.

Separate factor analyses were then conducted for male (n=72) and female (n=110) subjects. The results from the analyses produced one-factor solutions

with nearly identical factor loadings. The highest item loading for both male and female subjects was 29 `I am comfortable with myself'. As seen in Table 2.1, while all 30 items loaded significantly on the first factor in the factor analysis of female responses, 4 items loaded under .30 in the factor analysis of male responses (items 4, 17, 20, 30). While two items were just short of loading (r = .29) two other items were considerably lower. Inspection of these items reflected items tapping the family domain. These low loadings may represent significant differences in the structure of self-esteem for males and females, or they may potentially reflect differences due to sample size. It was decided to retain these items with the prospect of re-assessing item loadings for male subjects in a larger, subsequent study. Mean scores and standard deviations for male and female subjects separately as well as the entire sample are provided in Table 2.2, which shows that scores for both males and females were skewed in the positive direction, with a mean item score of 3.53 (SD = .53) for males and 3.62 (SD = .49) for females.

The unidimensional nature of the YSEI suggests that by summing across all 30 items, a global self-esteem index can be arrived at. All scores that were negatively coded (N=14) were reversed to so that the index represents total positive self-esteem, with upper and lower theoretical limits of 30 and 150 respectively. Male subjects had a mean scale score of 108.3 (SD = 13.25) versus 104.9 (SD = 15.6) for females, a difference which was not statistically significant

Table 2.2

Frequency Distributions of Items Comprising The

York Self-esteem Inventory

	Total		Males		Females	
Item#	M	SD	M	SD	M	SD
1,	2.95	1.13	3.36	1.21	3.13	1.18
2.	3.16	0.76	3.31	0.76	3.22	0.77
3.	3.48	0.80	3.75	0.81	3.58	0.81
4.	4.19	1.04	4.17	0.93	4.18	1.00
5.	3.84	1.13	3.94	0.95	3.88	1.06
6.	3.03	1.32	3.31	1.33	3.14	1.33
7.	3.49	0.78	3.53	0.86	3.51	0.80
8.	3.66	1.07	3.93	0.98	3.77	1.04
9.	3.31	1.02	3.51	0.99	3.40	1.01
10.	4.35	1.09	4.60	0.83	4.45	1.00
11.	3.58	1.22	3.94	1.11	3.73	1.19
12.	3.86	1.01	4.04	0.91	3.93	0.97
13.	4.53	0.78	2.71	0.88	2.73	0.82
14.	3.73	1.23	3.57	1.12	3.67	1.19
15.	2.73	0.78	2.71	0.88	2.73	0.82
16.	3.50	1.08	3.22	1.08	3.40	1.08
17.	4.51	0.97	4.46	1.03	4.50	0.99
18.	3.36	1.03	3.20	1.02	3.30	1.03

Table 2.2 Continued

	Total		Males		Females	
Item#	M	SD	M	SD	M	SD
19.	3.04	1.04	3.46	1.10	3.20	1.06
20.	3.46	1.18	3.60	1.30	3.52	1.22
21.	3.10	1.24	3.44	1.10	3.24	1.19
22.	3.79	0.89	3.78	0.89	3.79	0.89
23.	2.66	1.20	2.83	1.06	2.73	1.14
24.	3.86	0.91	3.89	0.70	3.88	0.83
25.	3.54	0.93	3.38	0.95	3.49	0.94
26.	2.68	1.30	3.17	1.42	2.88	1.37
27.	2.98	1.30	3.11	1.16	3.04	1.24
28.	3.47	1.06	2.82	1.07	3.21	1.11
29.	3.75	1.06	3.82	1.00	3.78	1.03
30.	4.42	1.06	4.18	1.05	4.20	1.05

(t (173) = 1.62, p =.205). Because total scale scores were skewed in the positive direction (to the right), median total scale scores were also calculated and found to be higher for males (Mode = 115) than females (Mode = 93) but this difference was not significant (X^2 (172)=1.12, p=.30ns). Further, an inverse relationship was

observed between the total scale score and age (r(173) = -.15 ns) although this was not statistically significant.

2.3 Reliability

2.3.1 Internal Consistency:

The internal consistency was assessed by means of Cronbach's Alpha. A coefficient of .86 was produced for the entire scale. Separate co-efficients were produced for males (.83) and females (.88) and the results demonstrated good internal consistency for both groups.

2.3.2 Test-retest

Test-retest reliability was determined over an eight-week inter-test interval (ITI). The YSEI was sent out to all subjects who had participated at the time of first testing. Of the 183 who responded at time one, an additional 134 completed the scale at time two, eight weeks later, resulting in a coefficient of .78 for the entire unitary scale for the 8-week ITI.

2.3.3 Social Desirability (Examining For Response Tendencies)

Finally, the total scale score on the YSEI was examined in relation to the potential confounding effect of social desirability. There is a recognized need to examine response tendencies with self-report measures. Social desirability has been seen to be significantly related to self-esteem ratings in the past and in some other studies, the relationship was assumed to be so great that self-esteem had been operationalized as the total scale score on social desirability measures (e.g.,

Evans, 1980). An analysis was conducted with an abbreviated form of the Marlowe-Crowne Social Desirability Scale (SDS; Reynolds, 1982) and the YSEI A positive, non-significant correlation was observed between social desirability and the YSEI ($r(173)=.16$ ns) thus pointing to the discriminability of the two constructs and the absence of contamination of the latter from the former for the sample as a whole. When the relationship between social desirability and the total scale score of the YSEI was examined separately for males and females, a near-zero relationship was observed for females ($r(110) = .02$ ns) whilst the relationship was positive and statistically significant for males ($r(72) = .36$, $p < .01$) thus pointing to greater social desirability in reported self-esteem for male than female subjects in this study. This is consistent with the finding that males tend to be more defensive and protective of their self-esteem (e.g., Evans, 1980). However, the magnitude of this relationship (10% of the variance of self-esteem being accounted for by social desirability) would not appear to jeopardize the reliability or validity of the scale.

2.4 Study 2 - Replication and Extension

2.4.1 Introduction

A second study was conducted to examine further the psychometric properties of the YSEI and to assess the relationship of the YSEI to two well-known self measures: The Rosenberg Self-esteem Inventory (RSE; Rosenberg, 1965) and the Tennessee Self-Concept Scale (TSCS:Roid & Fitts, 1991). In this way, the

convergent validity of the YSEI could be assessed with the RSE (by way of addressing overlap of self-esteem constructs) and discriminate validity (by way of testing the relationship between self-esteem and self-concept) with the TSCS.

2.5 Method

2.5.1 Subjects

Subjects were recruited from a second research panel comprised of first year students at the University of York who agreed to volunteer for research throughout the academic year. A total of 315 subjects (n=315) out of 414 mailed the questionnaire package completed the mailout for a response rate of 76%. Of the 315 subjects in this study 144 were male (mean age = 19.7, SD = 4.2) and 171 were female (mean age = 19.5, SD = 3.8). Subjects were not paid for their help nor did they receive academic credit.

2.6 Factor Analysis of The YSEI

Similar to the initial factor analysis of the YSEI the results in this study, utilizing a much larger sample, demonstrated that the data were best explained by a one-factor unidimensional scale as assessed by the scree test (see Appendix A3) (Factor 1, Eigenvalue = 7.47, 24.9% variance explained). All items loaded significantly at the factor-loading criteria .30 excluding scale items 5 `I have good ideas' and 7 `I am an important member of my family'. The highest loading was observed again on scale item 29, `I am comfortable with myself' (.74). A one-factor solution best explained the data in separate factor analysis (PAF) for male (n=144) and female (n=171) subjects, however, several individual item loadings

and the total explained variance was higher for female subjects (24.9%) than for male subjects (20.4%). Additionally, several items reflecting the family dimension (7, 28, and 49) failed to load significantly for males at factor-loading criteria .30, whilst only item 7 failed to load on the first factor in the scale analysis for female subjects. In conclusion, the results from this replication study of psychometric properties further support a) the initial unidimensional nature of the YSEI, and b) the possible conclusion that family-related self-evaluations may be less important to global self-esteem for males than for females.

2.7 Convergent Validity 1: The Rosenberg Self-esteem Inventory

The convergent validity between the YSEI and the RSE was examined. Total scale scores for both the YSEI and the RSE were derived by summing across all items for each scale separately. All items that were scored in the negative direction were reversed to create a total scale score in the direction of high self-esteem. The scoring of the RSE was changed to reflect the same five-point likert-scale format used in the YSEI, with the same anchoring points. A previous transformation of the RSE to a five-point likert scale (Pelham & Swann, 1989) showed that its psychometric properties were not affected and this allowed a direct comparison of items and scale scores for the YSEI and RSE free of the potential effects of method variance. It was anticipated that the relationship between the two scales would be a significant positive one, as both scales purport to measure unidimensional self-esteem. The Pearson Correlation analysis revealed a very strong, positive correlation between the RSE and YSEI ($r(314) = .83$, $p < .001$). This high correlation would not seem to be due to item overlap

as can be seen by comparing the two scales (see Appendix A4).

2.8 Factor Analysis of YSEI with RSE

This high magnitude correlation pointed to the overlap in constructs between the YSEI and the RSE. To further assess the degree of overlap in the scale items a factor analysis was completed using the 30 items from the YSEI and the 10 items from the RSE. Using principal axis factoring, with oblimin rotation, and factor-loading criteria .30, 9 factors were extracted with Eigenvalue > 1.0. The scree test, however, demonstrated that the data reflected a unidimensional structure (Factor 1, Eigenvalue = 10.54, 26.4% variance explained). All items from the YSEI and the RSE loaded significantly on the first factor (excluding YSEI items 5 and 7) with the highest loading representing RSE item 7, `On the whole, I am satisfied with myself' (.78). These results offer further support for the construct validity of the YSEI.

Alternatively, it could be argued that with such overlap a new scale is not required. It would be expected that the RSE would overlap with the YSEI to a large degree due to the fact that both scales comprise items that tap personal self-esteem. Despite this overlap, the narrow breadth of the RSE, with its 10 items tapping only personal self-esteem, fails to extend its purview to other relevant domains of self-esteem.

2.9 Convergent Validity 2: The Tennessee Self-concept Test

The TSCS consists of 100 self-descriptive statements that the respondent uses to portray his or her own self-picture. Items reflect a range of self dimensions

including the: a) physical self, b) moral-ethical self, c) personal self, d) family self, e) social self. Across these five domains, and a self-criticism domain, items are targeted at measuring identity, self-satisfaction and behavioural tendencies related to each of these dimensions. In this way, the scale can be scored column-wise for each self-dimension across the three levels (identity, self-satisfaction, behaviour) or row-wise tallying across all self-dimensions to produce a total index score for identity, self-satisfaction and behaviour. Despite the multiplicity of scoring indices in this scale, it is argued that the total scale score "is the single most important score on the TSCS. It reflects the overall level of self-esteem." (Roid & Fitts, 1991, p.3).

Many factor analytic studies assessing the factorial structure of the TSCS have failed to replicate the orthogonality (or at least some discrimination) of specific self-concept dimensions. In a review of the factor studies, McGuire and Tinsley (1981; reported in Roid & Fitts, 1991) argued that the majority of studies that produced a unidimensional factor had failed to use adequately large sample sizes and used principal components analysis with orthogonal rotation. They argued that a more appropriate analysis would allow for intercorrelation between items and factors and therefore a more suitable factorial approach would include principal axis factoring with oblique rotation. This study aimed to assess the factorial structure of the TSCS using PAF with oblique rotation amongst a larger sample then previously used (n=315). Secondly, this study allowed for the direct assessment of factor and scale scores of the TSCS in relation to the YSEI.

2.10 Factor Analysis of TSCS

The 100-item TSCS was subjected to prinicipal-axis factoring, using oblimin rotation. The latter method was used based on the assumption that factors could, and would be likely to be, intercorrelated. The scree test and Eigenvalue > 1.00 criteria was employed to determine the number of factors for extraction and rotation. The analysis produced 25 factors with Eigenvalue > 1.00 that failed to converge. Examination of the scree plot pointed to a very large first factor (Factor 1, Eigenvalue 19.53, 19.5% variance explained) with redundant and insignificant subsequent factors (e.g., Factor 2, Eigenvalue = 4.89, 4.9% variance explained). The additional factors produced low order correlations and double loadings with the first factor (Amongst the 25 variables that did not load, the most apparent trend was several non loadings from family-oriented items). Hence, the best fit to the data was a one-factor solution with seventy-five of the items loading significantly on the first factor. These results point to the inter-relatedness of self-domains and the difficulty in distinguishing them empirically, either with descriptive (identity items), evaluative items (self-satisfaction items), or behavioural items.

Second, the relationship between the TSCS, YSEI, and the RSE, was examined by Pearson Correlation tests, using total sum scores from each measure as well as sub-scores from the TSCS. Even though there was no justification in this study for computing sub-scores for separate self-concepts, scores were created based on the previously derived self-dimensions to better examine the relationship between global self-esteem and specific self-concept comments of the TSCS. Based on the previous discussion the following relationships were anticipated: a) different self-concept dimensions of the TSCS

would produce only moderate correlations demonstrating the close relationship between self-concept and self-esteem but some discriminability, empirically, b) the correlation between the YSEI and RSE will be higher than the correlation between the total score of the TSCS and the RSE, demonstrating the YSEI's greater relatedness to self-esteem than summed self-concepts, and c) because of the increased breadth in self-evaluation dimensions in the YSEI, and relate to the self-concept dimensions in the TSCS, the total score of the TSCS will correlate more highly with the YSEI then with the RSE.

2.11 Results

A subset of subjects of the original sample completed all three measures (n=135) and analyses were conducted with this sample. It was hypothesized above that correlations with descriptive, identity statements would be lower than with the total scale score across dimensions on the TSCS because of the inclusion of evaluative items. As seen in Table 2.3 the correlation matrix demonstrates marginal support for this hypothesis as there was a trend for each of the correlations of TSCS self-concept dimensions to be lower than the total scale score with either the YSEI or the RSE. Consistent with Marsh's (1986) findings, no self-concept dimension explained more than 50% of the variance of global self-esteem, with variances ranging from a high of 46% (personal) to a low of 17% (family) with the YSEI and from a high of 35% (personal) to a low of 4% (family) in relation to the RSE. Moreover, Roids and Fitts (1991) purport that the Personal self-concept dimension can be seen as a general self-esteem measure. The correlations of .68 with the YSEI and .60 with the RSE provide little support for this.

Table 2.3

Correlations Between The YSEI, RSE, and The TSCS

	Self-esteem Measures	
	YSEI	RSE
TSCS Dimension		
Physical	.64	.56
Moral	.41	.38
Personal	.68	.60
Family	,41	.21
Social	.57	.43
Total identity	.71	.55
TSCS Total Score	.81	.71

All correlations significant at $p<.001$ excluding the relationship between TSCS-Family and RSE.

Second, it was anticipated that the correlation between the YSEI would be higher with the RSE (because of its shared focus on self-evaluation) than would the correlation between the RSE and the total scale score of the TSCS, thus providing convergent (with the RSE) and discriminant (with the TSCS) validity for the YSEI. The observed correlations between the YSEI and the RSE ($r(135) = .85$, $p < .001$)

and the RSE and the TSCS (r(135) = .71, p <.001) showed a trend in this direction but the difference was not statistically significant. With respect to the third hypothesis, the correlation between the YSEI and the TSCS total scale (r (135) = .81, p < .001) was greater than the correlation between the TSCS total score and the RSE (r(135)=.71, p < .001) as was anticipated but again not to a degree of statistical significance. These trends should be interpreted with caution, however, as it is possible that the differential relationship patterns may be due to the differences in the number of items in the various scales.

Finally, the conclusion amongst the TSCS authors that the total scale score measures global self-esteem was, in fact, supported in this study. The TSCS produces a total score that is highly related empirically to other global measures of self-esteem, such as the YSEI and RSE, despite the obvious conflation between self-concept, self-esteem, social desirability, and non-evaluative behavioural items in scale content. It is possible that the relationship between the total scale score of the TSCS and self-esteem (as measured by the YSEI or RSE) is artificially enhanced because of the large number of scale items. The scale does appear to contain a large number of redundant items (100 items explaining only 19.5% percent of the variance) and all correlations between sub-components of the scale are smaller than when all items are summed together.

In conclusion, the YSEI appears to offer a more parsimonious (30 items versus 100 items) and theoretically consistent (i.e., only including self-evaluation items) account of global self-esteem than does the TSCS, and may be seen as potentially more useful in clinical and health research with its wider breadth in self-domains than the RSE.

2.12 Discussion

The factor analyses of the 30-item YSEI produced a unidimensional factor measuring global self-esteem. The final scale consists of items that pertain to self-evaluation in the following self-relevant domains: personal, social, family, achievement, attractiveness and ambiguity in self-evaluations across these dimensions. In this way, self-esteem represents the inter-relatedness of valenced, relatively stable, self-evaluations (across important core dimensions as above). Self-evaluations are assumed to have both a cognitive and affective component, where the affective reactions to valenced self-evaluations occur simultaneously.

Self-esteem, as measured by the YSEI also appears to be fairly normally distributed in student populations with skewness to the right in the positive direction. Further, there appears to be little influence of age or gender effects on the valence of self-esteem. While no gender differences were found in the general level of self-esteem maintained, several items comprising the family dimension failed to load consistently in male subject responses in the two scale construction studies which may point to the relatively less pertinent role of family-related self-evaluations in global self-esteem for males than females. Interestingly, in the factorial examination of the TSCS the family self-concept items were also observed to be the weakest or failed loadings, despite psychometric support for this dimension in the scales re-standardization (Roid and Fitts, 1991, e.g., standardization sample of adolescents and adults averaged an internal alpha of .78, and test-retest reliability of .81). One alternative explanation is that family-related concerns are less important for first year students who are working very hard to adjust outside of the family, with new peer groups, new academic

pressures, and a host of acculturation difficulties, and this may be more true for males as there is pressure to demonstrate emotional control and/or maturity and focus on achievement. This explanation is partially supported when the correlations between the Marlowe-Crowne Social Desirability Scale and the YSEI were examined for males and females separately. If social desirability is operationalized as a measure of defensiveness, then it would appear that males are more likely to inflate and then defend tentatively held self-esteem than are females. However, because the decrement in item loadings for these items were not consistently poor for male subjects, and because of their demonstrated importance in female global self-esteem, as well as the prospect of their greater relative importance in other populations than students, they were retained in the scale.

This chapter has set out to review the shortcomings in existing measures of self-esteem; the existing confusion between self-concept and self-esteem, both theoretically and empirically; and a review of the literature on the structure of self-esteem was offered to provide a foundation for understanding the features required for a valid global self-esteem measure. Based on the item selection and the proven psychometric foundation of the scale, the YSEI would appear to be an ideal scale for use in stress research.

Collectively, the results support the construction and validation of a new unidimensional measure of self-esteem for clinical-health research. Self-esteem is seen to be anchored to internal (e.g., goals, expectations) and external (e.g., behaviour) experience and the remainder of this text will be concerned with addressing the empirical relationship between self-esteem and psychological and

physical well-being. That is, while this chapter placed some emphasis on the interface between self-concept and self-esteem, the emphasis in the research to follow will be on the moderating influence of self-esteem in health and well-being.

Chapter 3

3 Self-Esteem, Emotion-control and Selected Personality Measures In a Two-phase Prospective Examination of Health

3.1 Introduction

Self-esteem may potentially buffer the stress-illness relationship directly via its influence on the primary appraisal process and secondly, by way of influencing coping responses which serve either to prolong or to attenuate behavioural, emotional and physiological aspects of stress. As discussed earlier (see chapter 1, section 1;12), there are two studies that sought to examine the relationship between self-esteem, psychosocial stress, and somatic complaints. Linville (1985) had demonstrated that individuals with low self-complexity, that is, few independent self-aspects, tended to have more extreme affective and self-appraisal reactions to threat. She subsequently hypothesized that individuals with greater self-complexity would be less likely to experience the negative consequences of stress and subsequent illness and/or depression because when certain dimensions were threatened these individuals were able to maintain positive feelings in other non-threatened self-dimensions. Linville (1987) in a prospective study over a two week period had 106 undergraduates complete a card sort exercise to determine self-complexity and then report experienced life events in the past two weeks. On two separate occasions within the two week period subjects completed questionnaires measuring depressive symptoms, physical symptoms, and perceived stress. Finally, subjects reported somatic

Illness experienced over the two-week period. The results supported the expected buffering role for self-complexity on physical health while controlling for initial values on perceived stress and illness. In addition to the methodological limitations of the study, including a limited `buffering zone' of two weeks, this study was focused on self-concept structure not self-esteem. While related, the relationship between self-concept and self-esteem has demonstrated only a modest relationship between specific self-concepts and global self-esteem (Marsh, 1986; Pelham & Swann, 1989). Pelman and Swann (1989) found that individuals with low global self-esteem tended to have fewer positive self-concepts but they were not equivalent. Marsh (1986) found that specific self-views only accounted for approximately 50% of the variance of global self-esteem.

In contrast to Linville's (1987) emphasis on the buffering role of self-concept, DeLongis and colleagues (DeLongis, Folkman, & Lazarus, 1988) assessed the mediating role of self-esteem on health directly. Seventy-five (n=75) married couples completed a battery of questionnaires (hassles and uplift scale; daily health record, self-esteem inventory; and an emotional support report) and were interviewed once monthly during a six month period for repeated assessment of these variables. DeLongis hypothesized that self-esteem would moderate the impact of stress on illness through its influence on coping processes. They reasoned that people who have positive views of themselves should be less likely to feel overwhelmed by stressful situations because they have confidence to cope with an array of problems. The results indicated that self-esteem moderated the impact of daily hassles on same-day reported symptoms as well as next-day reported symptoms. This moderating role of self-

esteem was greater than the impact of emotional support or network size on the hassles-symptom relationship. In addition to the methodological shortcomings of this study, which have also been addressed, (recall the potential ceiling effect problem with self-esteem ratings in this study), the study failed to test the mechanism by which self-esteem purportedly influences the stress-illness relationship, that is, as mediated by particular coping practices. To date, the mediating role of coping on the stress buffering effect of self-esteem has not been empirically tested, although a recent theoretical model (Bednar et al., 1989) links self-esteem with avoidant coping practices.

In addition to the potential moderating role of self-esteem, recent work by Roger and his colleagues (Roger, 1988; Roger & Jamieson, 1988) suggests that individual differences in emotional control patterns, particularly the degree to which individuals mentally rehearse past failures concerning interpersonal conflict, may serve to either prolong or attenuate physiological recovery from stress. In the multidimensional scale assessing emotional control styles (Emotion Control Questionnaire (ECQ): Roger & Nesshoever, 1987; Roger & Najarian, 1989), items that tap "feelings of dissatisfaction in interpersonal encounters and an inability to resolve conflict arising from them" strongly predicts prolonged physiological arousal during stressful laboratory exercises (Roger & Jamieson, 1988). It could be hypothesized that persons who are more likely to mentally rehearse failures may be those with low self-esteem. Indeed, it may be the case that individuals who perpetually call into consciousness past failures are likely to feel less positive about themselves and have low expectation for success when faced with the demands of a potentially threatening situation. Additionally, being preoccupied with emotional upset may inhibit individuals with low self-esteem from engaging

in assertive and adaptive coping behaviours to combat stress.

Finally, this study sought to test the moderating influence of two other personality variables which have been hypothesized to impact on stress appraisal and health outcomes, namely, locus of control and `tolerance of ambiguity'. The former was discussed at length earlier (see chapter 1, section 1.4.1). The latter, TAMB, represents a personality construct that reflects an inflexible and emotionally rigid approach to the world. TAMB has been found to moderate the impact of role ambiguity in the work place and the associated work-related stress (Frone, 1990) and this study provided an opportunity to test its moderating influence outside of the work context.

This study aimed first to determine the relationship between self-esteem, coping practices, emotion control patterns, and other personality moderators, as well as to assess the unique, cumulative, and interactive effects of these variables on physical and emotional well-being in a group of first year university students. These domains were also assessed in relation to locus of control, another well-known personality construct hypothesized to moderate the stress-illness relationship. It was hypothesized that self-esteem would relate to coping and emotion control patterns, as well as locus of control, although self-esteem would show superior prediction of health outcome. It was anticipated that this pattern would be relatively stable over the 8 week period (thus reflecting a dispositional moderating influence). That is, in contrast to the hardiness model (Kobasa, 1979) and Linville's self-complexity model (Linville, 1987), no a priori distinction between high and low stressful situations was set out in this study (which would allow for the testing of the interactional (mediating) effects of the `buffering' hypothesis).

Second, it was hypothesized that the impact of self-esteem on the stress-illness relationship would be mediated by coping patterns and emotion

control patterns, in the later case, especially the tendency to mentally rehearse past failures.

It has been demonstrated that self-esteem differences become most salient when individuals are faced with valenced (either positive or negative) life events (Brown, 1991), particularly events that are personally meaningful (Strauman et al. 1993). In order to examine person x situation components of self-esteem and health, all students were tested during the potentially stressful period of adaptation to university life. Entry to university presents unique challenges for all students; as it implies significant life event alterations related to the self: leaving home; demanding academic pressure; and possibly new sources of social comparison, as well as the pressure to make new friends and develop a social support network. It was anticipated that self-esteem would play an important role in health status and well-being at both entry to the university and later throughout the term.

3.2 Method

3.2.1 Subjects

Subjects in this study were the same subjects who had participated in the initial standardization study on the YSEI in the previous chapter (p. 66). They were recruited from a research panel comprised of first year students at the University of York who agreed to volunteer for research throughout the academic year. Two-hundred and twenty-four (224) were contacted via the internal university mail for the questionnaire survey and 183 returned the forms for a response rate of 82%.

Of the 183 subjects in this study 72 were male (mean age = 19.6, SD = 7.1) and 110 female (mean age = 20.0, SD = 4.26) (One subject declined to provide their sex). Of the 183 subjects who returned the questionnaire responses a further 22 subjects' health reports were discarded due to unreliable or incomplete responses thus rendering a sample of 161 with all measures completed at time one. The full sample was maintained for examination of the inter-relationship between self-esteem and personality measures while the reduced sample was utilized when examining the correlational patterns with health outcome. Finally, subjects received no financial or academic credit for their involvement.

3.2.2 Procedure

Subjects were mailed a questionnaire package three weeks after beginning term and were asked to complete and return them via internal university mail. At time one subjects received the following questionnaires: a) the York Self-esteem Inventory (YSEI), b) the Coping Styles Questionnaire (CSQ: Roger et al., 1993), c) the Emotion Control Questionnaire (ECQ: Roger & Najarian, 1989), d) a Tolerance of Ambiguity Measure and e) the Health Checklist Questionnaire (HCQ: Meadows, 1989). To assess the stability of the relationship between the independent variables and health outcome, a follow-up mail out was performed at the beginning of the second term (approximately 8 weeks later) with those subjects who had participated at the first mail out. At time two subjects were re-tested with the HCQ and were also provided with the Spheres of Control Questionnaire (SOCQ: Paulhus, 1983), a three-sphere measure of locus of control. The administering of the SOCQ at time two provided a robust test of the

moderating influence of self-esteem above and beyond locus of control as locus of control was more contiguous with the time two health measure.

3.2.3 Materials

York Self-esteem Inventory (YSEI)

The psychometric properties of the YSEI were reported in detail in the previous chapter. The scale comprises 30 items measuring global self-esteem. Items reflect various evaluative self-domains including: personal, interpersonal, familial, achievement, physical attractiveness and the degree of evaluative uncertainty across these domains. Preliminary psychometric examination of the scale has revealed strong internal reliability (Alpha .86) and test- re-test reliability (.83) over an 8-week ITI. In part, this study also served to test the predictive validity of the YSEI in relation to health and well-being.

Emotion Control Questionnaire (ECQ)

The Emotion Control Questionnaire (ECQ: Roger & Nesshoever, 1987; Roger & Najarian, 1989) comprises four scales labelled Rehearsal (R), Emotion Inhibition (EI), Aggression Control (AC) and Benign Control (BC). R examines the degree to which a person broods over past threats and failure. For example an item from this factor is "I get "worked up" just thinking about things that have upset me in the past". EI measures the willingness of subjects to express emotion; "When someone upsets me, I try to hide my feelings". AC is a measure of the degree to which aggression is controlled; "If someone were to hit me, I would hit back". Finally, BC has been shown to be a measure of impulsivity; "I often do or say

things I later regret". Previous examination of this scale has shown the factors to be relatively independent, particularly R and EI, and the individual factors have also been shown to possess satisfactory internal and test-retest reliability (Roger & Najarian, 1989).

Coping Styles Questionnaire (CSQ)

Scales for assessing coping strategies have generally consisted of three primary dimensions: rational, emotional, and avoidance. The measure used to assess coping in this study was the newly constructed CSQ (CSQ: Roger, Jarvis, & Najarian, 1993) that includes these three factors and a new dimension entitled detached coping. The rational dimension consists of 16 items, with the highest loading on "Try to find out more information to help make a decision about things." The detached dimension consists of 15 items, and the highest loading item on this factor is: "just take nothing personally." Emotional coping comprises 16 items and the highest loading is "Feel worthless and unimportant." Finally, the avoidant coping factor consists of 13 items and a typical item is: "talk about it as little as possible." The factors have been shown to possess acceptable internal consistency (range from .69 to .85) and good test-retest reliability over a three-month period (range .70 to .80). The rational and detached factors have been shown to be moderately inter-related (.49), as have the rational and the emotion-oriented coping factors (-.41). The avoidant and emotion-oriented coping factors are also interdependent (.33), whilst rational (.11) and detached (.05) are unrelated with avoidant coping strategies.

The Spheres of Control Scale (SOCQ)

The SOCQ (SOCQ: Paulhus, 1983) comprises 30 items that assess three domain-specific components of perceived control: Personal, Interpersonal, and Socio-political control. The personal control domain comprises 10 items, including `I usually achieve what I want when I work hard for it.' The interpersonal control sphere also contains 10 items, including `I have no trouble making and keeping friends' or `I often find it difficult to get my point of view across to others.' Finally, the socio-political sphere comprises 10 items such as `an average citizen can have an influence on government decisions.' The scale has been shown to possess adequate internal and test-retest reliability across many populations and scoring formats, and following Paulhus's suggestion, three new items replaced three old items to improve the internal reliability of the personal control dimension (Paulhus & Van Selst, 1990). In this study, a dichotomous `yes' `no' format was employed with negatively-keyed items reversed for computing sub-scale total scores. Across a wide array of populations the scale has been shown to have acceptable internal and test-retest reliability.

Tolerance of Ambiguity (TAMB)

Tolerance of ambiguity has been linked to the personality constructs of conservatism and dogmatism and is seen to reflect an inflexible approach to the world. TAMB has been found to moderate the impact of role ambiguity in the work place and the associated work-related stress (Frone, 1990). This study aimed to test the relationship between self-esteem and TAMB as well as its moderating influence outside of the occupational context. This study utilized a

composite measure of TAMB; following Kirton's (1981) suggestion, the short-forms of Rydell and Rosen's (1966) Tolerance of Ambiguity Scale (11 items) and Budner's (1962) test of Intolerance of Ambiguity scale (8 items) were used plus an additional 10 self-generated pilot items producing a 29-item scale. In Kirton's factor analysis of the two published scales the highest loading was on the item `I have always felt that there is a clear solution between right and wrong'. The scoring format was on a 5-point likert scale ranging from 1 `strongly disagree' to 5 `strongly agree'. Items were scored in the direction of greater intolerance so that items that reflected greater tolerance were reversed to generate a total scale score that represented intolerance of ambiguity with a theoretical range of 29-154. In addition the scale was found to have acceptable psychometric properties (e.g., Alpha=.86). In the present study, the Cronbach Alpha Coefficient was found to be satisfactory for the 29-item scale (.81).

General Health Checklist (GHC)

In this study the General Health Checklist (GHC: Meadows, 1989) was used to assess general health (see Appendix A5). The scale consists of items that measure common physical complaints frequently made to general practitioners. It also includes more serious illnesses that are reported less frequently. In previous validation of the scale Meadows (1989) had general practitioners independently rank order symptoms in terms of their severity and a weighted severity score can be obtained. There is a total of 28 items with an additional two items for female subjects only. The scale is scored as follows: 1 `Better', 2 `Unchanged', 3 `Worse' 4 `Don't have/suffer from'. On each administration,

subjects answered questions pertaining to their health within the past three weeks. A variety of health scores were derived: total frequency of symptoms (1-3 endorsed); severity of symptoms (3 endorsed) and a third weighted score was derived by summing across all scale items excluding three items measuring anxiety, depression and insomnia; these were scored independently as a general measure of `psychological distress' so as not to confound the illness ratings. Distress ratings were scored for frequency and severity in the same way as the illness index, but no weighted ranks were computed because of the small number of items comprising the factor.

3.3 Results

Descriptive Statistics

Table 3.1 describes the score distributions for the various measures completed at time one (T1). An examination of total scale score for the YSEI and sub-scale scores for the ECQ, CSQ, HCQ and SOCQ demonstrated approximate normality. That is, no scores exceeded acceptable limits with respect to kurtosis (<.1) or skewness (<.1) except the CSQ factor, detached coping style, which had a slightly elevated kurtosis score (1.20) although acceptable skewness. To examine possible sex differences across the various personality measures a multivariate analysis of variance (MANOVA) was conducted (for all personality measures including time two (T2) SOCQ scores). The results reflected multivariate significance (Wilks = .34, $F(1,117) = 3.28$, $p<.001$). Subsequent inspection of the

Table 3.1

Descriptive Characteristics for YSEI, ECQ, CSQ, Tolerance of Ambiguity (TAMB) And Total Frequency of Somatic Illness and Worsening of Illness.

Variable	Mean	SD	Range
GHC-Total Number of Somatic Complaints	6.5	3.3	0-16
GHC-Total Number of Somatic Symptoms Worsening	2.7	2.5	0-11
YSEI	107.1	14.5	64-141
ECQ-Rehearse	41.3	9.3	19-65
ECQ-Emotion	41.1	10.5	17-64
ECQ-Aggression	42.5	6.1	30-60
ECQ-Benign Cntrl.	40.6	6.3	20-60
CSQ-Emotion	18.5	8.3	5-45
CSQ-Rational	25.2	9.1	8-51
CSQ-Detached	17.9	8.8	3-48
CSQ-Avoidant	15.9	6.0	2-36
TAMB	82.7	13.4	45-122

univariate analyses pointed to differences between male and female subjects on CSQ factor scores (emotion, rational, and detached) and the personal control dimension of the SOCQ. Females scored higher on emotion-oriented coping

whilst males scored higher on rational and detached-oriented coping styles and females were also found to score higher on personal control of the SOCQ. In order not to reduce statistical power by examining the large number of measures independently in the male sample the results from male and female subjects were collapsed, although subsequent correlation analyses and hierarchial regression analyses will consider, and where applicable statistically control for, possible sex differences.

Time 1 Results

To examine the relationship between self-esteem, coping, emotion-control patterns and tolerance of ambiguity, correlation analyses were computed. The relationship between self-esteem and the personality measures can be seen in Table 3.2. Examining the correlations between self-esteem and the ECQ factors point to significant, negative relationships between self-esteem and rehearsal ($r(161) = -.31$, $p < .001$), emotion inhibition ($r(161) = -.25$, $p. < 01$), and aggression control ($r(161) = -.23$, $p < .01$) and a positive relationship between self-esteem and benign control ($r(161) = .21$, $p < .01$). Subjects with low self-esteem were more likely to rehearse, inhibit the expression of emotion, and demonstrate less aggression control. They were also less likely to demonstrate benign control. Second, there were significant positive correlations between self-esteem and rational ($r(161) = .42$, $p < .001$) and detached ($r(161) = .44$, $p < .001$) coping styles

Table 3.2

Correlations Among the Measured Personality Variables

At Time 1

	1	2	3	4	5	6	7	8	9	10
1. YSEI	-	-.49**	.43**	.44**	-.17	-.31**	-.25*	-.23*	.21*	.03
2. CSQ-E		-	-.36**	-.54**	.31**	.59**	.03	.21*	-.23*	.12
3. CSQ-R			-	.76**	-.15	-.30**	-.14	-.15	.37**	-.20*
4. CSQ-D				-	.20*	-.45**	-.03	-.21*	.29**	-.20*
5. CSQ-A					-	.27**	.29**	.15	-.26*	.27**
6. ECQ-R						-	.02	-.02	-.33**	.37**
7. ECQ-E							-	.19	.11	-.01
8. ECQ-A								-	.08	.04
9. ECQ-B									-	-.17
10.TAMB										-

*p<.05, **p<.001

and a negative correlation with emotion-oriented coping (r(161) = -.49, p<.001). Avoidant coping was not significantly related to self-esteem although the relationship was in the expected direction (r(161) = -.17ns). Hence, subjects with high self-esteem engaged in more adaptive, rational and detached coping, while subjects with low self-esteem were more likely to engage in emotion-oriented coping. Finally, self-esteem was unrelated to tolerance of ambiguity (r(161) = .03ns). Separate pearson correlation analyses for males (n=65) and females (n=96), for the three coping dimensions which males and females significantly

differed, reflected identical correlation patterns with self-esteem, although the pattern was higher for females in terms of emotion-oriented coping (Males; r(65) = -39, p<.001 vs. Females; r(96) = -.52, p<.001) and higher for males in terms of rational (Males; r(65) = .59, p<.001 vs Females; r(96) = .27, p<.01) and detached coping (Males; r(65) = .51, p<.001 vs. Females r(96) = .35, p<.001). Also seen in Table 3.2 are the inter-relationships within scale factors of the ECQ and the CSQ as well as the between scale factor correlations. As observed, correlations are in the moderate to strong range thus reflecting their inter-dependence and relative non-orthogonality.

The relationship between self-esteem and the other personality measures with illness and psychological distress reports can be seen in Tables 3.3 and 3.4. First, self-esteem was significantly related to the reported frequency of somatic complaints at T1 (r(161) = -.24, p<.01), reported worsening of symptoms at T1 (r(161) = -.31, p<.001) although not with weighted severity of illness (r(161) = -.14ns). As indicated subjects with high self-esteem were less likely to report illness complications or worsening of existing symptoms. A similar pattern emerged for reported psychological distress, with low self-esteem subjects reporting more distress (r(161) = -.46, p<.001) and severity of distress (r(161) = -41, p<.001). As also seen significant relationships were observed for ECQ-rehearsal and the frequency and severity of somatic complaints and psychological distress, with those subjects scoring higher on rehearsal also tending to report poorer health status. Moreover, coping styles (excluding avoidance) were significantly related to the frequency and severity of somatic complaints but only

Table 3.3

Correlations Between Measured Personality Variables and Frequency, Severity and Weighted Symptom Reports at Time 1

	Reported Health Symptoms (HCQ)		
	Frequency	Severity	Weighted
YSEI	-.24*	-.32**	-.14
CSQ-E	.29**	.45**	.24*
CSQ-R	-.24*	-.25**	-.19
CSQ-D	-.22*	-.31**	-.22
CSQ-A	.18	.14	.21
ECQ-R	.22*	.32**	.14
ECQ-E	.09	-.03	.22
ECQ-A	.11	.01	.08
ECQ-B	-.18	-.14	-.08
TAMB	-.10	.06	-.05

* p<.05, **p<.001

Table 3.4

Correlations Between Measured Personality Variables and Frequency and Severity of Reported Distress at Time 1

Reported Psychological Distress (HCQ)

	Frequency	Severity
YSEI	-.46**	-.41**
CSQ-E	.34**	.37**
CSQ-R	-.11	-.13
CSQ-D	-.15	-.18
CSQ-A	.20	.11
ECQ-R	.29**	.29**
ECQ-E	.11	-.09
ECQ-A	.21*	.09
ECQ-B	-.12	-.02
TAMB	-.01	.06

* p<.05, **p<.001

emotion-oriented coping was related to the frequency and severity of psychological distress. Tolerance of ambiguity showed no relationship to any of the health indices. Finally, the only significant relationship observed with weighted

severity was emotion-oriented coping ($r(161) = .24$ $p<.01$). The apparent overlapping pattern of correlations between self-esteem, coping, and emotion-control and health outcomes required hierarchial regression analyses to better gauge the unique effects of the independent variables on health status. Regression analyses would also allow for the testing of the a priori hypothesis that the moderating influence of self-esteem on health and psychological distress is mediated, in part, by coping and emotion-control processes.

Hierarchial regression analyses were conducted with frequency of somatic complaints and psychological distress as the dependent variables with predictor variables being those personality measures showing a significant relationship with the dependents in the correlation analyses. First, the regression model for predicting somatic complaints was constructed in such a way so as to assess the comparative moderating influence of self-esteem after the variance for all other measures had been already accounted for so as to provide a conservative and robust test for the influence of self-esteem on health. The model format, then, was as follows: at step 1 subject sex was entered: at step 2, the significant CSQ terms were entered; at step 3, the significant ECQ terms were entered; at step 4, self-esteem was entered; and finally, all possible two-way interaction terms were entered into the model. In this way, the influence of emotion control was assessed after coping, to assess its predictive utility after controlling for the well-supported influence of coping in health. The same model was constructed with psychological distress as the dependent variable. Although the steps of the model remained the same, the sub-factors entered into the model for the CSQ and the ECQ scales varied in accordance with non-significant terms from the correlational

Table 3.5

Results from Hierarchial Regression Analyses Predicting Time 1 Health and Distress Scores

		Health			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Sex	10.46**	.06	.25*	1.4	.01	.09
2.	CSQ-Main Effects	5.55**	.12		12.4**	.12	
	Emotion-CSQ			.20*			.37**
	Rational-CSQ			-.20*			
	Detached-CSQ			.10			
3	ECQ-Main Effects	4.72**			8.69**	.17	
	Rehearse-ECQ		.13	.11			.17*
	Aggression-ECQ			.08			.19*
4	YSEI-Self-esteem	4.23**	.14	-.12	12.16**	.27	-.37*
5	Two-way Interact						
	Main Effects	3.19**	.19				
	YSEI X Rehearse			-1.52*			
	YSEI X Detached			-2.41*			

*p<.05, **p<.01

analyses. The results for the regression analyses can be seen in Table 3.5 (see appendix A9 for full regression table). First, significant main effects were observed for sex, coping, emotion-control and self-esteem, with an increase in variance explained at each step. Finally, the significant main effect for two-way interactions were accounted for by two interactions, namely, self-esteem by rehearsal and self-esteem by detached coping. These interaction terms superseded the influence of the main effects and explained variance than for these variables alone. To better understand the significant interaction effects between self-esteem and rehearsal and between self-esteem and detached coping, median splits were computed on the YSEI total scale score, ECQ-rehearsal, and CSQ-detached coping and then submitted to an analysis of variance (ANOVA) with frequency of somatic complaints as the dependent variable. The significant interactions indicated that individuals with low self-esteem and high rehearsal scores were most likely to show increased health complaints. Second, a similar pattern emerged for the second interaction, with low self-esteem subjects who used little detached coping reporting more health difficulties. Finally, to unpack the direction of these interactions, subsequent ANCOVA's were conducted that partialled for one or the other measure. For instance, while the main effect for self-esteem and health remained significant while partialling for rehearsal ($F(1,161) = 6.34$, $p<.01$) the main effect for rehearsal and health was reduced to non-significance when controlling for self-esteem ($F(1,161) = 3.16$, $p = .08$). Similarly, the main effect for self-esteem and health status remained significant ($F(1,161) = 11.26$, $p<.001$) while controlling for detached coping but the main effect for detached coping and health was reduced to non-significance while controlling for self-esteem ($F(1,161) = 2.84$, $p = .09$).

Also seen in Table 3.5 are the results for the regression analysis with psychological distress as the outcome variable. When compared to the results for health status, significant main effects were observed for coping (emotion-oriented), emotion-control (rehearsal and aggression-control) and self-esteem, with increasing variance explained at each step. There was no main effect for subject sex, nor were any interactions observed. After all variables had been entered into the model, self-esteem was shown to account for 10% of the variance.

Time 2

Approximately 8 weeks later subjects were sent and asked to complete the GHC for a second time in addition to the SOCQ. Of the 183 subjects who participated at T1, 120 subjects completed the SOCQ, while 60 subjects reliably completed the GHC. Hence, the final sample who had completed health measures at both times was 60. Subsequent correlation analyses between personality measures utilized the full 120 subjects whilst correlation and regression analyses for health and psychological distress utilized the reduced sample. In light of this sizeable attrition rate (63%) across the study period a series of t-tests were conducted to determine whether the remaining sample at T2 was biased in any way from the initial sample in relation to demographic features or personality profile. The results indicated that the remaining sample was not significantly different from the initial sample on any of the personality measures (CSQ or ECQ factors, or YSEI). However, of the 60 subjects who completed the GHC at T2 all were female save one male. Despite the sex differences noted on the coping

dimensions at T1, the exclusion of males at T2 did not apparently skew the sample on measured personality domains as indicated by the absence of significant differences between the mean scores from T1 to T2.

As seen in Table 3.6 are the pearson correlation coefficients for the relationships between T1 health and personality measures (and T2 SOCQ scores) with T2 health and psychological distress reports. There was large stability in the frequency ($r(60) = .69$, $p<.001$) and reported severity ($r(60) = .61$, $p<.001$) of somatic symptoms from T1 to T2 as well as for reported frequency ($r(60) = .55$, $p<.001$) and severity ($r(60) = .38$, $p<..01$) of psychological distress. Self-esteem, as measured at T1 was related to the frequency of symptoms ($r(60) = -.41$, $p<.01$) and reported severity ($r(60) = -.36$, $p<.01$). Note that the correlations between self-esteem and T2 health status tend to be higher than the correlations observed between self-esteem and T1 health status. ECQ-rehearsal and CSQ-emotion-oriented coping were also related to reported frequency and severity of symptoms at T2. With respect to the reported frequency and severity of psychological distress at T2, self-esteem was found to relate highly to both frequency ($r(60) = -.52$, $p<.001$) and severity ($r(60) = -.41$, $p<.001$). As seen in Table 3.6 the only other dimension related to both the frequency and severity of psychological distress was emotion-oriented coping, although other CSQ factors were related depending on whether it was frequency or severity of psychological distress assessed.

Table 3.6

Correlations Between Measured Personality Variables and

Frequency and Severity of reported symptoms at Time 2

	Reported Symptoms (HCQ)	
	Frequency	Severity
HCQ-FREQ (T1)	.69**	.61**
YSEI	-.41*	-.36*
CSQ-E	.41*	.44**
CSQ-R	-.07	-.01
CSQ-D	-.10	-.14
CSQ-A	.10	.07
ECQ-R	.34*	.34*
ECQ-E	.16	.09
ECQ-A	.07	.08
ECQ-B	-.19	-.06
TAMB	-.14	-.04
LOC-PER	.04	.11
LOC-INT	-.04	-.06
LOC-POL	-.21	-.09

* p<.01, **p<.001

While the correlations between self-esteem and T2 health suggest a moderating influence for self-esteem on Health over time it would be necessary to control for the law of initial values. In this way, the relationship between self-esteem and health and psychological distress at T2 would be assessed while

controlling for T1 health and psychological distress ratings. Towards this end, hierarchial regression analyses were conducted. As in T1 regression analyses, the correlational patterns were similar for both frequency and severity of the 2 well-being indices so analyses were conducted on the reported frequency of symptoms to reduce redundancy in results. Consistent with the first series of regression analyses a conservative test of the predictive validity self-esteem was initiated by entering it into the regression equation after coping and emotion-control factors had been entered. In these analyses subject sex was not entered into the model and health status at T1 was entered first in its place. The results for reported somatic complaints and psychological distress can be seen in Table 3.8 (see Appendix A10 for full regression table). First, after accounting for the frequency of reported somatic complaints at T1 (which accounted for 50% of the explained variance) emotion-oriented coping and rehearsal produced significant main effects as did self-esteem after these variables had been entered. Finally, two-way interaction effects contributed slightly to the explained variance with there being a self-esteem by rehearsal interaction. This finding replicates the interaction pattern observed between self-esteem and rehearsal at time one with low self-esteem and high rehearsing leading to poorer outcome. The final equation demonstrated that after controlling for the law of initial values the sole remaining predictor of health status at T2 was self-esteem ($t(60) = -2.48$, $p<.02$).

Table 3.7

Correlations Between Measured Personality Variables and Frequency and Severity of Reported Distress at Time 2

	Reported Psychological Distress (HCQ)	
	Frequency	Severity
HCQ-FREQ (T1)	.55**	.38**
YSEI	-.52**	-.41**
CSQ-E	.35**	.32*
CSQ-R	-.26*	-.16
CSQ-D	-.30*	-.28*
CSQ-A	.19	.13
ECQ-R	.12	.15
ECQ-E	.11	.03
ECQ-A	.14	.16
ECQ-B	-.10	.03
TAMB	-.02	.08
LOC-PER	.00	-.02
LOC-INT	-.19	-.09
LOC-POL	-.16	-.18

* p<.05 **p<.001

As anticipated, subjects with low self-esteem who engage in emotion-oriented coping reported the most somatic complaints over the study period. A similar pattern emerged in the multiple regression analysis with psychological distress as the dependent measure. After controlling for the frequency of psychological

Table 3.8

Results from Hierarchial Regression Analyses Predicting Time 2 Health and Distress Scores

		Health			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Time 1 Health	74.70**	.50	.71**			
	Time 1 Distress				50.30**	.28	.53**
2	CSQ-Main Effects	42.39**	.54		15.72**	.33	
	Emotion-CSQ			.19			.11
	Rational-CSQ						-.06
	Detached-CSQ						-.11
3	ECQ-Main Effects	28.66**	.54				
	Rehearse-ECQ			.17			
	Aggression-ECQ			.19			
4	YSEI-Self-esteem	24.56**	.58	-.23*	15.14**	.38	-.29*
5	Two-way Interact						
	Main Effects	17.08**	.60				
	YSEI X Rehearse			-.57*			

*p<.01. **p<.001

distress at T1 (which accounted for 28% of the explained variance) main effects were found for coping factors and self-esteem but the only variable retained in the final equation was self-esteem ($t(60) = -2.99$, $p<.005$).

3.4 Discussion

This study sought to examine a) the relationship of self-esteem to coping and emotion-control processes, b) the moderating influence of self-esteem on health in a prospective design, and c) the possible mediating role of coping and emotion-control processes in the moderating influence of self-esteem on the stress-illness relationship. In contrast to past studies (e.g, Linville, 1987; DeLongis et al., 1988) which operationalized stress in terms of previously reported life events, this study examined the role of self-esteem in subjects facing a personally relevant acute stressor: the arrival and early adaptation to university life.

First, the correlation patterns between self-esteem and the various coping styles were statistically significant and conceptually meaningful. Individuals with trait low self-esteem are typically more likely to engage in coping practices that do not help them adapt to challenging situations. They are less likely to utilize effortful, controlling responses to either change stressful situations or alternatively to achieve a state of mind of rational, calm detachment. Rather, individuals with low self-esteem appear to be chronically emotionally engaged and return to this form of coping persistently. Similarly, self-esteem was related to the tendency to ruminate or rehearse mentally upsetting events and to inhibit emotion as well some evidence that self-esteem relates to anger control and impulsivity (benign control). Hence a rough profile emerges of the individual with low self-esteem, engaging in less adaptive coping practices over time and spending more time ruminating over past upset; particularly upset related to self experience. This pattern appears true for a considerable group of individuals thus reflecting an interactive personality dynamic opposed to a severe process in those with serious

mental health difficulties. In addition, this study did not appear restrained by ceiling effects on self-esteem or other any of the other personality dimensions as was evidenced in a previous attempt to document the role of self-esteem in health (DeLongis et al., 1988). As would be anticipated in a university student population, self-esteem scores were slightly skewed in the positive direction but not overly so, with the distribution reflecting approximate normality. Moreover, the range and variation in somatic symptoms was adequate for assessment of the role of individual differences.

It is also noteworthy that locus of control or tolerance of ambiguity appeared unrelated to self-esteem or only nominally to other personality dimensions. Theoretical accounts have held self-esteem and perceived control to be intimately connected (e.g., Taylor & Brown, 1988) although other studies have also failed to find strong relationships between locus of control and personality process variables implicated in the stress-illness relationship (Epstein & Katz, 1990). Moreover, the absence of significant findings for tolerance of ambiguity suggest that its applicability in broader health models outside of the work place may be more limited.

Second, self-esteem was found to moderate the stress-illness relationship. Individuals with low self-esteem were more likely to report greater frequency of somatic symptoms; greater severity of somatic symptoms; and increased psychological distress than subjects with high self-esteem. Emotion-oriented coping and rehearsal were also consistently related to health status but to a less extent than self-esteem. Moreover, the effects of self-esteem, coping and emotion-control were greatest when they were assessed interactively on health.

That is, the best predictors of health status at time one were the interactive effects of self-esteem and coping (detached); and self-esteem and rehearsal in addition to their independent effects. In this way, it is individuals with high-esteem who also engage in detached (adaptive) coping and ruminate less often who appear buffered against health complications and experience distress beyond those simply with high self-esteem. The prospective design allowed for the control of individual differences in symptom reporting at time one and a test of the stability of this pattern over time. While the apparent mediating role of coping and emotion-control in the self-esteem-stress-illness relationship was reduced somewhat over time, the moderating influence of self-esteem was relatively stable and even seemingly greater at time two. This is in stark contrast to the absence of any predictive utility of locus of control which has been implicated in moderating the stress-illness relationship. In summary, the results from the analyses appear to support a direct buffering role of self-esteem on health and psychological distress and indirect influence by way of influencing the particular coping and emotion-control strategies associated with either the prolongation or attenuation of stress. Conceptually, the study highlights the importance of self-process in health. In comparison to Linville's (1987) emphasis on the stress-buffering role of chronically activated self-aspects as self-structure, this study points more directly to the important moderating influence of valanced self-evaluation. The inter-relationship between self-esteem, coping and rehearsal further suggest possible pathways by which self-esteem is maintained, with individuals low on self-esteem being less likely to cope effectively with situational challenges, and then subsequently, ruminating on the upset residue from failed coping which, in turn,

lowers self-esteem and so on in cyclical fashion.

There are several limitations to this study, however. First, the attrition rate in this study was high, with only one third of the sample completing all relevant measures. While the analyses did not point to biases in those subjects who remained in the study until its completion, the sample, however, was comprised entirely of female subjects save one male. Hence, the more conservative test of the moderating influence of self-esteem after accounting for individual differences in health reporting at time one was achieved only for females. It may be that the interactive effects for self-esteem, coping and emotion-control are especially pertinent for females. The correlations between self-esteem and coping factors may, in fact, support this position. While the pattern of correlations between self-esteem and emotion-oriented and more adaptive coping styles, the magnitude of the correlations appeared to differ somewhat. This may also help explain, in part, why the correlations between self-esteem, emotion-oriented coping, and rehearsal increased in the time two analyses with female subjects. The results, therefore, are most generalizable for female subjects and replication with male subjects is required.

Second, the study demonstrates a moderating influence of self-esteem on health and distress but it does not necessarily provide evidence for a stress-buffering role of self-esteem. The relationship between self-esteem and health outcome remained relatively stable over the 8 week period. This may be the case as both assessments were conducted during high stress periods (beginning and end of first term at university) and/or self-esteem influences somatic experience during high (beginning of term) and low (end of term) periods of stress. The

stress-buffering hypothesis, alternatively, would suggest that self-esteem should influence health status only during periods of comparatively high stress. It may be that individuals with low self-esteem (and comparatively less adaptive coping and emotion-control styles) persistently experience more health difficulties and this general tendency becomes exacerbated during periods of high stress. Linville (1987) demonstrated a stress-buffering role for self-complexity where self-complexity only moderated the stress-illness relationship during periods of high stress although a recent report also suggests that self-esteem may lead to dysphoria even during periods of low stress (Whisman & Kwon, 1993).

To conclude, while it is difficult to determine the absolute directionality of the relationships observed in this study, the following tentative conclusions can be drawn: a) self-esteem moderates the cognitive-perceptual component that initially identifies a challenging event, experience etc., as potentially stressful, b) self-esteem may moderate the potential coping behaviours employed which have subsequently been found to mediate between exposure to potentially stressful events and the subjective experience of stress. Finally, self-esteem may, similarly moderate the way in which past emotional upsets are constructed and resolved--and more basically, the way an individual responds to experiencing and expressing emotion and these processes, independently as well as collectively, influence health status across time.

Chapter 4

4 Self-Esteem, Emotion-control and Situational Coping In A Four-phase Prospective Examination Of Health

4.1 Introduction

In the previous chapter self-esteem was shown to moderate the stress-illness relationship across the first term in a group of first-year university students. Self-esteem predicted health and distress scores directly from time one to time two and indirectly by influencing coping strategies employed during stress. That is, subjects with high self-esteem who reported a dispositional tendency to deal with stress with a detached coping pattern were found to report less health complications and lower psychological distress at time two, eight weeks later. These interactive effects of self-esteem and coping exceeded the predictability of either self-esteem or coping styles, independently. In this study coping was assessed as a dispositional tendency; as a trait reflecting individual differences in the propensity to deal with stress in a particular way. In addition to the demonstrated relationship between self-esteem and dispositional coping, it would also be valuable to assess the importance of the role of self-esteem with more contextually-based coping efforts. Lazarus (1993) has argued that coping is process-oriented where coping changes over time and in accordance with the situational contexts in which it occurs. In this way, the transactional model of stress points to the cyclical nature of stress appraisal,

coping patterns, and subsequent re-appraisals and subsequent coping patterns and so on. A number of studies have shown that situationally dependent coping influences immediate momentary and day-to-day fluctuations in emotions that result from immediate and delayed stressors (Folkman & Lazarus, 1985).

A more recent study has further demonstrated how coping practices change throughout different stages of a stressful transaction (Carver & Scheier, 1994). In this study student subjects (n=125) were monitored across a personally relevant stressor, an exam. After completing measures tapping dispositional coping styles students reported situational coping styles and related affect across four weekly stages of the exam process: two days before the exam; five days after the exam; two days before the exams were posted and five days after their posti g. Consistent with a process model of coping the authors were attempting to determine whether coping reactions relevant at one phase are used at a subsequent phase, as well as the possible differential effects of coping practices at different phases of the transaction. To summarize: the results coping efforts did change throughout the exam period; particularly noticeable was the change with active coping and planning as the modal response prior to the exam and then falling off following the exam. Coping was also related to emotions at different stages of the transaction. In contrast to previous studies, they found that at time one perceived threat and challenge were related. Threat and challenge were related to problem-focused coping at time one although at subsequent points whereas threat was related to the concurrent use of social support, challenge was more clearly related to continued problem-focused coping and positive re-framing. Further, this study also found consistent moderate relationships between

dispositional and situational coping (32 out of 39 correlations significant) but dispositional coping did not tend to relate to the emotion outcome measures. Finally this study also assessed a self-related process, self-confidence in relation to coping and emotion patterns across the different phases. Confidence was related to trends towards more beneficial emotions after exam and prior to the posting of exams, although it was not a significant predictor in the regression analysis.

These findings need further discussion. While confidence was examined as a potential moderating variable, it was also potentially contaminated with the sample selection process. Only subjects who indicated before the study that they expected to do well on the exam and who indicated that the exam was important to them were selected for the study. Thus only subjects with high self-confidence participated in the study. It is also conceivable in light of the close association between self-esteem, confidence (as well as potentially optimism in this case) that the effects observed in this study were particularly true for those with high self-esteem. Consistent with this argument, and the theoretical expectations of the relationship between self-esteem and stress appraisal, this study found that positive re-appraisal was one of only a few coping patterns that remained consistent over time. It might be high self-esteem subjects maintain high self-esteem via their comparative advantage in utilizing problem-focused coping during periods of challenge as well as threat as well as their persistent ability to re-frame even threatening events in positive terms. In short, a prospective study examining the relationship between dispositional coping, situational coping and self-esteem would answer some of the questions left remaining from Carver and

Scheier's (1994) recent study.

Collectively, the evidence from research on coping as a trait and coping as a process indicates that while coping appears to change from moment-to-moment these changes also occur within the backdrop of habitual patterns of dealing with stress. A parallel argument has long been maintained for the function of self-esteem as self-evaluations are sensitive to situational feedback, success and failures, it also tends to return to a fairly enduring baseline. In addition to the demonstrated relationship between self-esteem and dispositional coping in health and distress, it would be a more powerful test of the coping model postulated by Lazarus and Folkman (1984), and the interactional model of stress, as it stresses the cyclical role of situationally-based coping efforts and particular stressful life events over time. Because people experience repeatedly positive and negative life events it may be important to examine the relationship between moderating self-processes and situationally-based coping styles and their effects, in a middle ground between a-contextual dispositional coping response tendencies and assessment of single stressful events. For example, conducting multiple assessments of coping patterns utilized within the past several weeks for a range of negative and positive life events.

The current study was aimed, in part, to determine the relationship between self-esteem and situational-based coping patterns in a group of student subjects making the transition from high school to university life. As discussed in the previous chapter, the transition to university life may be a most suitable context to assess the role of self-esteem in the stress-coping-illness relationship because of the personal meaningfulness of the stressor as well as the personally relevant

nature of the outcomes (e.g., academic success, career options, probable life-style implications). Cantor and colleagues (Cantor, Norem, Niedenthal, Langston, & Brower, 1987) have previously assessed coping patterns prospectively in a group of first year university students with an emphasis on the person-by-situation interactions in adaptation. For instance they found that students showed considerable flexibility in response to different domains in their life. That is, while the academic and social pressures demanded particular coping efforts, they also had to contend with extraneous life events occurring outside of the academic realm. Hence, it would be important to examine the interaction between academic and social adjustment in light of experienced life events across different stages of adjustment to university life. Cantor and colleagues (1987) found that appraisals and achievement tasks were independent of appraisals in interpersonal tasks. They concluded that the solutions that work best for individual students will depend in large part on the ways in which they make those tasks their own by bringing to bear their unique constellations of social intelligence.

The current study set out to extend the examination of self-esteem, coping, and emotion-control processes and health initiated in the previous chapter. In addition to the assessment of reported symptoms and psychological distress experienced over four 8-week intervals, the study provided a test of the moderating influence of self-esteem on outcome germane to the contextual goals, namely social and academic adjustment. Further, this study provided the opportunity to assess the unique and potential interacting effects of self-esteem and valanced life events on health and adjustment.

The particular hypotheses were:

1. individuals with high self-esteem will experience better health and social and academic adjustment than individuals with low self-esteem and this will be borne out at each phase of the study,

2. individuals with high self-esteem who also cope with rational and detached styles, and who tend to ruminate less, are particularly likely to experience better health and adjustment,

3. the effects of a) and b) will supersede the importance of life events as will be evidenced in the amount of explained variance in the separate regression analyses at each phase of the study,

4. individuals with low self-esteem and greater frequency of negative life events will demonstrate the worst health status and adjustment at any given phase of the study.

4.2 Method

4.2.1 Subjects

The subjects in this study were the same participants from the second, replication study on the YSEI in chapter two (p. 75). Subjects were comprised of first year students at the University of York who agreed to volunteer for research throughout the academic year. Three-hundred and seventy-one (371) were contacted through the internal university mail system for the questionnaire survey and 311 returned the forms for a response rate of 84%. Of the 311 subjects in this study 136 (43.7%) were male and 170 (54.7%) female (mean age = 19.5, SD = 3.76) (5

subjects did not indicate their sex on the returned forms). Subjects received no financial or academic credit for their involvement.

4.2.2 Procedure

This study involved four assessments corresponding to roughly 8 week intervals throughout the academic year. Subjects were mailed a questionnaire package three weeks after beginning term and were asked to complete and return them via internal university mail. At time one (T1) subjects received the following questionnaires the YSEI, CSQ-Trait, ECQ and the HCQ. At time two (T2), approximately 8 weeks later subjects completed a second packet of questionnaires that included: CSQ-State, and GHQ-Revised, Social and Academic Adjustment ratings and reported positive and negative life events experienced in the preceding three months. At time three (T3) approximately 8 weeks later, subjects again received the CSQ-state and questionnaires for social and academic adjustment ratings and experienced life events in the preceding three months. Finally, 8 weeks later at time four (T4), subjects received the following: CSQ-state, HCQ, GHQ and the questionnaire tapping social and academic adjustment and experienced life events in the preceding three months.

4.2.3 Materials

York Self-esteem Inventory (YSEI)

The psychometric properties of the YSEI have been detailed previously (see chapter two). The scale compromises 30 items measuring global self-esteem. Preliminary psychometric examination of the scale has revealed strong internal

reliability (Alpha .86) and test- re-test reliability (.83) over an 8-week ITI. This study was also aimed, in part, to extend the examination of the predictive validity of the YSEI in health research and other sources of adaptation whilst under stress.

Emotion Control Questionnaire (ECQ)

The Emotion Control Questionnaire (ECQ: Roger & Nesshoever, 1987; Roger & Najarian, 1989) utilized in this study was in no way changed from its form in the previous study. The scale comprises four scales labelled Rehearsal (R), Emotion Inhibition (EI), Aggression Control (AC) and Benign Control (BC). As shown in the previous study the two most important factors for health research appear to be R and EI. R examines the degree to which a person broods over past threats and failure. For example an item from this factor is "I get "worked up" just thinking about things that have upset me in the past". EI measures the willingness of subjects to express emotion; "When someone upsets me, I try to hide my feelings". The characteristics of the other two factors and the overall scales psychometric properties have been previously outlined.

Coping Styles Questionnaire (CSQ)

CSQ-Trait

As detailed in chapter three the CSQ includes four factors measuring dispositional coping tendencies: rational ("Try to find out more information to help make a decision about things."), detached ("just take nothing personally."), emotional ("Feel worthless and unimportant.") and avoidant "talk about it as little as possible."). The factors have been shown to possess acceptable internal

consistency (range from .69 to .85) and good test-retest reliability over a three-month period (range .70 to .80). As devised the CSQ aims to assess a wide range of potential responses to stressors and the aim is to identify the relative combination of coping tendencies across the four factors opposed to identifying the modal coping style.

CSQ-State

Subject's coping reactions across three points in the academic year were measured by the CSQ in its situational form. In contrast to the assessment of relatively enduring dispositional coping styles assessed by the CSQ trait format, this version asks subjects how they have been engaging in particular coping responses during the previous week. Because the scoring key includes the temporal location (e.g., sometimes, never) the items did not need to be re-written although the instructions for completion changed somewhat. Subjects read "during the past week how would you describe the way you have tended to react to upsets?...remember, the questions are about how you have reacted during the past week, even if that has been different from the way you feel you might typically react." Further, the scoring was exactly as it is with the trait version.

General Health Checklist (GHC)

The GHC (GHC: Meadows, 1989), as described in chapter three was used to assess general health. The scale consists of items that measure common physical complaints frequently made to general practitioners. It also includes more

serious illnesses that are reported less frequently. Severity and a weighted severity score can be obtained in addition to the reported frequency of various symptoms. There is a total of 28 items with an additional two items for female subjects only. The scale is scored as follows: 1 `Better', 2 `Unchanged', 3 `Worse' 4 `Don't have/suffer from'. On each administration, subjects answered questions pertaining to their health within the past three weeks. As computed in chapter three, several health scores were derived: total frequency of symptoms (1-3 endorsed); severity of symptoms (3 endorsed) a third weighted severity index. Three items measuring anxiety, depression and insomnia which were used as the measure of well-being in chapter three were removed so as to not confound distress with illness but they were not summed to form a distress factor. In this study a more reliable and valid measure of psychological distress was used instead.

General Health Questionnaire (GHQ)

In its original form the GHQ is a 60-item self-administered screening test for detecting non-psychotic psychiatric disorders in community populations. A subsequent short version, the GHQ-30, has been widely used as a screening device for psychiatric disorders as well a general measure of distress. This study utilized a version abbreviated version to 20 items, the GHQ-20 (Siegart, McCormick, Taylor & Walkey, 1987). The GHQ-20 has four sub-scales containing five items each: general illness, sleep disturbance, anxiety and dysphoria, and severe depression with suicide ideation. All four factors have been shown to possess good internal reliability (.81 to .90). In this study the general illness factor

was examined separately from the other factors to provide a `pure' illness index free of the contaminating effects of distress. To assess psychological distress, the five items from the anxiety and dysphoria dimension were utilized. The sleep disturbance factor was not used because it was felt that this factor was more ambiguous; where it would be difficult to separate physical and distress causes and consequences. Finally, the severe depression items were removed from the scale prior to mail out because of the ethical issues involved in tapping students level of suicidality. Hence, two factors from the GHQ-20 were utilized in this study: general illness (Factor 1) and anxiety and dysphoria (Factor 3), each comprising five items. A typical item from the former dimension is `been feeling perfectly well and in good health' (reversed item) with the scoring key ranging from 1 `better than usual', 2 `same as usual', 3 `worse than usual' and 4 `don't suffer from'. A total factor score for general illness was derived by summing the five items with the total score reflecting poor health. A typical item from the anxiety-dysphoria dimension is `found everything getting on top of you' with the same four-point scoring system. The total distress factor score was in the direction of increasing distress.

Social and Academic Adjustment

To gauge subject's perceived adjustment to university life, both socially and academically, a questionnaire was created for this study which included two questions; `compared with my fellow-students, I feel I have so far adapted to social life at university' and `compared with my fellow-students, I feel I have so far adapted to academic work at university'. Each question was rated on a four-point

likert scale ranging from 1 `very badly' to 4 `very well'. Subjects received these questions at T2, T3, T4, so that a state marker for adjustment could be obtained at each point in time as well as an average index for adjustment across the academic year.

Life Events

In light of the problems associated with existing structured life event scales (see chapter one for review) and the fairly consistent finding that the frequency of experienced life events best predicts health outcomes above and beyond the importance of specific life events or their rated severity, in this study a simple index of frequency of life events was obtained at times T2, T3 and T4. The instructions for rating life events were as follows: `we constantly experience events which may have either a positive or a negative impact on us. For example, we may start a new relationship, which we will probably rate as a positive event. On the other hand, a relationship may end, and in this case we may rate it as positive if we wanted it to end but negative if we didn't. Another example might be failing an examination, or more seriously, a death in the family, both of which will normally be regarded as negative or stressful events.' Subjects were then asked to rate separately the number of positive and negative events experienced over the past three months ranging from 1 to 10 or more. In this way, multiple ratings of life events provided the opportunity to gauge the state effects of experienced life events on the adjustment and health indices as well the cumulative effects across the academic year.

4.3 Results

This study attempted to determine the relationship between self-esteem, dispositional and situational coping, and emotion-control styles across four stages of the first year of university for a large group of student subjects (n=311).

The means, standard deviations and ranges for each of the independent variables at each point of assessment can be seen in Table 4.1. Note that the sample size for each variable is reported based on the number of subjects who completed all measures at each phase of the study. A series of multiple t-tests were conducted to examine whether subjects who left the study from T1 to T2 and so on until the completion of the study differed across any of the measured variables. Subjects who failed to complete all measures at T2, T3, or T4 did not differ from subjects who remained in the study from one stage to the next nor did subjects who concluded the study differ on any earlier T1 to T3 measures. Furthermore, in contrast to the exponential attrition rate for male subjects in the previous chapter, the percentage of females and males at the various phases of the study remained relatively constant and near-equivalent (cf., percentage of female subjects across study period; T1: 53.5%, T2; 50.4%, T3 52.3%, T4; 58.2%). Consistent with the results from the previous study the distribution

Table 4.1

Mean Scores and Standard Deviation Terms for All Variables Measured At Each Phase of The Study For Male and Female Subjects and the Total Sample

Variable	Females			Males		Total	
	M	SD		M	SD	M	SD
Time 1	(n=136)			(n=114)		(n=250)	
YSEI	105.64	15.46		106.72	13.86	106.12	14.74
CSQ-Rational	18.30	5.04		19.37	5.13	18.81	5.06
CSQ-Detached	11.24	4.89	***	14.44	5.23	12.77	5.29
CSQ-Emotional	15.36	5.72	***	12.51	5.20	14.04	5.62
CSQ-Avoidant	14.08	4.48		15.05	4.42	14.52	4.23
ECQ-Rehearse	37.00	6.90		37.68	6.57	37.38	6.73
ECQ-Emotion	38.18	6.38	***	34.25	5.77	36.43	6.38
ECQ-Aggression	34.52	4.10	**	35.64	4.38	35.06	4.25
ECQ-Benign	33.15	3.97		33.49	4.72	33.31	4.30
Time 2	(n=70)			(n=67)		(n=139)	
CSQ-Rational	15.67	5.23		17.37	5.86	16.55	5.57
CSQ-Detached	10 27	4.89	***	14.45	5.83	12.33	6.04
CSQ-Emotional	13.30	6.05	**	10.42	5.62	11.82	6.00
CSQ-Avoidant	13.74	4.76		13.55	5.26	13.58	5.00
Events-Negative	4.44	2.19	**	3.45	2.11	3.95	2.19
Events-Positive	6.07	3.01		5.49	3.07	5.84	3.05
Adjust-Social	3.17	.59		3.15	.58	3.17	.59
Adjust-Academic	2.79	.61		2.76	.80	2.78	.71
GHQ-Illness	12.30	2.57		11.19	2.67	11.71	2.70
GHQ-Distress	11.77	3.03		10.25	2.33	11.00	2.85

Table 4.1 Continued...

Table 4.1 Continued

Variable	Females			Males			Total	
	M	SD		M	SD		M	SD
Time 3	(n=57)			(n=51)			(n=108)	
CSQ-Rational	17.32	5.80		18.12	6.76		17.60	6.26
CSQ-Detached	11 91	5.68		14.39	6.13		13.03	6.00
CSQ-Emotional	11.97	5.68		11.61	5.90		11.87	5.79
CSQ-Avoidant	13.56	4.67		14.16	4.42		13.85	4.52
Events-Negative	4.83	2.56		4.16	2.33		4.51	2.46
Events-Positive	6.30	2.72		4.96	2.42		5.68	2.65
Adjust-Social	3.28	.62		3.06	.58		3.17	.62
Adjust-Academic	2.97	.63		2.94	.79		2.95	.70
Time 4	(n=53)			(n=38)			(n=91)	
YSEI								
CSQ-Rational	17.32	6.52		17.74	6.58		17.46	6.48
CSQ-Detached	12.26	5.40	*	14.82	5.80		13.37	5.67
CSQ-Emotional	12.00	5.37		12.11	6.25		12.02	5.69
CSQ-Avoidant	12.55	4.62	*	15.11	5.00		13.61	4.89
Events-Negative	4.53	2.57		4.18	2.12		4.38	2.37
Events-Positive	6.00	2.92		5.05	2.46		5.62	2.75
Adjust-Social	3.17	.70		3.11	.61		3.14	.66
Adjust-Academic	3.04	.71		2.92	.82		2.99	.75
GHQ-Illness	11.85	3.43		11.74	2.60		11.78	3.08
GHQ-Distress	10.94	2.48		11.05	2.32		11.00	2.39
HCQ-Illness	4.60	3.55	***	2.24	2.01		3.59	3.20

*p<.05, **p<.01, ***p<.001

qualities for the YSEI reflected a fairly normal distribution. All but two items of the scale (items 7 and 15 had slightly elevated kurtosis (<1.20) and acceptable skewness) had acceptable levels of kurtosis (<1) and skewness (<1) and the total scale score demonstrated approximated normality. The sub-factor scores of the CSQ-Trait, CSQ-State, ECQ and the adjustment and life event scores also had acceptable distribution qualities excluding CSQ-State Avoidance at T4 which had elevated kurtosis (1.98). This factor was normally distributed in all other assessments and T4 data were used in conjunction with all T1 T2 and T3 data so a transformation was not conducted on the CSQ-State avoidance T4 data.

The analyses in this study focused on the moderating influence of self-esteem and the possible mediating role of state coping above and beyond the impact of life events on subject health, distress, and social and academic adjustment over four phases of the academic year. Analyses were conducted individually at each phase of the study to maximize statistical power in the regression equations. In addition to individual phase-specific examination of the moderating role of self-esteem, the results will also be presented that assess trends for the within-subject variables on the 92 subjects who completed all study measures from T1 to T4.

4.3.1 Time 1 results

Possible sex differences in measured variables were assessed independently at each phase of the study with Multivariate Analysis of Variance (MANOVA). For subjects who completed all T1 measures (N=251) the results indicated overall multivariate significance (Pillais = .22, $F(1,249) = 6.60$, $p < .001$).

The subsequent univariate analyses demonstrated sex differences on CSQ-Trait detached coping (F(1,249)=24.11, p<.001), CSQ-Trait emotion coping (F(1,249)=15.08, p<.001), ECQ-emotion inhibition (F(1,249)=26.06, p<001) and ECQ-aggression control (F(1,249)=4.51, p<.05). As seen in Table 4.1 Female subjects were less likely to engage in detached coping and more likely to engage in emotion-oriented coping and maintain higher aggression control. In light of these sex differences relationship patterns between the independent and dependent variables would be independently assessed for male and female subjects.

Correlation coefficients were computed on T1 measures, self-esteem, CSQ, ECQ, and health, and the results for the entire sample can be seen in Table 4.2.

Due to the similarity in measures at included at T1 and measures used in the previous study, these analyses provided an opportunity to confirm previously identified relationships between self-esteem and CSQ and ECQ factors in a considerably larger sample as well as relationship patterns for males and females separately. As seen in Table 4.2 with respect to coping, self-esteem was positively related to CSQ-rational (r(251)=.33, p<.001), CSQ-detached (r(251)=.25, p<.001) so that individuals with higher self-esteem were more likely to engage in these adaptive coping practices. Conversely, individuals with low self-esteem were more likely to engage in emotion (r(251)=-.47, p<.001) and to a less extent avoidant-oriented coping (r(251)=-.19, p<.01). Turning to the observed relationships between self-esteem and the ECQ dimensions, the expected patterns were observed with self-esteem relating inversely

Table 4.2

Correlations Between Self-esteem and the CSQ and ECQ Dimensions and The Symptom Severity at Time 1 For Male and Female Subjects Separately and For the Entire Sample (N=251)

	Self-Esteem Scores (YSEI)		
	Females	Males	Total
CSQ-Rational	.32**	.33**	.33**
CSQ-Detached	.24*	.27**	.25*
CSQ-Emotional	-.49**	-.46**	-.47**
CSQ-Avoidant	-.24*	-.15	-.19*
ECQ-Rehearse	-.30**	-.23*	-.27**
ECQ-Emotion Inhb.	-.33**	-.23*	-.26**
ECQ-Aggression	-.28**	-.15	-.21*
ECQ-Benign Cntrl	.26*	.25*	.26**
HCQ-Symptom Sev.	-.21	-.24*	-.23*

* p<.01, **p<.001

with rehearsal (r(251)=-.27, p<.001) and emotion-inhibition (r(251)=-.26, p<.001) thus demonstrating that subjects with high self-esteem were less prone to rumination or the inhibiting of the expression of emotion. Further, self-esteem was inversely related to aggression control (r(251)=-.21, p<.001) and positively with benign control (r(251)=.26, p<.001), suggesting that individuals with high self-esteem were better able to contain experienced anger and tend to be less impulsive (high benign control) than individuals with low self-esteem. Self-esteem

was also significantly related to the reported frequency and (r(251)=-.26, p<.001) and severity (r(251)=-.23, p<.001) of symptoms as well as the absence of symptoms (r(251)=.27, p<.001). The correlation coefficients between all independent variables and the weighted-ranked severity index of the HCQ was near zero.

As seen in Table 4.2 the pattern of results for males and females at T1 are nearly identical although the magnitude of the correlations were somewhat different on avoidant coping, rehearsal and emotion-inhibition with these correlations being higher amongst female subjects. Further, the correlations between aggression control and health status were slightly higher for male subjects. In short, the significant relationship patterns between self-esteem and coping and between self-esteem and health status are nearly equivalent for male and female subjects.

The pattern of relationships at T1 replicate and extend the findings in chapter three and in order to reduce redundancy in reported results from the previous chapter, replication of T1 regressions were not conducted so as the more stringent assessment of the moderating influence of self-esteem would be conducted whilst controlling for initial health status at T1.

4.3.2 Time 2 results

For subjects who completed all T1 and T2 measures (n=136), multivariate significance was again observed based on sex (Pillais = .17, F (1,135) = 2.66, p<.01). Univariate analyses pointed to continued sex differences on CSQ-Detached (F(1,135)=18.21, p<.001), CSQ-Emotion (F(1,135)=8.32, p<.005) as well

Table 4.3

Zero-order Correlations between Trait and State Personality Measures, Life Events, and Adjustment and Health profiles at Time 2

	Life Events		Adjustment		Health	
Variable	Negative	Positive	Social	Academic	Illness	Distress
YSEI	-.24	.13	.47**	.28*	-.24*	-.29**
ECQ-Rehearse	-.14	.07	.02	.00	.24*	.22*
ECQ-Emot Inhib.	.06	-.13	.06	-.14	.06	-.05
ECQ-Aggress	.19	.00	-.23*	-.05	.15	.21
ECQ-Benign	-.05	-.01	-.07	-.06	-.02	-.07
CSQ-Trait						
CSQ-Rational	-.03	.08	.15	.14	-.18	-.12
CSQ-Detached	-.06	.05	.01	.04	-.12	-.22*
CSQ-Emotional	.28**	-.14	-.24*	-.17	.34**	.37**
CSQ-Avoidant	.11	-.11	-.11	-.17	.11	.14
CSQ-State (T2)						
CSQ-Rational	.04	.13	.08	.15	-.22*	-.31**
CSQ-Detached	-.21	.07	.02	.07	-.32**	-.50**
CSQ-Emotional	.33**	-.09	-.17	-.21	.39**	.53**
CSQ-Avoidant	.16	-.07	-.09	-.13	.09	.11
Negative Events	--	.31**	-.11	-.20	.17	.24*
Positive Events	--	--	.15	.08	-.16	-.17

**p<.001, *p<.01

as reported negative life events (F(1,135)=7.36, p<.01), reported illness (F(1,135)=6.10, p<.05) and distress (F(1,135)=10.74, p<.001) symptoms on the GHQ. As seen in Table 4.3 the coping differences were in the same direction as that observed at T1 and females tended to report negative life events, illness and distress. To examine the relationship between self-esteem, dispositional coping, emotion-control patterns with health status, life events and social and academic adjustment at T2 pearson correlations were computed. The concurrent and prospective relationship patterns can be seen in Table 4.3. Self-esteem was significantly related to the reporting of negative (r(138)=-.23, p<.01) but not positive life events (r(138)=.13 ns). Subjects scoring high on disposition emotion-oriented coping (r(138)=.28, p<.01) and state emotion-oriented coping (r(138)=.33, p<.001) were also more likely to report experiencing more negative life events at T2. No other T1 variables or T2 state coping dimensions were significantly related to reported life events. Self-esteem was positively related to social (r(138)=.47, p<.001) and academic adjustment (r(138)=.28 p<.01). In both cases subjects who reported higher self-esteem at T1 reported greater perceived social and academic adjustment at T2. Life events were unrelated to perceived social and academic adjustment as were all other T1 and T2 measures. As also seen in Table 4.3 self-esteem was significantly related to reported illness (r(138)=-.24, p<.01) and psychological distress (r(138)=-.29, p<.001) on the GHQ. Subjects with higher self-esteem as reported at T1 were more likely to report less general illness or distress at T2. Significant point-biserial correlations based on sex (dummy codes

issued so that females were coded as 1 and males coded as 2) were also noted with female subjects demonstrating a greater incidence of illness complaints ($r(138)=-.22$, $p<.01$) and psychological distress ($r(138)=-.28$, $p<.001$). Of the dispositional coping styles only emotion-oriented coping was similarly related to both illness ($r(138)=.34$, $p<.001$) and distress ($r(138)=.37$, $p<.001$). However, CSQ rational, detached and emotion-oriented state coping strategies showed significant patterns to illness and distress in the expected directions. Avoidant-oriented state coping remained unrelated to health indices at T2. Finally neither negative or positive life events were significantly related to health status at T2 although negative events were positively related to reported distress ($r(138)=.24$, $p<.001$). Note that the reporting of negative and positive life events were moderately positively correlated ($r(138)=.31$, $p<.001$) so that subjects who reported negative life events were similarly more likely to also report experiencing positive life events. This pattern would appear to counter arguments launched at response bias in reporting either positive or negative valanced life events.

To assess the unique effect of each of the significant independent variables at T1 and state coping at T2 on health status and adjustment, hierarchial regression analyses were completed. The regression equations were constructed in such a way as to statistically partial out statistically prior health status when examining health status at T2 and in addition models allowed for the direct comparison of differential effects for state coping independent from dispositional coping strategies. With this proviso the regression equations were constructed as follows: at step 1 prior health was entered; at step 2 positive and negative life events were added; at step 3 subject sex was entered; at step 4 CSQ-disposition

(T1) scores were entered; at step 5 CSQ-State (T2) scores were then added, at step 6 significant ECQ dimensions were added; and finally self-esteem was added at step 7. Consistent with regression modelling from chapter three, the model was built so as to test the effects of self-esteem after all other variables were accounted for thus providing a conservative test of the moderating influence of self-esteem. Finally, the deviation score product terms of significant independent variables were calculated to create interaction terms. All possible two-way interactions with self-esteem were added as a block at step 8. A priori assumptions included significant interactions between self-esteem and state coping for the different dependent variables as well as a possible three-way interaction Self-esteem by state coping dimensions by life events, positive and/or negative. The results from these analyses can be seen in summary in Table 4.4. and Table 4.5.

Regression Analyses Summary

In each separate regression analysis for the four dependent variables after statistically controlling for prior health status at T1 life events were found to contribute significantly to the model in the expected direction, that is, with negative life events leading to worse health and well-being (Table 4.4) and poorer adjustment (Table 4.5) (see Appendix A11 for full regression tables) whereas positive life events successfully predicted outcomes in the opposite direction, in this way providing a buffering role against poor health and enhancing adjustment. After controlling for prior illness and experienced life events, subject sex was found to significantly predict distress scores, with female subjects reporting more general distress at T2. No other

Table 4.4

Results from Hierarchial Regression Analyses Predicting Time 2 Health Scores

		Health Scores					
		Somatic Illness			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Time 1 Health	21.74***	.14	.37***	14.20***	.09	.31***
2.	Life Events						
	Main Effects	9.89***	.18		3.38*	.18	
	Negative			.16*			.26**
	Positive			-.19*			-.24**
3.	Subject Sex	7.67***	.19	-.09	8.54***	.20	-.18*
4.	CSQ-Trait						
	Main Effects	6.98***	.21		7.94***	.23	
	CSQ-Emotion			.17*			.19*
5.	CSQ-State						
	Main Effects	5.46***	.25		10.27***	.39	
	CSQ-Emotion			.19*			.33**
	CSQ-Rational			-.04			-.06
	CSQ-Detached			-.10			-.23*
6	ECQ-Main Effects	4.62***	.27		8.73***	.41	
	Rehearse			.11			.05
	Aggression			.10			.14*
7	YSEI-Self-esteem	4.19***	.27	-.03	7.96***	.41	-.06

Table 4.4 Continued

Table 4.4 Continued

Results from Hierarchial Regression Analyses Predicting Time 2 Health Scores

		Health Scores					
		Somatic Illness			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
8.	Two-way Interact.						
	Main Effects	3.14**	.34		4.87***	.44	
	YSEI X Pos.Events			-.61***			

***p<.001, **p<.01, *p<05

differences based on subject sex were observed. T1 disposition coping styles were unrelated to social or academic adjustment and the only factor related to illness and distress was emotion-oriented coping. Likewise, state-coping strategies were unrelated to social or academic achievement, or illness ratings, although emotion-oriented and detached coping patterns were significant predictors of reported distress even after partialling for dispositional emotion-oriented coping. Next emotion-control factor, aggression control significantly predicted social adjustment and psychological distress scores with individuals with higher aggression-control typically showing better adjustment and experiencing less distress. Rehearsal did not remain within the model although controlling for

Table 4.5

Results from Hierarchial Regression Analyses Predicting Time 2 Adjustment Scores

		Adjustment Scores					
		Social			Academic		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Time 1 Health	9.34***	.06	.25***	2.86*	.02	-.14
2.	Life Events						
	Main Effects	4.71***	.09		3.38*	.07	
	Negative			-.12			-.23*
	Positive			.17*			.15
3.	Subject Sex	4.06**	.11	-.13	2.86*	.08	-.10
4.	CSQ-State						
	Main Effects	3.41**	.11		2.70*	.09	
	CSQ-Emotion			.08			-.13
5	ECQ-Main Effects	4.03**	.16		2.23*	.09	
	Rehearse			-.10			.06
	Aggression			-.21**			.01
4	YSEI-Self-esteem	6.97***	.27	.39***	2.54*	.12	.19*

Table 4.5 continued

Table 4.5 Continued

Results from Hierarchial Regression Analyses Predicting Time 2 Adjustment Scores

		Adjustment Scores					
		Social			Academic		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
5	Two-way Interact.						
	Main Effects	3.14**	.36				
	YSEI X Pos.Events			1.27***			

***p<.001, **p<.01, *p<05

life events and coping practices also provided a conservative test of the effects of rehearsal on the outcome measures.

The results for the role of self-esteem are somewhat more varied than the other independent predictors although the bulk of results support the hypotheses as outlined. After all other significantly related variables had been accounted for self-esteem still made a significant contribution to the model for social (full model R-square reported) ($F(8, 126)=6.97$, $p<.001$, Beta=.39, R-Square = .27) and academic ($F(8,126)=2.54$, $p<.001$, Beta=.19, R-Square = .12) adjustment. With respect to social adjustment a two-way interaction between self-esteem and positive life events demonstrated a significant increase in the explained variance (9%) after the main effects for all other variables had been accounted for. While

self-esteem was significantly related to illness and distress scores as indicated by the significant F ratios, it did not significantly predict these indices after all other variables had been controlled for (as noted by the non-significant Beta terms). The effect for self-esteem in illness ratings was similarly embedded within the two-way interaction between self-esteem and positive life events with this interaction accounting for the greatest amount of variance (7%) in the model after prior health and the main effects for life events were removed. No other two-way or three-way interactions were significant.

4.3.3 Time 3 results

For subjects who had completed all measures at T1, T2 and T3 (n=109), there was only a statistical trend observed in the MANOVA for sex differences in the assessed variables at that phase of the study (Pillais=.12, F(1,106)=1.75, p<.10). This non-significant result prevented examination of univariate differences between male and female subjects at T3.

To reduce redundancy in reported zero-order correlation coefficients for T1 and T2 with T3 measures only significant terms will be reported. Subject sex, CSQ-dispositional coping styles (T1) (r range from .02 to .12), ECQ factors other than Aggression Control (r range from .01 to .16) were unrelated to social or academic adjustment at T3. While neither T2 or T3 negative life events were related to either social (.11 and .08) or academic adjustment (.00 and -.11) at T3, positive life events at T2 (r(109)=.35, p<.001) and T3 (r(109)=.39, p<.001) significantly predicted social adjustment at T3. Neither previous life events (T2) or more recent life events (T3) were related to academic adjustment at T3. Beyond

life events the highest correlation amongst the independents with social adjustment was self-esteem (r(109)=.33, p<.001). Consistent with the results from T2 individuals with high self-esteem were reporting better social adjustment at T3. There was a similar trend in the relationship between self-esteem and academic adjustment at T3 although the coefficient did not meet statistical significance (r(109)=.18 ns). The only other variable relating to social adjustment was ECQ-aggression control (r(109)=-.26, p<.01), the inverse correlation indicating that subjects who reported better aggression control (T1) also showing better social adjustment. No other variables were significantly related to social or academic adjustment. There was a fair degree of variability across the period from T2 to T3 in perceived social adjustment (r(109)=.48, p.001) and to a less extent academic adjustment (r(109)=.60, p<.001). Nonetheless a considerable number of students who were reporting poor adjustment T2 were reporting comparatively better adjustment at T3 and the opposite also being true for those reporting comparatively better adjustment at T2.

To examine the unique and potential interactive effects of significant predictor variables at T3 median splits were conducted on self-esteem, positive life events and aggression control to produce a self-esteem (high/low) x positive events (high/low) x aggression control (high/low) crossed factorial Analysis of Variance (ANOVA) with social and academic adjustment as the dependent variables. A priori assumptions pointed to an expected two-way and possible three-way interaction with subjects with high self-esteem and more positive life events and better aggression control showing the greatest adjustment at T3. The results from the two-way ANOVA with social adjustment as the dependent variable

reflected the expected main effects for self-esteem (F(1,88)=8.08, p<.01), positiv life events (F(1, 88)=4.18, p<.05) and a trend in the effect for aggression contr (F(1,88)=3.30, p=.07 ns) with subjects with high self-esteem and comparativel more positive life events, and better aggression control showing better socia adjustment. There were no two-way or three-way interactions observed. Th results from the two-way ANOVA with academic adjustment as the dependen demonstrated only a significant main effect for positive life events (F(1,88)=5.38 p<.05) where as the results for self-esteem (F(1,88)=1.90, p=.17 ns) an aggression control were non-significant and no additional two-way or three-wa interactions were observed. The results, in part, reflect the relative independenc in social and academic adjustment across time with self-esteem best predictin social adjustment approximately 19 weeks into the first year of university.

4.3.4 Time 4 results

At T4 (n=92) the MANOVA revealed overall multivariate significance for se differences, with univariate differences emerging on CSQ-Detached (F(1,89)=4.64 p<.05), CSQ-Avoidant (F(1,89)=6.34, p<.05) and severity of symptom (F(1,89)=13.73, p<.001). As seen in Table 4.6, the pattern of findings sugges that males continued to use more detached coping and avoidant coping at thi stage. Females were also likely to report greater severity of illness on the HCQ although not on the GHQ. To reduce redundancy in the reported results and t shed light on the time trends in the examined relationships, the data at T4 were collapsed with previous data observations and submitted to multiple Repeatec Measures MANOVA's with illness, distress, and social and academic adjustmen

as the within-subject repeated dependent measures for T1 T2 T3 and T4 observations. These analyses also aimed to provide a better index of there stability across the duration of the study period.

In the absence of multiple assessments of self-esteem over time, the analyses precluded examination of the bi-directional effects of self-esteem, coping, life events and the various outcomes, which could be captured with a sophisticated trend analysis. Second, no a priori assumptions were presented about the specific path by which self-esteem exerts its influence on health outcomes over time. That is, while self-esteem was expected to relate to coping practices, emotion-control strategies, and show differential patterns in response to life events, and better or worse health and adjustment, the aim of this study was not to devise a model that would explain this path, and thus a path analysis was deemed inappropriate.

The results are broken down by section, starting arbitrarily with the results between self-esteem and coping.

4.3.4.1 Coping

First, a major aim of this study was to assess the relationship between self-esteem and coping practices over a long period of adaptation. The first analysis conducted was pearson correlation coefficients to first determine the relative stability of coping practices. Seen in table 4.6 are the correlations between the dispositional coping styles (CSQ-Trait) and situational coping strategies for each of the CSQ coping dimensions. As seen, all correlations are highly significant ($p<.001$) and in the moderate to strong range (.35 to .68). Hence, although some

variability in state coping was observed dispositional patterns also appear to be relatively stable across time. Of particular note appears to be the drop off in potentially emotion-oriented and avoidant-oriented coping strategies from T2 to T3. To better gauge time trends in coping strategies and to determine whether or not

Table 4.6

CORRELATIONS BETWEEN DISPOSITIONAL COPING STYLES (CSQ-TRAIT) AND SITUATIONAL COPING STRATEGIES FOR EACH OF THE CSQ COPING DIMENSIONS

	Time of Assessment		
Coping Dimension	Time 2	Time 3	Time 4
CSQ-Rational	.68	.65	.64
CSQ-Detached	.61	.59	.57
CSQ-Emotional	.64	.35	.51
CSQ-Avoidant	.60	.44	.62

all correlations significant at one-tail $p<.001$

strategies differed by level of self-esteem a series of repeated measures MANOVAs were conducted. A median-split was first conducted on the total self-esteem score to create a high (upper median) and low (lower median) self-esteem

groups and this served as the between groups variable in the analysis. The within-group variable was T2 T3 and T4 state coping. Four separate MANOVAs were conducted for each of the four coping dimensions. The results from these analyses will be briefly summarized. First, with respect to emotion-oriented coping there was a significant between-group main effect ($F(1,90)=5.33$, $p=.02$). Subjects with HSE were less likely to engage in emotion-oriented coping across the study period. There was also a trend within-group self-esteem by emotion coping effect ($F(2,90)=3.31$, $p<.08$) although the absence of statistical significance precluded post-hoc analyses. Finally, there was no within-subject effect for coping thus pointing to the stability in this style over the different phases of the academic year for subjects in this study. There were no observed between-group or within-group effects for ether of the remaining coping patterns, rational, detached, or avoidance coping.

4.3.4.2 Life Events

Repeated measures MANOVAs were conducted to assess the stability of reported positive and negative life events across the study and to determine whether, overall, level of self-esteem predicted the frequency of life event reports. The between group variable was self-esteem (high/low) and the repeated measure was reported life events at T2 T3 T4. No between group differences were observed for self-esteem for either positive or negative life events indicating their relative independence. That is, low self-esteem subjects were no more likely to report negative life events and similarly high self-esteem were no more likely to report experiencing positive life events, as was expected.

4.3.4.3 Illness and Psychological Distress

Consistent with the previous MANOVAs repeated measures analyses were conducted with self-esteem (high/low) as the between-subjects variable and illness reports on the HCQ (T1, T4) and GHQ (T2, T4) as the within-subjects repeated dependent measure. In the third analysis distress scores on the GHQ (T2, T4) was the within-subject dependent measure. In each of the three separate analyses a between-group effect was observed for self-esteem, HCQ illness ($F(1,90)=9.71$, $p<.005$), GHQ illness ($F(1,90)=13.86$, $p<001$) and GHQ distress ($F(1,90)=11.33$, $p<.001$). Across the study period, subjects with high self-esteem were more likely to experience better health and less psychological distress. No within-subject effects were found for any of the health indices or for self-esteem by health index thus pointing to the stability of this relationship at different phases of the study.

4.3.4.4 Adjustment

A one-between, one-within repeated measures design was similarly conducted for adjustment scores across the study with self-esteem (high/low) and social and academic adjustment scores at T2 T3 and T4 as the within-subject repeated measure. With respect to academic adjustment there was a trend in the between-subject effect suggesting that subjects with high self-esteem were more likely to report better academic adjustment, although this trend was not statistically significant ($F(1,90)=2.66$, $p=.11$). There was, however, a between-group effect ($F(1,90)=5.17$, $p<.05$) with subjects with high self-esteem reporting better social adjustment across all phases of the study. There was also a within-subject effect

for self-esteem ($F(2, 90)=4.91$, $p<.01$). A univariate analysis with post-hoc comparisons (Tukey) indicated that differences between high and low subjects were present at T2 and T3 although scores converged at T4 and the group differences were no longer significant thus suggesting that the effects of self-esteem were most important during the early phases of adaptation to university life.

4.4 Discussion

This study sought to examine the moderating influence of self-esteem in social and academic adjustment and health in a group of first year university students over the course of the academic year. Hypotheses were focused on the relationship between self-esteem and state coping strategies at 4 different phases of the study in addition to the possible mediating role of life stress as measured by the frequency of positive and negative life events at 3 different phases covering total life events over roughly a 8-9 month period. The specific hypotheses will be addressed in turn.

Self-esteem and Coping

The assessment of individual differences in dispositional coping in relation to self-esteem supports and extends the findings in the previous chapter. Individuals with high self-esteem tend to maintain a disposition towards problem-focused and adaptive coping strategies whereas individuals with low self-esteem are more likely to engage in emotion-oriented coping. The positive correlation between self-esteem and disposition coping strategies points to their inter-relationship

independent of situational demands or contextual cues. What was the relationship between self-esteem and more situationally based coping strategies in this study? Across time, the pattern demonstrated between personality dispositions (traits) were replicated at various points in time so that individuals with high self-esteem were less likely to engage in emotion-oriented coping and there was a trend in the opposite direction for detached coping, with individuals with high self-esteem tending to report more detached coping at different phases of the study. Furthermore, the coping patterns in this study tended to be fairly stable. Hence, in this study the findings would appear to support both contentions that specific coping practices change according to the situational demands but situational strategies are more likely to reflect dispositional tendencies and both are influenced by self-esteem. In this way, knowing an individuals general level of self-esteem does provide some indication of how they are likely to cope with potentially challenging circumstances above and beyond the valence and impact of the events themselves. That is, while the reporting of negative life events were related to dispositional and state-emotion coping strategies, none of the other coping patterns appeared to either influence the reporting of life events (T1 CSQ-dimensions not predicting T2 reported life events) or change as a result of life events (T2 negative life events not related to T3 CSQ-dimensions nor a pattern between T3 life events and T4 CSQ- dimensions).

Consistent with past research and the results in chapter 3, the main effects model for coping was supported in this study in relation to the various health indices. Greater predictive validity was also noted in state coping strategies beyond the impact of dispositional coping styles when the outcome measure was

assessed health or psychological distress at two separate points in the study approximately 16 weeks apart. Particularly important were the positive findings between the adaptive coping strategies and health outcomes. The preponderance of research on coping process and health have not found a buffering effect for adaptational coping but rather the intensification of health difficulties and psychopathology as the result of engaging in typically maladaptive strategies such as emotion-oriented coping. In this study while dispositional emotion-coping did predict health outcomes across time as shown in most studies, as did state-emotion strategies, the positive effects of rational and detached coping in buffering against illness and distress only emerged in the assessment of state-processes (at T2). Finally, avoidant-oriented coping consistently failed to show any relationship between the other moderating variables and categorically failed to relate to any health or adjustment measure at any point in the study. This raises some doubt as to the importance of this dimension in health-related contexts. While a number of authors have suggested that low self-esteem is intimately linked with avoidance behaviours, empirical examination has more successfully pointed to self-esteem relating to the positive influence of adaptational strategies as well as (inversely) with the negative consequences of emotional strategies. Further, coping processes appeared to be less related to social and academic adjustment than health outcomes in this study thus pointing to their comparative importance for health-related domains.

Finally, despite the important relationship between coping and health outcomes in this study, the expected interactive effects of coping with self-esteem in relation to health outcomes was not observed. It has been argued previously

that controlling for main effects may limit the potential for demonstrated interactive effects and so it may that this study provided a more rigorous and conservative test of the interaction effects. This in fact, was supported by the significant F ratio in each regression equation but then the failure of specific two-way and three-way interaction terms to remain in the model after all main effects were accounted for. Further, interaction effects may have been hindered due to the inter-relationship between self-esteem and coping practices. That is, self-esteem was not orthogonal to dispositional or state-coping processes and this have prevented interaction effects from emerging.

Self-esteem and Life Events

Consistent with Linville's (1987) findings that self-complexity was unrelated to the reporting of negative life events, in this study, when the total frequency of life events was extracted for the entire study period, neither negative nor positive life events were found to related to level of self-esteem. Hence, subjects with high self-esteem were no more likely to report experiencing positive life events as were subjects with low self-esteem no more likely to report a greater frequency of negative life events. This study pointed to a comparatively nominal impact of negative life events on adjustment scores at individual stages and collectively for the study period. Further, while negative life events were related to health and distress scores at T2 and then again at T4 they typically accounted for less than 5% of the variance. Further, when the impact of positive life events was examined while statistically partialling the effects of negative life events, they were shown to predict social adjustment (T2, T3), illness (T2) and psychological distress (T2).

These findings are to be contrasted with the bulk of published reports which have found no effect for positive events on health outcomes. In this study individuals experiencing relatively more positive life events also tended to experience better health and adjustment thus suggesting a buffering role for positive life events. This finding supports a recent study that found as strong an effect for daily uplifts as for daily hassles on upper respiratory illnesses (Lyons & Chamberlain, 1994). In this study self-esteem was also found to correlate positively and significantly with reported uplifts at two periods of assessment whereas daily hassles did not correlate significantly with self-esteem at either time.

Moreover, the influence of positive life events appeared to be especially true for subjects with high self-esteem. Analyses were conducted to assess Brown and McGill's (1989) findings that positive life events impact negatively on the health only among individuals with negative self-views. Of the total 92 subjects who completed the study, correlations between all health measures were examined in relation to a summed score for positive life events across the entire study for subjects within the low self esteem (n=44) and high self-esteem (n=48) groups. The correlational patterns were virtually identical although subjects with low self-esteem were not buffered by positive life events at T4 with respect to psychological distress ($r(48)=.08$ ns) although those with high self-esteem were ($r(48)=-.45$, $p<.01$). These results suggest that positive life events do not enhance illness difficulties with those with low self-esteem but rather only offer a comparative advantage for those with high self-esteem. Hence, while subjects with high self-esteem are no more likely to experience positive life events, it may be that when they do experience positive life events those with high self-esteem

are better able to capitalize on the positive effects emanating from such experiences. One possible avenue by which this may occur is the expression of positive affect when something goes well. A recent study (Langston, 1994) has pointed to the beneficial effects for health for having an opportunity to celebrate and express positive emotions. Consistent with the finding that subjects with low self-esteem are also likely to inhibit the expression of emotion, it may be that they limit the extent to which a positive event can be beneficial. It is also noteworthy that interactions were not found between self-esteem and negative life events, suggesting that what is more important is how high and low self-esteem subjects differ in their experience of positive life events opposed to their experience of negative life events. Linville (1987) argued that negative life events trigger negative thoughts and feelings associated with various self-aspects which subsequently leads to negative arousal and the consequent health difficulties. In this study the findings point to a potential self-inflating effect of positive life events that exceed detrimental effects of experienced negative life events. These findings, in part, support experimental studies on motivational strategies of high self-esteem subjects who are more likely to selectively attend to positive events and positive feedback in interpersonal relations thus maximizing and reinforcing positive information while also minimizing attentiveness and the impact of negative life events. This may be the first study pointing to the differential health outcomes based on the different motivational strategies of high and low self-esteem subjects when confronted with valanced life events.

<u>Self-esteem and Emotion Control</u>

This study also demonstrated the relationship between self-esteem and emotion-control strategies, with subjects with low self-esteem tending to inhibit emotion and report poor aggression control. The relationship between self-esteem and aggression control appeared to be especially important for male subjects. Further, aggression control was significantly related to reported social adjustment and experienced distress at T2 and then social adjustment ratings again at T3 approximately 16 weeks into university life: subjects with better aggression control reported better social relationships across this period. The differential relationship patterns between self-esteem and aggression control and the latter's importance in predicting adjustment and distress at different points in the study suggests that it may be an important process in health-outcome research, particularly for male subjects. These results converge with other studies that have looked at the role of aggression on health outcomes in typically male samples (e.g., Type A studies and hardiness studies) and found the expected predicted effects.

This study supported the inter-relationship between self-esteem and rehearsal although their interactive effects on health outcomes were not replicated. The theoretical model, as reflected in the regression equations, also tended to provide a conservative test of the impact of emotion-control processes (i.e., following main effects for life events, coping) and so this study may have conducted a more stringent test of rehearsal than has been achieved previously. Relatedly, because rehearsal is by definition motivated by negative life experiences and perceived interpersonal failure it may be that its effects were reduced when life events and coping practices were statistically controlled. Chapters 6 and 7 will provide further examination of the important relationship

between self-esteem and rehearsal in controlled experimental conditions where these relationships can be more exactly assessed.

Self-esteem and Social and Academic Adjustment

As mentioned, the additive effects or main effects model of self-esteem on adjustment was supported in this study at the various stages. Self-esteem accounted for the greatest variance in social and academic adjustment scores at T2 and social adjustment scores at T3 beyond life events, coping strategies, and emotion-control patterns. Moreover, as discussed their were interactive effects for self-esteem and positive life events for T2 adjustment scores.

The predictive impact of self-esteem on academic adjustment dropped after the first 8 week phase of the study. However, the first term may be particularly important for students adapting to new academic demands and competition. Again, the correlation between self-esteem and T2 academic adjustment scores exceeded all other effects including previously experienced life events and dispositional and state coping. Hence, subjects with high self-esteem perceive themselves to be doing better academically after the first term, regardless of extraneous life stress or the particular level of problem-focused coping (which would be expected to study habits) engaged in prior to or just before the second assessment phase. This may reflect actual academic performance or it may reflect positive illusions about performance as individuals with high self-esteem are more likely to maintain positive illusions about self-related goals and health (Taylor & Brown, 1988).

Sex (Gender) Differences

At different points in the study female subjects differed from male subjects with respect to the moderating variables and outcome measures. Consistent with the results from Endler and Parker (1990) female subjects are more likely to maintain a dispositional emotion-oriented coping style. However, in this study female subjects were also shown to more consistently engage in emotion-oriented coping in response to specific situational demands at different (T2) points in the study. The most consistent differences between male and female subjects in terms of coping was the greater likelihood for male subjects to reporting preference for detached coping at different phases of the study (T1,T2, T4). The greater likelihood of female subjects to engage in emotion-oriented coping may have been the result of having experienced more negative life events earlier in the study (as reported at T2). However, the general consistency from dispositional to state coping processes suggest a more robust gender difference in preferred ways of confronting and alleviating stress. The general finding that both dispositional and state coping consistently predicted negative health status and heightened psychological distress raises important gender issues for coping and health. Because the health measures in this study reflect self-reported health complaints opposed to objective, verified illnesses, it may be that females are more willing to acknowledge emotional upset, emotional coping strategies, and poor health. This possible explanation may be supported by the near zero-order correlations between gender and the potentially more neutral assessment of perceived adjustment.

This prospective offers a unique perspective of the moderating influence of

self-esteem on health and adjustment over a comparatively longer duration than ha previously been reported. This allowed for the assessment of the stability i relationships between self-esteem and coping within a time frame that provided fo the assessment of minor as well as more serious symptomatology. The sho incubation period of two weeks tested by Linville (1987) potentially constrained th effects of self-esteem on health. The role of self-esteem in this study points to a number of conclusions. While individual phase-specific regression analyses pointe to the differential impact of self-esteem at different points in the study, the repeate measures analysis reflected fairly stable patterns over approximately 24 week between self-esteem and coping; self-esteem and social adjustment; between self esteem and illness; and between self-esteem and distress. Subjects with high self esteem tended to utilize more adaptive coping, reported greater perceived socia adjustment (with trends reflecting positive perceptions with academic adjustment) reported less general illness (GHQ) or specific health problems (HCQ) over time and experienced less psychological distress over time. In short, these results point to the relatively stable moderating influence of self-esteem. However, the absence o interaction effects with life events does not suggest a buffering role of self-esteem That is, the moderating influence of self-esteem occurred in both high and low stress conditions. This was evidence by the absence of an interaction between self-esteem and negative life events in any of the regression analyses. While not reported, a series of supplemental repeated measures analyses were conducted for the repeate health measures for subjects reporting high life stress (n=50) (as calculated by a median split on total reported life events across the study period) and low life stress

(n=42). As before, the between-group variable was high and low self-esteem. The moderating influence of self-esteem was nearly identical (all $p<.01$) for all health and distress for both high and low stress conditions. Hence, the results in this study clearly do not support a buffering role for self-esteem. Perhaps a more robust test of the buffering model of self-esteem in health outcomes could be conducted within a more clearly circumscribed stressful and non-stressful period. In general the findings suggest that people with high self-esteem are less likely to be overwhelmed when faced with self-relevant stressors; adapt successfully, both in the short and longer term, and function relatively free of chronic somatic complaints and psychological distress. Finally, with particular respect to coping, this study has shown that not only is self-esteem related to personality trait measures relevant to health and well-being but also influence situationally-dependent coping processes.

Chapter 5

5 Experimental Examination of the Stress Buffering Effects of Self-esteem

5.1 Introduction

The studies reported thus far have focused on a macro approach to delineating the role of self-esteem in health. Consistent with the small handful of studies that have aimed to implicate self-esteem in health-related processes, the approach has been correlational in nature, with the examination of baseline self-esteem with other personality measures and related physical and psychological health outcomes. To some extent the problem of directionality in the correlational patterns was clarified through their prospective designs and the control of baseline values in chapters three and four.

Another related avenue of research has attempted to explain the motivational, affective and performance-related sequelae of self-esteem in specific evaluative laboratory situations with the manipulation of success and failure feedback. It has been shown that people with low self-esteem are considerably more likely to show impairment in subsequent motivation and performance than persons with high self-esteem when faced with failure feedback (Brockner, Derr, & Laing, 1987; Campbell & Fairey, 1985). In addition to the impact of negative feedback on performance and motivation in individuals with low self-esteem, Moreland and Sweeney (1984) also found that failure feedback elicited more negative affect in low than in high self-esteem

subjects. Linville (1985) replicated Moreland and Sweeney's work and extended it by suggesting that low self-esteem individuals were typically more labile with greater emotional reactivity to both positive and negative feedback.

A number of theorists have attempted to examine the psychological mechanisms to explain the differential responding of low versus high self-esteem subjects under threat conditions (i.e., receiving negative feedback). Individuals with low self-esteem have been shown to react to failure feedback in very similar ways to individuals who are depressed insofar as they are likely to overgeneralize (Brown, 1988, 1989). Further, individuals possessing high self-esteem demonstrate a variety of self-enhancing reactions when under threat (Baumeister, 1982; Tesser, 1986; Swann, Hixon, Stein-Seroussi, & Gilbert, 1990) including exceptional skills at minimizing the impact of failure feedback and attacking the credibility of the source of negative feedback. It has also been argued that individuals with high self-esteem are more likely to maintain positive illusions about their abilities thus providing further minimization of negative and maximization of positive feedback (Taylor & Brown, 1988). The research appears to point to the cruel and self-perpetuating aspect of low self-esteem and the adaptive state of high self-esteem.

These experimental findings may shed light on the role of self-esteem in health-related processes. Studies of immunologic functioning have shown that psychological processes are also implicated in inducing acute and prolonged changes in immune responses (Ader, Felten, & Cohen, 1991; Jemmott & Locke, 1984) and subsequent decrements in immune functioning (Kiecolt-Glaser, & Glaser, 1988). The above experimental literature suggests that low self-esteem may lead to a) performance

deficits and the subsequent probability of frequent acute negative mood states, b) motivational deficits, with a reduction in the exercise of adaptive, task-oriented coping and the relatively infrequent opportunity to gain successes and bolster self-esteem and c) more chronic negative mood states due to overgeneralization following failure and the propensity to which negative self-evaluative thoughts can be primed. Hence, these processes may, in part, contribute to greater vulnerability and emotional, neuroendocrine and immunological difficulties in individuals with low self-esteem.

The experimental self-esteem literature has been plagued with several important methodological issues that, to some extent, has limited the internal consistency of the purported effects of self-esteem. Many studies have not systematically assigned subjects to different performance conditions nor have they manipulated self-esteem. As noted by Kernis and colleagues (1989) the significant relationship observed between self-esteem and outcome (performance, motivation, affective) measures may reflect differences in baseline relationships between self-esteem and the outcome variables and not due to components of the situation. That is, both the correlational health studies conducted so far, as well as the discussed experimental literature has precluded any causal associations from being drawn. To demonstrate the temporal salience of self-esteem it would be necessary to a) manipulate self-esteem, b) expose subjects to a stressful event and then, c) measure experienced stress in order to assess whether subjects who experience high self-esteem are less responsive to stress.

In this chapter three experimental studies are undertaken to test whether bolstering self-esteem leads to a comparative advantage when faced with laboratory

stress. The first study assesses subjectively reported stress while studies two and three also include psychophysiology measures of stress. In this way, the latter two studies provide an opportunity to examine the underlying physiological concomitants of self-esteem in stress reactivity that may, in part, explain the greater vulnerability for illness in those with low self-esteem.

Study 1

5.2 Manipulated Self-esteem and Subjective Distress and Cognitive Rumination During A Stressful Cognitive Task

5.2.1 Introduction

Study one was designed to test the hypothesis that increasing self-esteem will reduce stress responsivity in the face of a potential stress-inducing task (the Stroop Test). Consistent with an interactional model of personality and health, the study was cast into a 2 (Self-Esteem: High/neutral) X 2 (Stress Event: High/low) factorial design. It was hypothesized that subjects would be responsive to manipulated self-esteem, such that subjects in the high self-esteem group would a) report less experimental stress, b) make fewer errors on the task, and c) show less state cognitive rehearsal following the experimental exercise. With respect to the latter hypothesis, this study aimed to examine more systematically the potential causal role of self-esteem in cognitive ruminations.

5.2.2 Method

5.2.2.1 Subjects and Procedure

Subjects were 53 female first year undergraduate students at the University of York who had previously completed a series of personality scales. Eight subjects had not completed baseline measures and so they were discarded from the analyses thus leaving a sample of 45 for the analyses. Subjects were paid £3.00 for their participation.

After completing a consent form, the experimenter explained that the subject's personality characteristics had been measured in a previous testing session and that an individual `personality profile report' had been prepared. The personality feedback was sufficiently general to be plausible to all subjects and is well known as the `Barnum' effect in clinical report writing and this feedback constituted the self-esteem manipulation (see Appendix A6). Subjects were randomly assigned to either a neutral or positive personality report and given approximately two minutes to read and think about the report. It is important to note that the experimenter was unaware which report the subjects received. To prevent positive or negative expressions that may have insinuated which report was received, the experimenter asked the subject to sit quietly after he/she was finished reading the report and to save any comments or queries about the report until the study was over. Next subjects were given instructions on the Stroop Test and then shortly after, asked to start the test with the experimenter in the next room. The Stroop Test (Stroop, 1935) comprised a chart with names of various colours printed in an array of different colours (e.g., the word

`red' is printed in green ink). There was a total of 96 colour words printed (8 columns and 12 rows) in eight different colours of ink, and the subjects were to name the colour of ink used for each word.

Finally, they were given post-experimental forms to complete including the dependent measure, reported level of experienced stress during the task.

5.2.2.2 Stress conditions

Half the subjects were told that their scores on the Stroop test would be dependent on both their speed and accuracy and that they would be ranked with fellow students. These simple instructions have been shown to intensify the inherent level of stress in the task (Roger & Jamieson, 1988), and provided the high stress condition. Conversely, in the low stress condition, subjects were given instructions on how to complete the task without heightening the stakes by imposing neither the time dimension nor the competitive elements.

5..2.2.3 Conditions and Measures

State Self-esteem Test (SSET)

A newly created state measure of self-esteem (SSET: Heatherton & Polivy, 1991) was utilized in this experiment to assess momentary changes in state self-esteem. The SSET was constructed and validated based on state self-esteem ratings and is specifically designed for experimental work on state self-esteem and this is in contrast to the YSEI and the frequently used RSE, which are trait-based measures.

This scale consists of 20 items tapping three dimensions of state self-esteem:

social evaluation, academic performance and appearance. Seven items comprise the social dimension with the highest loading `I am worried about what other people think of me.' Seven items comprise the performance dimension and the highest loading item is `I feel confident about my abilities.' Finally, the appearance dimension taps state satisfaction with body shape and appearance and the highest loading item is `I feel satisfied with the way my body looks right now.' The coefficient alpha for the total scale score (.92) was found to be robust for both male and female subjects in the original study and in this study the alpha (.91) was also found to be satisfactory.

Stress measure

Following the Stroop Test, subjects completed a purpose-designed feedback report indicating on a 7-point Likert scale how 1) stressful, 2) disturbing, 3) anxiety-arousing, 4) anger provoking, 5) insecure, and 6) challenged they felt during the task. Additionally they rated how 7) meaningful they found the task to be as well as the 8) personal control they felt they had maintained (see Appendix A7). Hence, the scale comprised 8 items scored in the direction of greater distress (items 6 and 7 are reversed) with a theoretical range of 8-56. The final dependent measure was the number of errors made on the task (out of 96 responses) and was operationalized as an additional index of experienced stress.

ECQ State Rehearsal

The study sought to examine the causal relationship between self-esteem and cognitive rehearsal. Subjects also completed a state version of the ECQ-R dimension

following the Stroop test. The scale was comprised of the original 12 items (Roger & Nesshoever, 1987) and six newly written items for a scale total of 18 items. The format of the questions remained the same although subjects were asked to complete the scale in light of how they were feeling at that particular moment. The scoring was on a 5-point Likert format with scores ranging from 1 `strongly disagree' to 5 `strongly agree' with a total scale score in the direction of greater rehearsal with a theoretical range of 18 to 90. The alpha coefficient for the total scale score was found to be satisfactory for this study (alpha=.84).

Baseline measures

In addition to the specific measures constructed for this experiment the majority of subject's scores on trait self-esteem (YSEI) and emotion control patterns (ECQ) had been previously collected and were available for comparison with the above state measures.

5.2.3 Results

Manipulation Check

First, to assess the success of the self-esteem manipulation an ANOVA was conducted with self-esteem group (high/low) as the independent variable and the total SSET score as the dependent variable. The results from the ANOVA for total SSE demonstrated that although subjects in the high (M=74.2) versus the low (M=69.5) self-esteem groups differed in their state levels of self-esteem this difference was not statistically significant (F(1,44)=1.92, p=.17ns). Because the scale assesses three

separate dimensions of SSET one-way ANOVA's were computed for each of the dimensions individually. There were observed trends in the expected direction for the performance and social dimensions and the appearance score was found to be significantly higher in the high (M=21.4) versus the low (M=19.3) self-esteem group (F(1,52)=3.61, p=.06). Hence, the results suggest that subjects who received the positive personality feedback reported higher self-esteem than did subjects in the neutral self-esteem condition and this difference was particularly relevant to the appearance domain.

Stress Measure

Examination of the 8-item stress measure reflected a large number of high magnitude inter-correlations. To reduce possible redundancy in the items a factor analysis with principal axis factoring and oblimin rotation was conducted. Using the scree test and Eigenvalue (>1) criteria, the results from the analysis demonstrated that a two-factor solution was the best fit to the data accounting for 54% of the variance. As seen in Table 5.1, factor 1 (Eigenvalue=3.79, 47.4% of the variance explained) appears to reflect insecurity and distress with the highest loading being item 5 `felt insecure during the task.' While factor 2 (6.6% of explained variance), with unique loadings on items 6 and 7, appeared to reflect `involvement and commitment' with the highest loading on item 7 `found the task meaningful.' (Note that while factor 2 fell slightly below eigenvalue 1 following rotation it was retained because it appeared to be a theoretically meaningful factor and its variance was greater than 5%). The correlation between the two factors (.51) reflected a fair degree of inter-dependence. Further the

internal reliability estimates for the distress (Alpha=.87) and commitment (Alpha=.51) factors were satisfactory. In addition to the total scale score then, analyses were computed on the two factors separately.

Table 5.1

Item Loadings for The Post-experimental Distress Rating Scale (Oblimin)

Item	Factor Loadings	
	F1	F2
(1) Stress	.60	
(2) Disturbance	.46	
(3) Anxiety	.81	
(4) Anger	.42	
(5) Insecure	.90	
(6) Challenged		.55
(7) Meaningfulness		.66
(8) Perceived Control	-.52	

Self-esteem by Stress Condition

The examination of trait by state self-esteem interactions with the dependent measures was precluded due to the significant relationship between trait (YSEI) and the SSET ($r(45)=.53$, $p<.001$). Because the interest in this study was on the effects of manipulated state self-esteem, the analyses were conducted while statistically

partialling for baseline self-esteem.

Two-way Self-esteem (high/low) x Stressful Task (high/low)) ANCOVAs for the three stress indices were conducted. In these analyses baseline self-esteem score was the covariate. The mean reported experimental stress for each of the stress by self-esteem conditions (total scale score) can be seen in Table 5.2 and graphically represented in Figure 5.1.

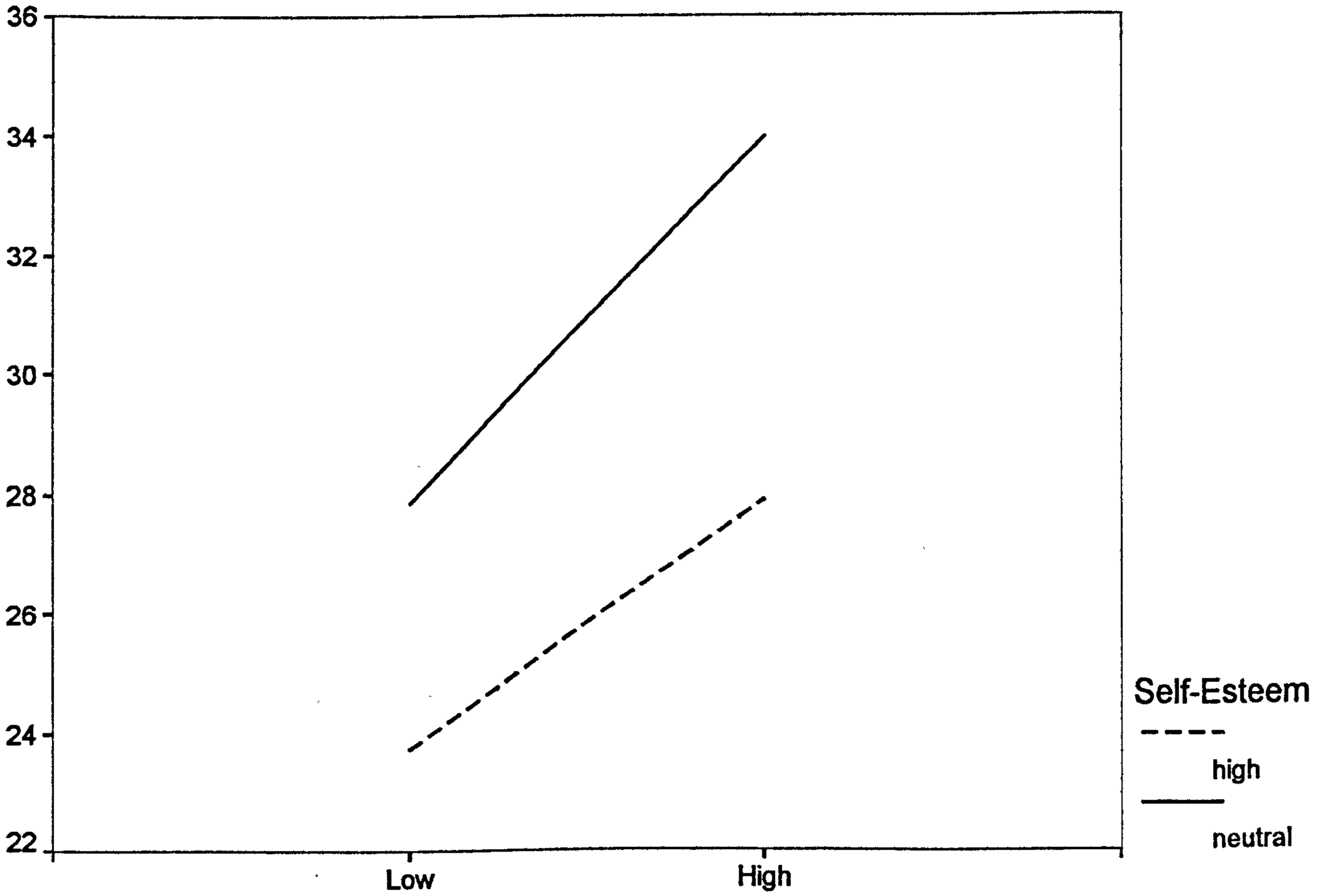
Table 5.2

Mean Subjective Stress Scores for High and Neutral Self-esteem Groups By Stress Condition

	Stress Condition		
Self-Esteem	High	Low	Total
High	27.91	23.73	25.82
Neutral	34.00	27.85	30.93
Total	30.96	25.79	

As seen, there was a significant main effect for stress condition with subjects in the high stress condition reporting more subjective stress than subjects in the low stress condition ($F(1,44)=7.19$, $p<.01$). There was also a significant main effect for self-esteem group ($F(1,44) = 6.52$ $p<.01$) with subjects in the high self-esteem group reporting less experimental stress. The absence of an interaction effect between self-

(Chapter 5) Figure 5.1: Mean Subjective Stress Scores for High and Neutral Self-Esteem Groups by Stress Condition



esteem and stress condition (F(2,44)=.38, p=.54ns) suggests a moderating effect of self-esteem in high and low stress conditions. The pattern of findings for the stress and commitment factors, when assessed independently, demonstrated that the effect of self-esteem was less important in influencing commitment ratings (F(1,44)=2.36, p=.11ns) than in distress ratings (F(1,44)=6.75, p<.01) while the main effects for stress condition were significant in both instances. No interaction effects were observed.

Self-esteem and Task Completion

Significant differences between subjects in the high versus the neutral self-esteem group were also observed with respect to the number of errors made on the experimental task. Subjects in the neutral group (M=12.71) tended to make nearly twice the number of mistakes made in the high self-esteem group (M=6.70) and this difference was statistically significant (F(1,43)=5.88, p<.05). Moreover, no main effect was observed for stress condition nor were there any interaction effects. Hence, self-esteem appeared to be more relevant to successful task completion than stress level and the buffering effect for self-esteem was present in both high and low stress conditions.

Self-esteem and State Rehearsal

The results from the ANOVA with state rehearsal as the dependent measure suggested that stress condition did not influence the amount of reported post-experimental rehearsal while there was a trend in the differences for self-esteem group, with the high self-esteem group (M=48.36) showing less rehearsal than the

neutral self-esteem group (M=53.22) ($F(1,44)=2.75$, $p<.10$). As before, no interaction effects were observed.

5.2.4 Subsidiary Analyses

A number of recent investigations have suggested that instability in self-esteem may be even more important than level of self-esteem per se in predicting performance and arousal in laboratory examination (Kernis, Cornell, Sun, Berry & Harlow, 1993). Because subjects in this study had completed a baseline measure of self-esteem, stability of self-esteem could be assessed in relation to reported state self-esteem at the time of the study. To assess self-esteem stability z-score transformations were first conducted on both baseline self-esteem (YSEI) and the SSET. Next, a difference score was created by subtracting the two z-scores and to eradicate negative integers the final resulting difference z-score was multiplied by itself. The resulting distribution reflected a normal curve with acceptable skewness and kurtosis (<1) and a median split was derived. The median split occurred roughly at the point of one half of a standard deviation. The lower median split represented those whose self-esteem was relatively stable and the upper median split represented relatively unstable self-esteem scores. Consistent with Kernis et al.'s (1993) study, it is the magnitude of the fluctuations in contextually based self-esteem, rather than their precise nature (i.e., direction, different types of instability) that is emphasized.

The two-way stress (high/low) by self-esteem stability (high/low) ANOVAs were computed for each of the dependent measures again. All resulting F ratios were found to be non-significant ($F<1$) suggesting that instability in self-esteem was not a

good predictor of experienced subjective stress or task performance. However, while no main effect was found for state rehearsal, a strong trend was observed in the stress by self-esteem stability interaction ($F(2,44)=3.53$, $p=.067$) as can be seen in Table 5.3 and Figure 5.2.

Table 5.3

Mean State Rehearsal Scores for Stable and Unstable Self-esteem Groups By Stress Condition

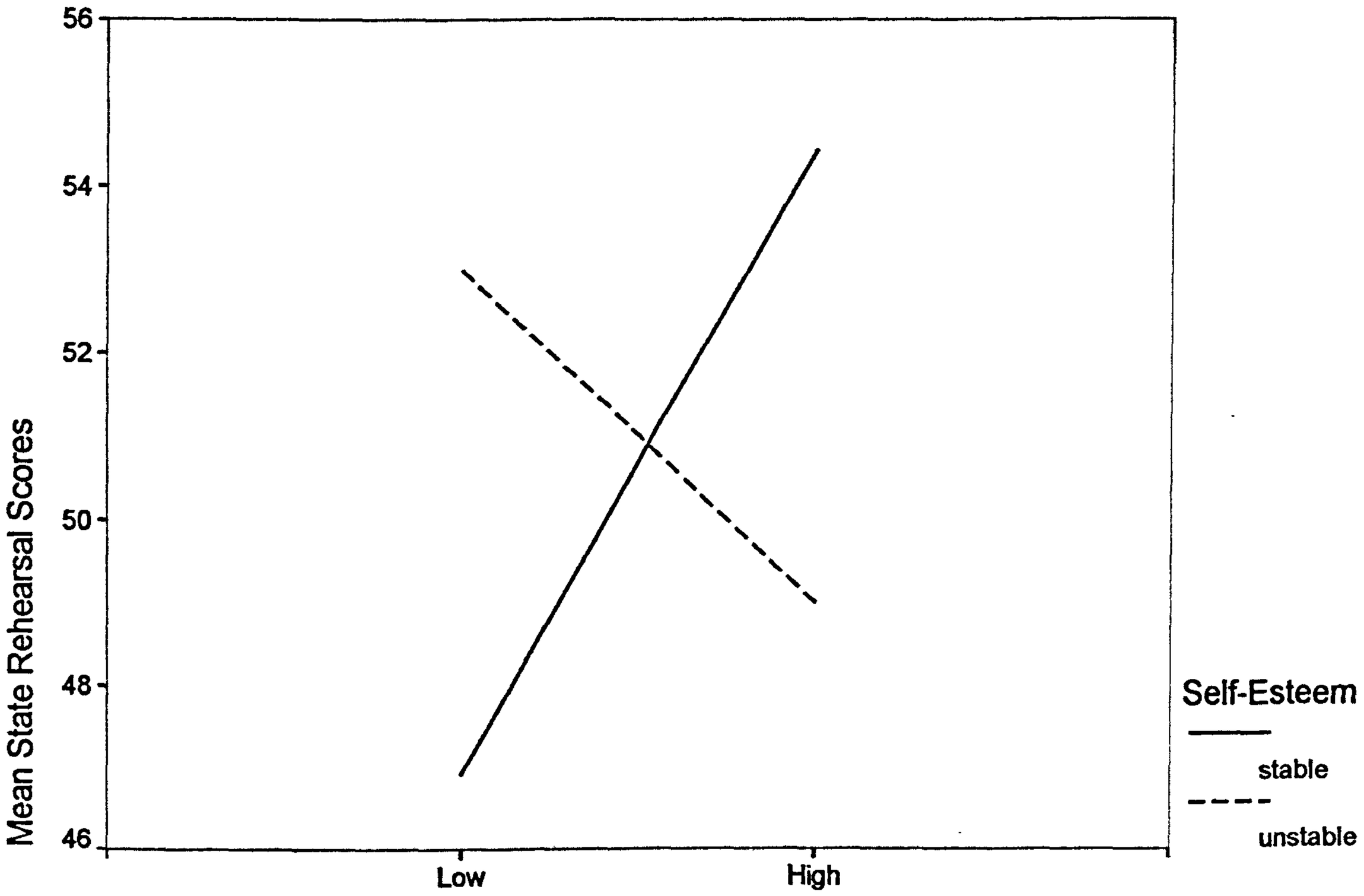
	Stress Condition		
Self-Esteem	High	Low	Total
Stable	54.45	46.92	50.69
Unstable	49.00	53.00	51.00
Total	51.73	49.96	

Post-hoc analyses suggested that while subjects stable in self-esteem tended to report greater rehearsal in the stressful condition, those subjects with unstable self-esteem were more likely to engage in rehearsal in low stress conditions although this result was just marginally non-significant ($t(43)=1.96$, $p=.057$).

5.2.5 Discussion: Study 1

First, this study demonstrated that while self-esteem tends to be a relatively enduring

(Chapter 5) Figure 5.2: Mean State Rehearsal Scores for Stable and Unstable Self-Esteem Groups by Stress Condition



personality trait it is also sensitive and potentially malleable depending on situational factors. In this way, subjects who were read a bogus personality report subsequently reported experiencing higher self-esteem. Those subjects who were exposed to the high self-esteem manipulation tended to show superior performance and experience less personal threat during the task and this effect was true in low and high stress conditions. Hence, consistent with the results reported in chapters three and four, the moderating influence of self-esteem appears to occur across stressful conditions, not simply in high stress conditions as has been demonstrated for the related personality mechanisms of self-complexity (Linville, 1987) and hardiness (Kobasa, 1979).

There was only an observed trend in the results between manipulated self-esteem and rehearsal although the direction was consistent with the hypothesis that individuals with high self-esteem tended to engage in cognitive rehearsal less frequently than individuals in the neutral self-esteem group.

This study also demonstrates the personal relevance of an academic-achievement oriented task for female students. The preponderance of research examining the buffering influence of personality on stress in achievement settings have utilized male samples (e.g., Greenberg et al., 1992) including the majority of studies reported on the effects of the hardy personality. This study demonstrates that female subjects attach personal meaning to academic tasks and personality mechanisms play a mediating role in the experience of subjective stress during these exercises.

While this study lends support to the causal role of self-esteem in stress it could

be argued that the self-esteem manipulation produced demand characteristics whereby subjects in the high self-esteem group were reluctant to express subjective distress so as not to appear inconsistent with the experimenter's `personality report' that told them that they tend to `cope well with life's difficulties'. However, the superior performance on the cognitive task amongst subjects in the high self-esteem group does weaken this position to some extent. However, a more complete test of the moderating effect of self-esteem on stress would include an objective index of physiological reactivity.

Study 2

5.3 The Psychophysiological Correlates of Self-esteem During a Stressful Cognitive Task

5..3.1 Introduction

Study two examined the same hypothesis about the potential buffering effects of self-esteem in laboratory induced stress, but in addition to self-reported stress and observed errors, heart-rate was monitored to assess the physiological concomitants of self-esteem during the task. In addition to the hypotheses established in the first study, this study allowed for the direct assessment of stress reactivity during the testing period and the rate of change in physiological arousal during the post-experimental recovery period. In this way, the study also provided the arena for a re-examination of Roger and Jamieson's (1988) findings on the relationship between

cognitive rehearsal and prolonged activation in light of manipulated self-esteem. It was anticipated that subjects in the high self-esteem group would show less physiological activation during the testing period and a faster return to resting heart-rate following the task.

5.3.2 Method

The procedure for the first study was replicated, except that between completing the self-esteem manipulation check and beginning the Stroop Test subjects were connected to a (heart-rate monitor) Seca Sportronic BHL 6000 and given time for heart-rate to achieve baseline. This monitor is attached by means of a belt and requires skin contact.

5.3.2.1 Subjects

Subjects were 41 first year male undergraduate students at the University of York who had previously completed at least one personality battery. Six students were excluded from the analyses due to incomplete or unreliable heart rate data thus leaving a subject pool of 35 for the analyses with 19 in the high self-esteem group and 17 in the neutral self-esteem group. Subjects were paid £3.00 for their participation.

5.3.2.2 Conditions

As the first study pointed to fairly stable effects for self-esteem across high and low stress conditions only the high stress condition was replicated, with subjects being placed under time pressure and competition.

5.3.2.3 Measures

The measures utilized in this study were just as they were in the first study and, as before, in addition to the specific measures constructed for this experiment subject's scores on trait self-esteem (YSEI) and emotion control patterns (ECQ) had been previously collected and were available for comparison with the above state measures. The reliability estimates for the state self-esteem measure (.81) and the state rehearsal scale (.72) were also satisfactory. The dependent measures included the 8-item post-experimental distress scale, errors made on the task, and state rehearsal scores. In addition to these measures heart rate data were computed according to three time intervals: baseline period (2.5 minutes) test period (2.5 minutes) and recovery period (3 minutes).

5.3.3 Results

Manipulation Check

The results from the ANOVA for the self-esteem manipulation check demonstrated that male subjects who received the positive personality feedback did not report higher self-esteem (although all of the means were slightly higher in the high self-esteem group); either on the total scale score or any of the three state dimensions. Hence, the personality feedback that to some extent manipulated self-esteem in Study one was unsuccessful in Study two. These results did not appear to be due to possible ceiling effects as the mean score on the YSEI was nearly identical to the standardized sample mean (M=107.25, SD=13.27). To further assess the possible role of a ceiling effect on self-esteem scores, analyses on state self-esteem were conducted again

whilst controlling for baseline self-esteem (YSEI) in an ANCOVA and the results confirmed that the lack of differences between the two self-esteem groups was not due to differences in baseline self-esteem.

Despite this apparent failure to induce differing self-esteem states, analyses were conducted nonetheless because of previous evidence pointing to the particular likelihood that males will defend self-esteem (such as reporting inflated level of self-esteem) when it is under threat (Greenberg et al.,1992).

Stress measure

Similar to the significant inter-relationship between the 8 items in the previous study, high-magnitude inter-correlations were also observed in this study. To reduce redundancy factor analysis with principal axis factoring and oblimin rotation was conducted using the scree test and eigenvalue criteria previously employed. The results demonstrated that a two-factor solution was the best fit to the data accounting for 58% of the variance. As seen in Table 5.4 factor 1 (Eigenvalue=2.70, 33.7% of the variance explained) appears to reflect experimental `distress' with the highest loading being item 5 `felt insecure during the task.' This factor largely reflects the `distress' factor extracted in the previous study. The second factor (Eigenvalue=1.14, 14.3% of explained variance), with unique loadings on items 1 and 7, appeared to reflect `challenge and commitment' with the highest loading on item 1 `found the task stressful.' In contrast to the previous study where item 1 loaded on the distress factor in this study reported experimental `stress' loaded on the second factor with perceived meaningfulness of the task. Finally, item 4 `was feeling angry during the task' did not

Table 5.4

Item Loadings for The Post-experimental Distress Rating Scale (Oblimin)

Item	Factor Loadings	
	F1	F2
(1) Stress		.83
(2) Disturbance	.56	
(3) Anxiety	.56	
(4) Anger		
(5) Insecure	.88	
(6) Challenged	.56	
(7) Meaningfulness		.52
(8) Perceived Control	-.63	

load on either factor. Because anger may be particularly relevant for male subjects when under threat, it was retained for individual analysis. Hence, the two factors are essentially the same with factor 1 reflecting experimental distress and factor 2 reflecting an indice of threat and commitment and the third item, anger, was assessed independently. The total score, two sub-factor scores and item 4 were then submitted to independent ANOVAs.

Self-report measures

First, individual oneway ANOVAs were conducted for 4 measures of experimental stress with self-esteem group as the independent variable. In contrast to the previous study, no significant differences emerged in any of these analyses ($F<1$) with neutral and high self-esteem subjects reporting equivalent levels of stress and emotional upset during the experimental task.

Task Performance

Moreover, there was a trend for high self-esteem subjects to make fewer mistakes on the task ($M=8.21$) than neutral self-esteem subjects ($M=14.00$) although this difference was not statistically significant ($F(1,34)=2.85$, $p=.10$).

Rehearsal Scores

A similar trend was observed in the post-experimental rehearsal scores, where the high self-esteem subjects tended to report less rehearsal ($M=87.84$) than the neutral self-esteem group ($M=92.82$) but this difference was not significant ($F<1$).

Heart-rate Results

First, the relationship between reported stress following the task and the physiological index of arousal during the testing period was in the expected direction but not robust ($r(35)=.23$ns), thus suggesting only approximate convergence between the subjective and objective markers of experimental stress. A repeated measures analysis MANOVA with self-esteem group as the between-groups variable and testing period

(baseline, test, recovery) as the within-group repeated measure demonstrated no between subject effects for self-esteem group ($F<1$). Examining the within-group effects there was the expected effect for arousal period ($F(2,24)=44.57$ $p<.001$) although there was no self-esteem group by arousal period interaction. These results pointed to the equivocal nature of heart-rate arousal between the two self-esteem groups across the different phases of the study.

5.3.4 Subsidiary Analyses

Consistent with the interest in examining the role of instability in self-esteem in relation to subjective and objective experimental stress and task performance, z-scores were created for both baseline and state measures of self-esteem just as they had in study one. A resulting normal distribution in change scores was subsequently divided into stable and unstable groups based on a median split which occurred at approximately one half a standard deviation point as was the case in the preceding sample. In the ANOVA tests on subjective stress, performance and state rehearsal no main effects were observed ($F<1$). Further, a repeated measures analysis with self-esteem stability (high/low) as the between groups variable and heart-rate arousal at baseline, test, and recovery as the within-subject repeated measure did not produce any significant between or within-group effects for self-esteem stability. These results further extend the results of study one insofar as self-esteem instability offered no explanatory power in relation to stress or performance.

5.3.4.1 Post-hoc Analyses

While the self-esteem manipulation failed to produce differential levels of self-esteem, interest remained in examining the role of self-esteem in self-reported and physiological markers of stress. Upper and lower tertile groups were created to reflect high (N=10) and low (N=12) self-esteem groups and the ANOVAs were repeated. The results demonstrated that individuals with high self-esteem reported experiencing less experimental distress (Factor 1)(18.71 versus 21.73)($F(1,21)=4.33$, $p<.05$), less rehearsal (81.92 versus 97.00) ($F(1,21)=7.09$, $p<.01$) and the margin for errors made on the task increased (HSE=11.33 versus 14.00) although this only remained a weak trend ($F<1$). Further, examination of the heart-rate data demonstrated the expected trends for test period (HSE=93.42 versus NSE=103.40 ($F(1,21)=2.51$ $p=.13$) and recovery (HSE=80.00 versus NSE=82.90) ($F(1,21)=2.34$ $p=.16$) although the trends failed to reach conventional levels of statistical significance. None of the other dependent measures were significantly different by self-esteem group.

Finally, the correlations between trait and state rehearsal did not replicate Roger and Jamieson's (1988) previous findings. The relationship between baseline rehearsal (ECQ-R) and the total recovery period was ($r(35)=-.07$ ns) and the state rehearsal measure correlated only slightly better ($r(35)=.10$ ns). Further, examination of three separate 1 minute intervals during the recovery period did not improve the findings (all r's < .12).

5.3.4.2 Study 1 - Study 2 Comparisons

The pattern of results between the first and second studies appeared to differ

significantly despite the consistency in the experimental manipulation and completed measures. To better gauge the meaning of these differences the results from the current study were compared with the results from the high stress condition in the previous study.

Trait and State Self-esteem

Similar to study one, trait and state self-esteem were significantly correlated ($r(30)=.40$, $p<.05$). However, while trait self-esteem was found to be unrelated (all correlations near zero) to self-reported stress in the female sample, trait (YSEI) self-esteem was found to relate significantly to reported experimental distress (Factor 1) ($r(30)=-.36$, $p<.05$) in the male sample. The magnitude of this correlation was nearly identical to the correlation between state self-esteem and experimental distress thus suggesting that whereas male subjects may be less sensitive to situational attempts to manipulate self-esteem their typically maintained levels of self-esteem do influence performance and reactivity in potentially stressful situations.

Dependent measures

Finally, to gauge whether or not there were differences on the raw scores of self-report and task measures, male subjects (n=30) were compared against female subjects in the high stress condition from study one (n=21). Individual ANOVAs for state self-esteem level, experimental distress scores (total scale score), errors, and state rehearsal scores were all equivocal with no differences emerging based on subject sex. Hence, the significant pattern of findings between study one and study

two are not due to differences in distribution characteristics on any of the outcome measures but rather point to probable qualitative differences in the relationship between trait and state self-esteem and the outcome measures in the two study samples.

5.3.5 Discussion: Study 2

The findings from this study appear much more complicated than the results obtained in the first study. In contrast to the ability to successfully manipulate state self-esteem in females, this attempt appeared to fail with male subjects. Because the manipulation was an attempt to bolster self-esteem in the high self-esteem manipulation and not to threaten self-esteem in the neutral self-esteem manipulation the results between the two studies point more to the receptiveness of female subjects to positive information opposed to differences between the groups in their reactions to self-esteem threats. One tentative explanation for this difference emerges from the results obtained in the previous studies on the comparatively more important role of emotion-oriented coping in females. These studies and others (e.g., Endler & Parker, 1990) point to the greater propensity of females to engage in emotion-oriented coping. It may be that females are more responsive to the emotional qualities of situations and in this way the valence of feedback. Consistent with this interpretation is the finding that women typically have more elevated physiological responses when under stressful conditions.

Despite the failure of the self-esteem manipulation and subsequent differences in subjective or objective stress, post-hoc analyses pointed to the importance of self-

esteem in subjective distress and trends in physiological reactivity. When post hc high and low self-esteem groups were created based on state self-esteem scores, tl expected differences between the groups emerged on reported experimental distre and cognitive rumination following the task. However, the findings for heart-ra elevation during the test period and the recovery period remained only statistic trends. One limitation on these results, however, is the restriction on statistical pow due to the relatively small sample size.

While the results from study one and study two do implicate self-esteem achievement-related stress, it would also be important to demonstrate the bufferin role of self-esteem in more socially-oriented contexts.

Study 3

5.4 The Psychophysiological Correlates of Self-esteem During A Stressful Social-Communication Task

5.4.1 Introduction

Consistent with the two previous studies the majority of studies that have examine the impact of failure feedback on self-esteem and subsequent performance, motivatio and affect, has utilized a pre-experimental task that is clearly an academic-related achievement task and the feedback consists of bogus scores on this task. Typically the next task is also an academically-related cognitive task. The potential problem with this limited contextual operationalization of stress is that a) only self-evaluative

components relevant to academic performance are primed and b) the differential effect between high and low self-esteem is only relevant to this limited domain. It has been argued previously (see chapter 2) and empirically demonstrated (see chapter 4) that sources of interpersonal or social stress are connected to self-related processes.

Therefore, it would be relevant to demonstrate a causal role of self-esteem in stress reactivity in a more communication-oriented context. This final study sought to test the moderating influence manipulated state self-esteem in subjective and objective stress in a study focusing on confidence in social skills.

5..4.2 Method

5.4.2.1 Subjects

Subjects were 29 female first year undergraduate students at the University of York. Some subjects were drawn from a first-year research panel while some other subjects were psychology students. Similar to studies one and two, after completing a consent form the experimenter explained that the subject's personality characteristics had been measured in a previous testing session and that an individual `personality profile report' had been prepared (in this study not all subjects had completed the same baseline measures although all subjects had completed some previous questionnaires during the academic year). The personality feedback constituted the self-esteem manipulation. As before, subjects were randomly assigned to either a neutral or positive personality report and given approximately two minutes to read and think about the report and the experimenter was blind to the valence of the report. Three subjects were unable to produce reliable heart-rate data which left a total of 26

subjects for the analyses. Subjects were paid £3.00 for their participation.

5.4.2.2 Procedure

Subjects were told that the experiment was to determine the relationship between personality and social skills. Subjects were told that they would be asked to read a short passage from a novel and would be assessed according to several dimensions that measure social skills such as a) clarity of expression, and b) accurateness in depicting the story. In short, subjects were asked to read the passage to "reflect your ability to express yourself in a coherent and interesting fashion and the task is aimed at assessing your general social skills".

Subjects were told that behind the one-way mirror were cameras and equipment to help the experimenter properly examine her performance and a bogus tape recorder was set-up to appear as if the performance was being taped. After these instructions subjects were given a consent form to complete and were then connected to the to the Seca Sportronic BHL 6000 heart monitor.

Next the experimenter stated "I'm going to give you some time to get acquainted with the passage but first I would like to share with you some feedback on your questionnaire responses that you completed earlier in the year. At this point subjects were given a written report with their name on it that was either the neutral and high self-esteem manipulation and they had approximately two minutes to read the report. Next subjects were given the opportunity to familiarize themselves with the written passage for approximately one minute. Subjects were then told that they would shortly be asked to begin their performance but some final equipment preparation was

required. Here subjects sat quietly for roughly 2.5 minutes and this constituted the baseline period. Just before starting the experiment subjects were first asked to complete the RSE and this served as the manipulation check.

Next the experimenter explained to the subject that she would be shortly beginning the task and that it would go as long as needed until the experimenter felt that he had sufficient information to examine her skills. She was told that she would be interrupted and to sit quietly after this as the experimenter would need several minutes to analyze the results. All subjects were interrupted 2.5 minutes into the passage and were then given three minutes and this served as the `recovery' period.

Finally, subjects removed the heart-rate measure and then completed the following post-experimental questionnaires: a) 8-item stress measure and the 19-item state rehearsal measure utilized in the previous studies.

7.4.2.3 Conditions and Measures

State Self-esteem

In the two previous studies, despite the reports of subjects following the experiment that they were affected by the self-esteem report, and the largely supportive results, the manipulation check with the state self-esteem scale devised by Heatherton and Polivy (1991) appeared relatively insensitive to the state self-esteem changes. Part of the problem appeared to be due to the length of the scale and the possibility that the state effects were lost across a 20-item, three-dimensional scale. Further, the YSEI could not be used in its place to provide a more sensitive test of the hypothesized state changes because of its trait emphasis and broad scope (30 items).

It was decided that to better determine the differences in state self-esteem responsivity, subjects would complete the RSE (as the state self-esteem manipulation check). While it was argued that the Rosenberg Self-esteem Inventory (Rosenberg, 1965) is not a sensitive state measure (Heatherton & Polivy, 1991) it was utilized in light of the problems discussed, and because of its quick and easy completion (10 items). Hence, this final study provided a rather conservative test of the effectiveness of the self-esteem manipulation.

Stress measure

Subjects completed the same 8-item experimental stress report used in the earlier studies. Based on the factor analytic results from study one the total scale score was examined, and in addition the two factors `distress' and `commitment' were examined separately. The total scale comprised 8 items scored in the direction of greater distress (items 6 and 7 are reversed) with a theoretical range of 8-56.

Physiological Measure

In addition to the subjective index stress heart rate data were computed according to three time intervals: baseline period (2.5 minutes) test period (2.5 minutes) and recovery period (3 minutes). Finally, the recovery period was broken down into 3 one minute periods to examine the rate of change towards baseline and average heart was computed for each one minute interval separately.

ECQ State Rehearsal

This was the same measure used in the previous studies. The scoring was on a 5-point likert format with scores ranging from 1 `strongly disagree' to 5 `strongly agree' with a total scale score in the direction of greater rehearsal and a theoretical range of 18 to 90.

5.4.3 Results

Manipulation Check

Subjects were evenly assigned to the neutral and high self-esteem groups. To assess the success of the self-esteem manipulation an ANOVA was conducted with self-esteem group (high/neutral) as the independent variable and the total RSE score as the dependent variable. Inspection of the distribution of RSE scores pointed to an outlier. The sample mean RSE score was 37.72 and the outlier's RSE score was 13.00. This score was converted to a Z-score (Z=3.40) and with a criterion cut-off of 3 (Marascuilo & Serlin, 1988, p.73) this subject's RSE score was identified as a true outlier and discarded from the analyses. As such the high self-esteem group had one less subject.

The results from the ANOVA for total RSE demonstrated that subjects in the high (M=41.36) versus the neutral (M=36.54) self-esteem groups differed in their state levels of self-esteem and this difference was statistically significant ($F(1,24)=6.16$, $p<.02$). The results thus support the success of the self-esteem manipulation.

Subjective Stress

One-way ANOVAs for self-esteem (high/neutral) by reported stress on the 8-item

stress index were computed. As stated, in addition to the total scale score sub-scale scores were computed for the two factors previously derived from female scores in study one, tapping a) experimental distress and b) commitment and challenge. The results for the total scale score demonstrated that subjects in the neutral and high self-esteem groups did not differ overall in their reported level of stress ($F<1$). Examination of the sub-scale scores showed that while no differences emerged on the `distress' sub-dimension, the two groups differed on their level of commitment and challenge ($F(1,25)=4.69$, $p<.05$) with subjects in the high self-esteem group reporting more commitment during the task.

Physiological Arousal

First, self-reported stress in this study correlated fairly weakly with heart-rate during the testing period ($r=.14$) and the magnitude of the correlation was identical in both the high and neutral self-esteem groups. Because the experiment sought to generate social stress and not academic-evaluative stress it may have been the case that this study was not largely seen to be stressful and so therefore self-esteem differences did not emerge between the two groups. In support of this argument subjects reported less `distress' in this experiment than they did in the first study ($t(75)=2.01$, $p=.025$). However, physiological arousal would still indicate the degree to which subjects were challenged by the experiment.

To examine the degree to which subjects in the neutral and high self-esteem groups differed in their heart-rate arousal before, during and following the social task, a repeated measures MANOVA was conducted with self-esteem as the between-

groups variable and baseline (2.5 minutes) test (2.5 minutes) and recovery (3 minutes) as the repeated within-group measure. Overall, no between group effect was observed although a within-group effect was found for Time ($F(2,21)=14.35$, $p<.001$) and a trend was observed in the Self-esteem Group by Time within-group interaction ($F(2,21)=2.60$, $p<.09$). While this latter effect was not significant, follow-up univariate analyses were conducted to unravel this statistical trend.

As seen in Table 5.5 and Figure 5.3 while the groups were nearly equivalent at baseline a clear separation occurs during the testing period with the average heart rate in the neutral group ($M=105.00$) I exceeded the rate in the high self-esteem group ($M=88.83$) and this difference was statistically significant ($F(1,22)=4.58$, $p<.05$). Finally, in contrast to the expected finding of elevated arousal at recovery period in the neutral self-esteem group, the average rate in the two groups is nearly equivalent. Looking at Table 5.6 Figure 5.4 the recovery period is separated into three one-minute intervals and the trend is for high self-esteem subjects to achieve a lower post-experimental heart-rate although these differences are not statistically significant and, moreover, appear largely dependent on the heart-rate differential at the beginning of the recovery phase.

Table 5.5

Average Heart-rate Values Across Phases of The Experiment

For High and Neutral Self-esteem Groups

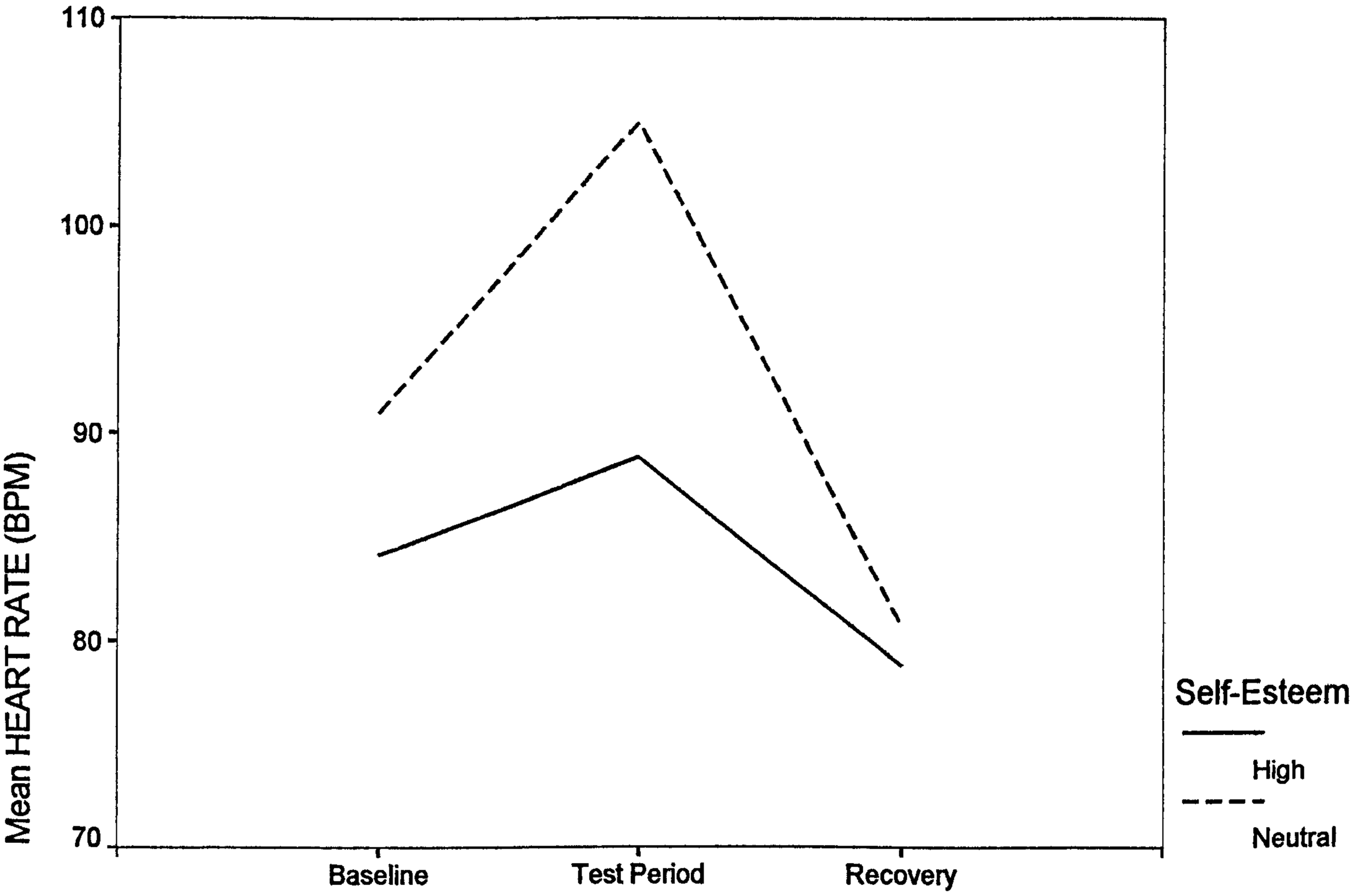
	Phase of Study		
Self-Esteem	Baseline	Test Period	Recovery Period
High	84.17	88.83	78.83
Neutral	90.97	105.00	80.73

Table 5.6

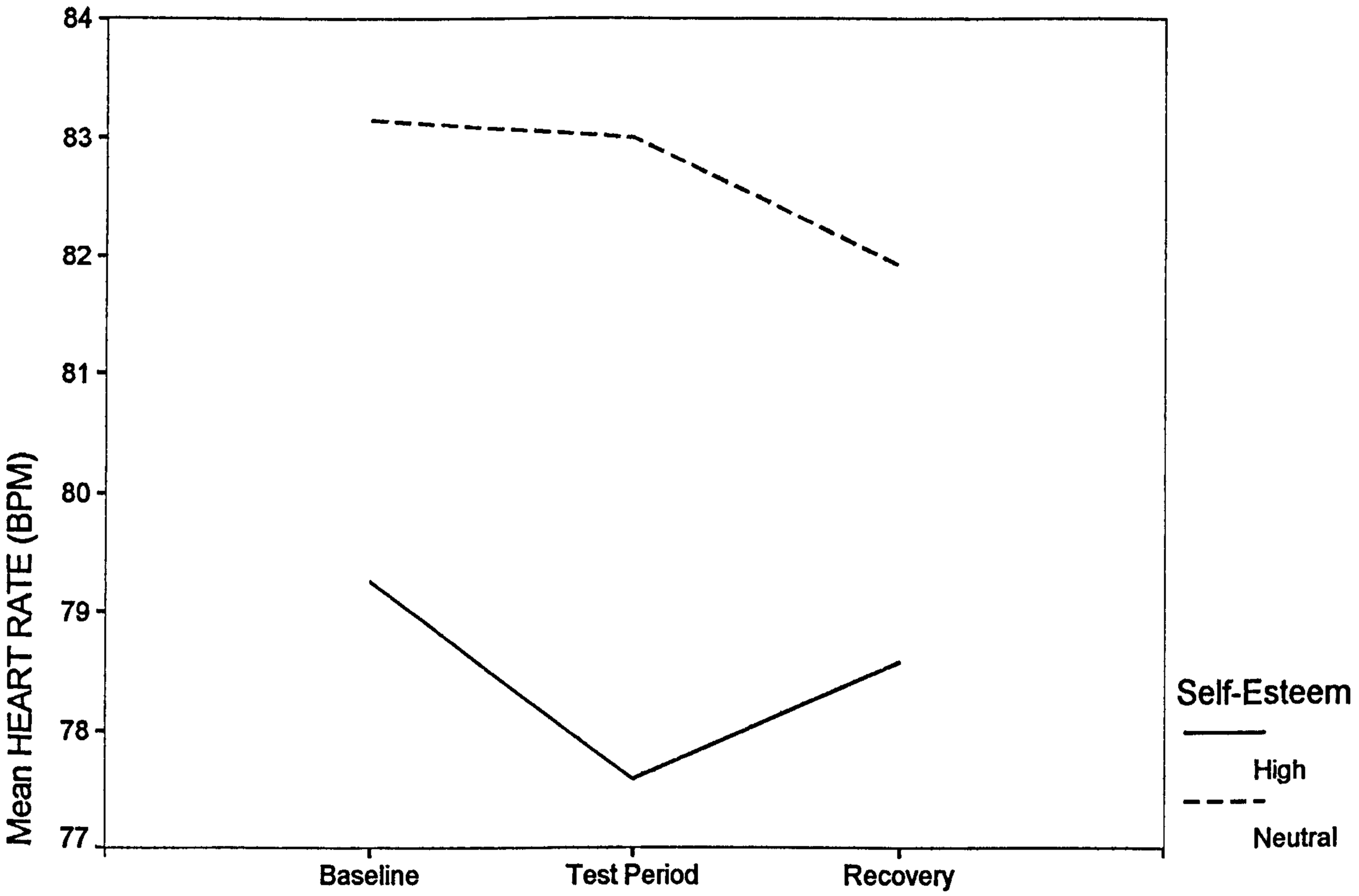
Average Heart-rate Values Across The Three Phases of The Recovery Period For High and Neutral Self-esteem Subjects

	Recovery Phases		
Self-Esteem	1st Minute	2nd Minute	3rd Minute
High	79.25	77.58	78.58
Neutral	83.15	83.00	81.92

(Chapter 5) Figure 5.3: Average Heart-Rate Values for High and Neutral Self-Esteem Groups



(Chapter 5) Figure 5.4: Average Heart-Rate Values for Recovery Period for High and Neutral Self-Esteem Groups



Self-esteem and State Rehearsal

A one-way ANOVA was computed to determine whether or not there were reported differences in state rehearsal by self-esteem group. While the high self-esteem group tended to report lower state rehearsal (47.38) than the neutral group (50.67) these differences were not statistically significant ($F<1$). To further investigate the relationship between self-esteem and state rehearsal post-hoc correlation analyses were computed between RSE and state rehearsal and the finding reflected a trend in the expected direction ($r(25)=.21$ ns) with subjects with high state self-esteem showing less state rehearsal.

5.4.4 Discussion: Study 3

First, this study successfully manipulated self-esteem, in a different experimental context, with a different state measure of self-esteem than was used in the first study. The results further demonstrate the state responsiveness of self-esteem to positive personality feedback. Second, the differences in subjective distress reported during the experiment did not differ by self-esteem group as was anticipated. This is in contrast to the first experiment that did successfully produce the expected buffering results. As suggested in the results section, the post-experimental questionnaire was initially constructed for the stressful experimental tasks of studies 1 and 2. Inspection of the raw scores between this study and study one suggested that subjects may have found this experiment challenging they did not perceive it as stressful. This may be consistent with non-achievement oriented tasks where the contextual heuristics of the task are more ambiguous, but nonetheless, influenced by personality processes. An

alternative explanation is that female subjects are less willing to report subjective stress in experimental conditions where they believe they are naturally competent. For instance, a growing literature on sex differences in interpersonal communication skills demonstrate that females are typically more confident in their skills and actually demonstrate superior communication skills (Feingold, 1994). This may be the exact opposite effect with males in achievement-oriented contexts. It would be useful to have a re-examination of this study comprising a male sample. However, subjects who were given the high self-esteem manipulation did report greater commitment and personal involvement during the exercise. This finding is consistent with the general findings of the hardiness construct, where subjects who personally involve themselves in life experiences tend to derive more satisfaction from their involvement.

In contrast to the absence of significant results in reported subjective stress, the heart-rate arousal data does lend further support that the majority of subjects did experience heightened arousal during the social skills performance. Further, the expected buffering effect was found for self-esteem: subjects in the high self-esteem group showed significantly lower heart-rate arousal during the testing period. Even though subjects may not have labelled this arousal as `negative arousal' the mechanisms of autonomic activation and their deleterious effects would still occur. Finally, while the self-esteem manipulation did not influence state rehearsal in this study the trends were in the expected direction.

5.5 General Discussion

The series of studies reported in this chapter lend support to the moderating role of self-esteem in stress-induced arousal and, by implication, health-related mechanisms. The successful manipulation of self-esteem in study one produced the expected subjective ratings of greater distress during a stressful laboratory task. The successful manipulation of self-esteem in study 3 led to observed differences in experienced physiological arousal during the experimental task. Further, while study two failed to sufficiently bolster subject's self-esteem the post-hoc analyses demonstrated that subjects experiencing comparatively lower state self-esteem during the task were more likely to report subjective distress and show elevated heart-rate arousal. Collectively these results support the temporal saliency of self-esteem in stress-related arousal. A recent study by Greenberg and colleagues (Greenberg et al., 1992) which directly attempted to manipulate self-esteem similarly found that self-esteem buffered the individual from subjective and objective indices of experimental anxiety. They also observed that threats to self-esteem produced defensive reactions. Just as anxiety poses a threat to self-esteem, protecting oneself from threats to self-esteem also reduces experienced anxiety. This model could be similarly applied to the experience of stress. However, because this study aimed to enhance self-esteem rather than threatening self-esteem a more robust test of self-esteem effects in stress may, in the future, utilize a more threatening manipulation procedure. This would parallel the nature of actual feedback contingencies in various life situations, where it is negative feedback that typically generates the expected polarization of self-esteem differences. Notwithstanding, this research is perhaps the first demonstration that enhancing self-esteem creates the greater resilience to stress. The results of positive self-esteem

feedback are also consistent with the correlational patterns observed in chapter four and a number of recent studies that showed that positive life events were more predictive of health outcomes than negative life events.

The relationship between self-esteem and emotion-control processes, namely cognitive rehearsal, and stress measures were less demonstrative than the previous relationships discussed although still suggestive of an important mechanism. In study one manipulation of self-esteem did produce the expected changes in state rehearsal with subjects in the high self-esteem manipulation tending to report less rehearsal. Further, the significant interaction between unstable self-esteem and rehearsal suggested that in addition to level of self-esteem, stability of self-esteem may relate to a greater tendency to rehearse. Further, study two demonstrated that subjects experiencing comparatively lower state self-esteem were also likely to engage in greater state rehearsal. However, this relationship was not established in the final study, although the statistical trend was in the expected direction. In short, this study suggests that manipulated self-esteem was causally related to the tendency to engage in state rumination. This further supports the idea that individuals with lower self-esteem are more

The strength of the preceding studies rest on the direct manipulation of the independent variable under study, self-esteem, and the random assignment of subjects to different self-esteem groups. Psychological and physiological measures of stress allowed for the assessment of converging effects by self-esteem. Moreover, the control of the inherent stress level of the situation provided a further and more systematic test of the `main effects' versus the `interaction effects' or `buffering'

hypothesis of the relationship between self-esteem and stress. The results are consistent with the previous findings in this thesis: self-esteem appears to have a moderating influence on the psychological and physiological aspects of stress in both high and low stress conditions. Low self-esteem may be a chronic vulnerability factor and may precipitate negative health outcomes across time independent of situational feedback and life events. This was particularly borne out in the first study where self-esteem predicted distress scores over and above the effects of stress condition.

This study provided a systematic test of the role of self-esteem in state cognitive rumination. The results were consistent, albeit varying in magnitude, where enhancement of self-esteem led to reduced situationally-based rumination over the task performance. These results support and extend the correlational pattern between self-esteem and rumination. However, examination of the physiological data during the recovery phases of the second and third studies did not replicate the previous relationship between prolonged activation following a stressful exercise and rehearsal scores. In this study neither state or disposition rumination tendencies correlated with physiological arousal. There may be an important methodological difference between Roger and Jamieson's (1988) study and the recovery interval employed in this research. They used 15 second average heart-rate intervals and found the strongest effects from the period just ending the testing period and beginning the recovery period. This rather small interval increased the sensitivity to the subtle differences. In this research, a one-minute interval was utilized and, as such, may have been too long an interval.

The weakness of the current research is reflected in the relatively small sample

sizes. Many of the findings in this study appeared very robust but then failed to meet conventional levels statistical significance. Low power due to the small sample was undoubtedly a contributing factor.

In this study only heart-rate was indexed to assess the physiological correlates of self-esteem under stress. In light of the relative independence of the subjective stress report and arousal in study 3, it would have been helpful to have multiple physiological measures. In short, this preliminary research needs replication with larger samples and multiple measures of stress to better assess the moderating influence of self-esteem in acute stress.

Chapter 6

6 Self-esteem and Emotion Control in Anxiety And Depressive-Spectrum Disorders

6.1 Introduction

In chapters three and four self-esteem was associated with the experience of psychological distress. In the preceding chapter, subjects who were exposed to an artificial enhancement of their self-esteem experienced less experimental distress. This chapter attempts to extend these findings linking self-esteem to mental health in more serious distress, clinical depression and anxiety disorders.

Self-esteem has long-been implicated in clinical depression. Freud (1917) first distinguished between the normal bereavement process and melancholy based on whether there was the presence of negative self-directed cognitions. Later psychoanalytic theorists placed vulnerable self-esteem at the core of depressive proneness (Rado, 1928). More contemporary psychoanalytic theories also focus on the self, where risk for depression is seen to increase as the individual tends to remain overly dependent upon a few, external sources of self-worth and is unable tolerate discrepancies between excessively high goals and actual performance (Roberts & Monroe, 1994). Negative self-evaluation has also been given central importance in cognitive models of depression (Beck, 1976; Segal, 1988). Clinical and experimental studies from the cognitive perspective demonstrate that individuals with unstable, uncertain and poor efficiency in

self-schemata are more likely to a) experience depression and b) experience a more severe and prolonged depressive episode than individuals who have more stable and certain sources of self-worth (Roberts and Monroe, 1994). A third prominent theory of depression that implicates self-esteem, is Brown and Harris's (1978) psychosocial model. In this model, individuals with low self-esteem are increasingly vulnerable to experience depression when faced with negative life events. In this way, the maintenance of low self-esteem is an ongoing vulnerability factor for depression. This model has been supported in a host of previous studies (Brown & Harris, 1978; Roberts and Monroe, 1992; Brown, Andrews, Bifulco, & Veiel, 1990) and best explains the previous findings between self-esteem and reported psychological distress in chapters three and four. The results demonstrated that after controlling for initial levels of psychological distress, self-esteem moderated the development of distress approximately 8 weeks later. In chapter four, self-esteem proved to be a relatively chronic vulnerability factor for distress and dysphoria across the academic year. In addition to supporting the moderating, main-effects model, that study demonstrated that individuals with high self-esteem were most likely to experience stress-buffering consequences from the experience of positive life events, thus pointing also to important interactive effects.

In chapter three cognitive rumination (rehearsal) was also implicated in the experience of distress, particularly through its interactive effects with self-esteem, where individuals with low self-esteem and a greater propensity to ruminate over upsetting emotional experiences were most likely to experience negative outcomes. These findings are consistent with Nolen-Hoeksema and her

colleagues (1991; Nolen-Hoeksema et al., 1993, 1994) who have directly implicated rumination processes in depression. She has demonstrated that individuals who focus passively and ruminatively on negative emotions aroused by stressful events are at greater risk for severe and prolonged periods of distress. Moreover, in the examination of those who are already clinically depressed those who ruminate are more likely to remain depressed than those who do not tend to ruminate. Further, experimental studies with depressed subjects have shown that inducing rumination leads to: negative, and distorted interpretation of events; self-defeating attributions for negative events; and greater hopelessness than depressed subjects who are given a distracting activity (Lyubomirsky & Nolen-Hoeksema, 1993; Pyszczynski, Hamilton, Herring, & Greenberg, 1989).

Hence, there is converging evidence that self-esteem and rumination are two potential moderating variables in the development and course of depression and chapter three provided some preliminary support for their interactive effects on psychological distress.

Self-esteem has been less directly implicated in anxiety disorders although there is a long history demonstrating a link between self-esteem and trait anxiety (e.g., Janis & Field, 1959) and between self-esteem and clinical anxiety disorders (Ingham, Kreitman, McMiller, Sashidhara, & Surtees, 1986). Anxiety is the over-estimation of danger and threat either in specific situations (phobias) or across a wide range of situations (e.g., generalized anxiety disorder). Consistent with the transactional model of stress (Lazarus, 1966) it is the perception of threat that creates the associated psychological (experienced upset, distress) and physiological (e.g., elevated heart rate; sweating, trembling) discomfort. Just as

self-esteem, it is being argued, moderates the perception of threat in potentially stressful circumstances, self-esteem may provide a similar moderating influence in more serious psychopathology such as anxiety disorders. In perhaps the first study to test the direct causal role of self-esteem in anxiety, Greenberg and colleagues (1992) manipulated self-esteem in student subjects and observed the expected buffering effects on the subsequent experience of anxiety across a series of anxiety-related conditions thus pointing to the direct role of self-esteem in state anxiety experiences. However, there is a need to assess the role of self-esteem in more enduring and incapacitating anxiety experiences.

Similarly, while cognitive rumination has been conceptually and empirically developed in models of depression, there is a dearth of investigation into its possible role in anxiety disorders. Nolem-Hoeksema and colleagues (1994) have argued that ruminative coping reflects *excessive worry* about mood-related problems. Central to the diagnosis and clinical phenomenology of anxiety disorders is excessive worry (Brown,O'Leary, & Barlow, 1993). Conceptually, cognitive rumination is said to reflect passive, mental rehearsing of *past* upsetting events. In depression this takes the form and content of excessive brooding over negative thoughts about self, others, and their future, the well observed `cognitive triad' (Beck, 1976). In anxiety, rumination may occur with respect to *future* expectations of self-relevant failure, loss and rejection. Hence, individuals who maintain low self-esteem and who ruminate over future threat may be most likely to experience anxiety related difficulties. To test the prediction of past versus future cognitive rehearsal in the current study, two new ECQ factors were created based on the existing rehearsal construct, with a retrospective factor including

existing items focused on the tendency to ruminate over past events, with several newly written items, and 12 new items reflecting rumination over future events and interpersonal situations. (see below for further discussion).

This study sought to explore and contrast the nature of self-esteem in a group of patients diagnosed with a depressive-spectrum or anxiety-spectrum disorder. It was anticipated that both clinical groups would show deficits in self-esteem in comparison to the student standardization sample (chapter 1) although no hypotheses were made with respect to between group differences. Second, this study provided a more robust test of the role of emotion-control processes in individuals who, by definition, have difficulties managing affective experiences. It was hypothesized that both patient groups would show deficits when compared to student norms on rehearsal and emotion inhibition and in light of psychoanalytic formulations of anger in depression it was anticipated that the depressed group would show greater inhibition of aggressive tendencies. Third, this study provided pilot data on the directionality of ruminating content, either future or past. It was anticipated that the anxiety group would show elevations on prospective rehearsal whereas the depressed group would show greater elevation on retrospective rehearsal. Finally, while still related to the third hypothesis, this study provided the opportunity to examine the differential role of self-esteem and emotion control strategies, and particularly the moderating influence of self-esteem in retrospective and prospective rehearsal. It was anticipated that low self-esteem in anxiety patients would lead to comparatively more prospective rehearsal whereas low self-esteem would lead to retrospective rehearsal in depressed patients and this would be evidenced by differential correlation patterns between

self-esteem and rehearsal in the two groups.

6.2 Method

6.2.1 Subjects

Consecutive patients admitted to the adult section of a clinical psychology department who had a diagnosis (DSM-III-R criteria) of a mood disorder within the depression spectrum (major depression, dysthymia, cyclothymia) or a diagnosis of an anxiety disorder (panic disorder, social and simple phobia, obsessive compulsive disorder) were invited to participate in the study. The present sample consisted of 25 anxiety-disorder and 25 depressed patients. Seven of the 25 depressed patients also had a secondary diagnosis within the anxiety spectrum. The data from these mixed patients were collapsed with `pure' depressed sample because the primary diagnosis was depression. Overall there were 24 men (48%) and 26 women (52%) and their mean age was 35.6 years (sd=11.2, range 20-59yrs).

6.2.2 Procedure

All patients were referred to the Clinical Psychology Services for assessment and treatment of a psychological problem. Patients were approached upon their first visit to the department and asked to participate in the study. It was explained that the questionnaires would take approximately 20 minutes and that they would have time to complete them before their first appointment. While patients were told that some of the questions could be reviewed in subsequent clinical sessions (due to

the clinical nature of the forms), it was clarified that their decision to participate in the study would in no way influence their acceptance into, or the course of treatment. Each patient's symptom profile was assessed as part of the standard diagnostic and assessment phase of treatment. To cover the breadth of possible Axis I and Axis II disorders of the DSM-III-R, clinical interviews were loosely formatted on the Structured Clinical Interview for DSM Clinical Disorders (SCID). The completed questionnaires were not examined until a reliable diagnosis had been made to assure that the diagnosis was made when blind to the patients questionnaire responses.

6.2.3 Materials

York Self-esteem Inventory (YSEI)

The YSEI has been described in detail in chapter two. The YSEI used in this study compromises 30 items measuring global self-esteem. Items reflect various evaluative self-domains including: personal, interpersonal, familial, achievement, physical attractiveness and the degree of evaluative uncertainty across these domains. Preliminary psychometric examination of the scale has revealed strong internal reliability (Alpha .86) and test- re-test reliability (.83) over an 8-week ITI (see chapter two for psychometric properties of the YSEI). In part, this study also served to provide further concurrent validation for the newly created YSEI as its predictive validity could be examined in relation to psychopathology.

Emotion Control Questionnaire (ECQ)

The Emotion Control Questionnaire (ECQ: Roger & Nesshoever, 1987; Roger &

Najarian, 1989) comprises four scales labelled Rehearsal (R), Emotion Inhibition (EI), Aggression Control (AC) and Benign Control (BC). R examines the degree to which a person broods over past threats and failure. For example an item from this factor is "I get "worked up" just thinking about things that have upset me in the past". EI measures the willingness of subjects to express emotion; "When someone upsets me, I try to hide my feelings". AC is a measure of the degree to which aggression is controlled; "If someone were to hit me, I would hit back". Finally, BC has been shown to be a measure of impulsivity; "I often do or say things I later regret". Previous examination of this scale has shown the factors to be relatively independent, particularly R and EI, and the individual factors have also been shown to possess satisfactory internal and test-retest reliability (Roger & Najarian, 1989).

In addition, new rehearsal items were written to reflect rumination over the occurrence of past (12) or future (12) events; retrospective and prospective rehearsal, respectively (Roger & Najarian, 1995) (see extended ECQ scale in Appendix A8). The Cronbach Alpha Coefficients were found to be low to moderate for the retrospective (.29) and the prospective (.53) factors, respectively. Despite the low reliability estimates this study retained the two new rehearsal factors for pilot examination because the ECQ has yet to be tested in clinical populations.

6.3 Results

Descriptive

The breakdown of demographic and clinical features for the total sample

Table 6.1

Demographic Profile For the Total Clinical Population and The Anxiety and Depressed Groups Separately

	Clinical Groups		
Variable	Anxiety		Depressed
Age			
M	32.6	*	38.6
SD	9.8		11.9
Age of Onset			
M	29.1		32.0
SD	9.5		11.6
Duration of Illness			
M	5.2		7.9
SD	5.4		9.9
GAF+			
M	60.8		49.8
SD	13.2		17.2
Sex (%)			
Men	60		40
Women	36		64
Marital Status (%)			
Single	25		25
Married/Cohabit.	63		60
Divorced	13		15
Education (%)			
High School	56		60
College	13		5
University	19		25
Professional	13		10

Table 6.1 Continued

Table 6.1 Continued

	Clinical Groups	
Variable	Anxiety	Depressed
Number of Previous Referrals (%)		
None	75	55
1	12	20
2-5	7	25
.Medication Use (%)		
Yes	38	50
No	62	50

*p=.06, †General Assessment of Functioning Scale: Axis V, DSM-III-R

and the two clinical groups can be seen in Table 6.1. For the entire sample there were roughly equivalent number of subjects male and female although the anxiety group tended to have more males (60%) and the depressed group more females (64%) although a Chi-square analysis only pointed to a trend in these differences ($X^2(1,50)=2.91$, p=.09). With respect to the demographic profile of the sample roughly two-thirds of the clinical subjects in this study were married or co-habitating with a smaller proportion of subjects who were either single (25%) or divorced (13-15%). Further, nearly two-thirds of the sample had some high school or finished high school, with the remaining one third having obtained a college or university education. There were no statistical differences between the groups in terms of marital status or education. Further, all but one subject in this study were white.

Turning to subject's clinical background the average age of onset for the entire sample was 30.82 yrs (SD=10.65) with the anxiety group having a slightly earlier age of onset (M=29.13 SD=9.54) then the depressed group (M=32.00 SD=11.59) although this difference was not statistically significant. Duration of illness was calculated by subtracting current age from first diagnosable episode of their clinical disorder. Despite the slightly earlier average age of onset in the anxiety group, the depressed group tended to have a longer duration of illness (M=7.85 SD=9.92) than did subjects on average in the anxiety group (M=5.19 SD=5.38). As seen by the large standard deviation terms there was considerable variation in the duration of illness, particularly in the depressed group. There were two outliers with a 30-year history of depressive illness and they skewed the results in this comparison. When these two subjects were removed from the analysis the mean duration was more nearly equivalent for the two groups. However, in neither analysis were there significant group differences for duration of illness. The trend for longer duration of illness in the depressed group appears to be better explained by the fact that individuals, on average, tended to be older in the depressed group (M=38.64 SD=11.88) than the anxiety group (M=32.64 SD=9.81) although this trend was only marginally significant ($t(48)=1.95$, $p=.06$).

In terms of previous referrals to mental health professionals more than half of the clinical subjects had never been referred to a psychologist or other mental health professional. In the anxiety group roughly 75% of the subjects were being seen for the first time versus 55% of the depressed subjects although a Chi-square analysis (along with the proportion of subjects with either 1 previous visit or 2 to 5 previous visits) was not statistically significant. Further roughly equal

proportions in both groups were currently receiving anxiolytic or depressive medications respective to their diagnosis.

Finally, subjects were assessed for severity of illness at time of assessment with the General Assessment of Functioning (GAF) Axis 5 measure from the DSM-III-R. This scale represents a barometer of overall impairment in social, occupational, and personal functioning with higher scores reflecting comparatively better adjustment. The mean GAF for the entire sample was 54.67 (SD=16.27) thus falling into the area of `moderate symptoms' or moderate difficulty in social, and occupational (school) functioning. Whereas the anxious group scored at the top end of the moderate symptom indicator (M=60.75 SD=13.15) (or the very bottom end of the scale `some mild symptoms') the depressed group reflected comparatively worse global functioning (M=49.80 SD=17.18) reflecting `serious symptoms' and serious impairment in social and occupational functioning and this difference was significant (t(48)=1.95, p=.06).

Personality Measures

The distribution for self-esteem and ECQ scores for the entire sample, and clinical groups separately can be seen in Table 6.2.

Self-esteem

The distribution characteristics of the YSEI demonstrated acceptable skewness and kurtosis (<1) on 27 of the 30 YSEI items, with those 3 items above 1 remaining only marginally elevated (<1.20). The total mean score for the YSEI for the entire sample (M=85.16 SD=19.09) the anxiety group (M=92.21 SD=16.83)

and the depressed group (M=78.12 SD=12) all reflected nearly perfect normal

Table 6.2

Mean Scores on Personality measures for The Anxiety and Depressed Clinical Groups

Variable	Anxiety		Depressed
YSEI			
M	92.20	*	78.12
SD	16.83		18.90
ECQ-Rehearsal(R)			
M	7.64		8.76
SD	3.07		3.23
ECQ-Emotion Inhb.			
M	7.04		7.84
SD	3.18		2.95
ECQ-Aggression			
M	7.12		8.04
SD	2.26		3.12
ECQ-Benign			
M	6.60		6.44
SD	1.98		2.10
ECQ-R-Prospective			
M	7.16		9.64
SD	4.10		4.07
ECQ-R-Retrospect.			
M	11.00		11.64
SD	3.40		3.35

*p<.01

distributions with the mean, mode, and median being equivalent. That is, in contrast to the student standardization sample (M=107.1 SD=14.5 N=183) which was skewed in the positive direction, the results from YSEI in both the anxiety and depressed populations reflected evenly distributed variance about the mean. Further, comparison of mean scores on the YSEI between the student standardization sample (n=183) (M=107.1 SD=14.5) and the two clinical groups demonstrated significantly lower scores for the anxiety group (t=4.73, $p<.005$) and even greater differences with the depressed group (t=7.29, $p<.005$). These results reflect a priori hypotheses that self-esteem is significantly impaired in anxiety and depressive disorders and provides additional evidence for the validation of the YSEI as previous studies with the RSE have shown decrements in level of self-esteem in these clinical groups (Silverstone, 1992).

Emotion-Control

The distribution scores for ECQ-rehearsal, emotion-inhibition, aggression control and benign control are seen in Table 6.2. First, the distribution of the 56 ECQ items reflected approximate normality with all but 2 items meeting the 85-15% split. The sub-factor scores all demonstrated characteristics of the normal curve. In contrast to the two previous studies that examined ECQ dimensions on likert scales, this scale utilized a bi-polar, true-false scoring key and so scores in this study were examined in relation to data collected and previously reported (Roger & Najarian, 1989) on 61 students with the bi-polar scoring key to better gauge the nature of emotion control strategies in those with a clinical disorder versus a

`normal' student population. In this study the values were reported separately for males and females and so the average scores were taken for comparison. The mean scores and standard deviation values for the different ECQ dimensions in the student population were: rehearsal (M=7.28 SD=2.82), emotion inhibition (M=6.19 SD=3.01), benign control (M=8.19 SD=2.54) and aggression control (M=7.06 SD=2.68) and can be examined against the values for the anxiety and depressed subject groups as seen in Table 6.2. Multiple t-tests were performed to test whether or not there were significant differences between the student standardization sample and the two clinical samples for any of the ECQ dimensions. With respect to rehearsal scores while no differences were observed between the student group and anxiety group ($t<1$) a significant difference between the student and depressed group emerged ($t(84)=2.03$, $p<.05$) with depressed patients reporting a greater tendency to ruminate or mentally rehearse past emotionally upsetting events. Similarly no differences on emotion-inhibition scores were found between the student and anxiety group while the student and depressed group significantly differed ($t(84)=2.34$, $p<.05$) with depressed patients reporting a greater tendency to inhibit emotions. No differences were found with respect to aggression control but the student group was found to differ significantly with the anxiety group ($t(84)=3.10$, $p<.005$) and the depressed group ($t(84)=3.30$, $p<.005$) on benign control scores, with both clinical groups reporting more impulsivity.

Anxiety and Depressed Group Differences

There were two central hypotheses to be tested in this study. First, between-

group differences were anticipated on self-esteem with depressed patients tending to show greater deficits on both indices. Second, the newly piloted retrospective and prospective rehearsal factors were anticipated to differentiate the depressed and anxiety group, respectively. Third, this study sought to examine the correlation patterns between self-esteem and the directionality of emotion-control patterns. It was anticipated that correlations between self-esteem and rehearsal would be higher in the depressed group than in the anxiety group. Fourth, correlations between self-esteem and prospective rehearsal were expected to be higher in the anxiety group than the correlation between self-esteem and retrospective rehearsal. Conversely, in the depressed group it was hypothesized that self-esteem would correlate more highly with retrospective rehearsal than with prospective rehearsal.

Returning to Table 6.2 the mean scores for the YSEI and the sub-factor scores for the ECQ and the newly created retrospective and prospective rehearsal items. To test the first hypothesis a one-way ANOVA was conducted with groups as the between variable and the total YSEI score as the dependent variable. The results indicated a significant group difference ($F(1,48)=7.74$, $p<.01$) with the depressed group reporting lower self-esteem.

To test whether differences existed between the anxiety and depressed group on rehearsal or the new prospective and retrospective rehearsal factors, individual t-tests were computed. The observed results pointed to the absence of group differences on ECQ-rehearsal ($t(48)=1.26$, $p=.22$ ns) or the retrospective rehearsal factor ($t(48)=.67$, $p=.51$ ns), although a significant difference was observed between the two clinical groups to the degree to which they engaged in

prospective rehearsal (t(48)=2.15, p<.05). Finally, no significant differences were found between the groups on any of the remaining ECQ factors.

To test the differential between-group correlational patterns for self-esteem and emotion-control processes, zero-order correlations were computed for the anxiety and depressed group separately. The correlation results for the anxiety and depressed groups can be seen in Table 6.3. In the anxiety group self-esteem

Table 6.3

Zero-order Correlations between Self-esteem and Emotion-Control factors by Clinical Group

Variable	Anxiety	Depressed
ECQ-Rehearse(R)	-.60***	-.34*
ECQ-Emot.Inhb.	-.62***	-.23
ECQ-Aggression	-.22	-.23
ECQ-Benign	.38*	.29
ECQ-R-Prospective	-.74***	-.50**
ECQ-R-Retrospect.	-.50**	-.23

*p<.05 **p<.01 ***p<.001

was found to correlate inversely with ECQ rehearsal ($r(25)=-.60$, $p<.001$), emotion inhibition ($r(25)=-.62$, $p<.001$) and positively with benign control ($r(25)=.38$, $p<.05$). Robust correlations were also observed between self-esteem and prospective rehearsal ($r(25)-.74$, $p<.001$) and retrospective rehearsal ($r(25)=-.50$, $p<.01$). In contrast, the results from the depressed group reflected fewer significant correlations and lower magnitudes, as self-esteem was found to related with rehearsal ($r(25)=-.34$, $p<.05$) and none other ECQ factors. Self-esteem was, however, also found to relate to prospective rehearsal ($r(25)=-.50$, $p<.01$) although not retrospective rehearsal. To test whether or not the correlation patterns were significantly different, Fisher Z transformations were conducted on the pairs of correlations and submitted to Z tests.

The results reflected consistent trends in the observed Z values ($Z>1$) in the differential correlation patterns between self-esteem and rehearsal and emotion-inhibition, and finally between self-esteem and both prospective and retrospective rehearsal in the anxiety group. Note, however, that due to the small sample size the Z values did not reach statistical significance. In short, while there was a trend to support the expected correlation between self-esteem and prospective rehearsal in anxiety patients, the opposite effect, of a greater relationship between self-esteem and retrospective rehearsal in depressed patients, was not found.

6.4 Discussion

The results in this study support, in part, the outlined hypotheses regarding the important, differential role of self-esteem in anxiety and depressive disorders. First, as anticipated the level of self-esteem was found to be significantly lower in both clinical groups when contrasted with student norms thus suggesting that self-esteem is a) adversely affected in both disorders and b) a central personality mechanism influencing the process of the disorder. That is, while patient demographics, clinical background and emotion-control strategies failed to differentiate the two symptomatic groups, self-esteem did so, with the depressed group showing greater impairment. This is consistent with a previous report (Silverstone, 1991) that found self-esteem to be lower in depressed patients than in patients with an anxiety disorder where the latter did not even differ from student controls. It may be, however, that patients with depressive disorders suffer greater functional impairment than individuals suffering from anxiety and it is the greater severity of illness that leads to greater reductions in self-esteem rather than it being pathognomic to the disorder itself. Supporting this perspective, the depressed group were found to be more impaired on the global assessment index. However, several studies have reported that even after depressed patients have recovered symptomatically and have regained important life roles and commitments, there self-esteem remains impaired (Ingham, Kreitman, McMiller, Sashidharan, & Surtees, 1986; Pardoen, Bauwens, Martin & Mendlewicz, 1993).

This suggests that while self-esteem may be sensitive to worsening within the clinical condition it is not merely a symptom of the disorder itself. This line of reasoning is still further supported by Brown and Harris's (1978) finding from a

prospective study that found that individuals with low self-esteem were at greater risk to go on to have a first depressive episode. Collectively, these results suggest that self-esteem is lower before, during, and following a depressive episode and represents a persistent vulnerability factor for future episodes and potential relapse.

The hypotheses regarding the role of emotion control processes were only partially supported in this study. The greater tendency for depressed patients to mentally rehearse and inhibit emotional expression when contrasted with student controls was borne out, however, the same pattern was not established for the anxiety group. That is, patients with anxiety were no more likely to rehearse or inhibit emotion than `normal' controls which may suggest that these emotion control mechanisms are relatively independent of anxiety symptomatology. Further, both clinical groups differed from the student norms on benign control suggesting that both patient groups were more likely to be impulsive. While impulsivity is not recognized as a symptom of either disorder, consistent with psychoanalytic theory, impulsivity may be the consequence of weakened ego strength.

Despite the differential levels of emotion control in the clinical groups when compared with student norms, the results did not point to significant differences between the two clinical groups on the four emotion-control dimensions. Further, just as retrospective rehearsal was not found to be higher in the depressed group, as was hypothesized, just the opposite effect was found with prospective rehearsal scores, with depressed patients scoring higher. The trend in retrospective rehearsal scores was, however, in the expected direction, and in light of the

significant difference on prospective rehearsal scores, it suggests that depressed patients are more likely to engage in rumination over past and future, imagined life events. The former may be represented in content as loss and rejection whereas the latter may reflect the hopeless outlook customarily seen in this clinical population. These results may suggest in clinical depression not only is the *content* of the depressive's future forecast bleak there is a future-oriented cognitive *process* that holds this negative perspective constantly in view.

The relationship between self-esteem and mental rehearsal and between self-esteem and emotion-inhibition were comparatively stronger in the anxiety group than in the depressed group. It may be that deficits in self-esteem and affective regulation are relatively (robust) independent vulnerability factors in depression whereas only patients suffering from anxiety disorders who also have low self-esteem are particularly likely to routinely engage in these strategies. This pattern appeared especially true for the relationship between self-esteem and prospective rehearsal. Collectively, these findings suggest that emotion-control processes are impaired in depression and anxiety disorders particularly amongst those subjects with low self-esteem.

The strength of this study lies in its application of the inter-relationship between self-esteem and emotion-control processes in two well-diagnosed clinical groups. The cross-sectional design of this study, however, does limit the understanding of the process of self-esteem and rumination in these groups. That is, this study does not provide information regarding the causal pathway of self-esteem and rumination in these disorders. To unravel process variables, it would be best to obtain multiple assessments of self-esteem and emotion-control

processes over the course of treatment, and then again at outcome and follow-up.

Further, by examining baseline self-esteem at one point in time assumes that self-esteem is stable over time in these clinical populations and relates to clinical symptoms in a relatively linear way. Kernis (Kernis et al., 1989) has demonstrated that level of self-esteem relates more strongly to subsequent depression for individuals only with stable self-esteem. Treatment aimed at preventing rumination, may also shed light on the flex of self-esteem over the course of treatment. In light of the low reliability estimates for the two new rehearsal factors, particularly the retrospective factor, as well as the absence of this latter factor to discriminate between groups, a replication of these findings with better validated retrospective and prospective measures may point to important existing differences that were potentially understated in this study.

Finally, this study provides suggestions for future research in depression and anxiety research. The two clinical syndromes have often been difficult to distinguish in research, both with student samples (Gotlib, 1984) and in clinical samples (Luteeijn & Bouman, 1988) with traditional, clinical psychometrics. The research reported here suggests that cognitive-affective variables (i.e., self-esteem, rumination) may better distinguish between the clinical disorders above and beyond overlapping symptomatology and provide clues to successful treatment.

Chapter 7

7.1 General Discussion and Conclusions

Following the construction and validation of a new instrument for the assessment of self-esteem, the research compiled in this project was concerned with the testing of the inter-relationship between self-esteem and selected personality processes previously implicated in the stress-illness relationship, and the direct and indirect effect of self-esteem on stress reactivity, physical, and mental health. The results will be reconsidered in light of their implications for clinical treatment and future research.

7.2. The Construction and Validation of a new Self-esteem Scale

The number of studies testing developmental, motivational, and behaviour concomitants of self-esteem is exceedingly large. Despite the proliferation of interest in self-esteem, the vast majority of published reports have operationalized self-esteem with the use of a single self-esteem instrument, namely the Rosenberg Self-esteem Inventory (RSE). As outlined in chapter two, the RSE has several important limitations that threaten its validity including its constricted breadth, detachment from relevant self-domains related to global self-esteem, and insensitivity to state fluctuations due to positive and negative experiences (although this was not the case in chapter five).

Likewise, the clinical utility of the RSE is questionable as it fails to adequately isolate etiological components relevant to low global self-esteem or provide a basis for broaching dimensions relevant to negative self-evaluations. For instance,

learning that an individual responds `extremely true' to the question `I am not a valued member of my family' (item 23 on the YSEI) may provide greater insight for the source of low self-esteem than a negative response to the question "all in all I am a person of worth." While the RSE has been shown to anchor to many internal and external experiences it is difficult to determine the clinical meaningfulness of these relationships. At the present time, the continued dependence on the RSE in self-esteem research would appear to perpetuate the chasm between statistical and clinical significance.

Moreover, the prevalent multi-factorial self-esteem measures currently in use also suffer from the operationalization of global self-esteem with too few self-evaluative domains (see chapter two for elaboration) and the recent advancement made in assessing specific self-esteem domains is not commensurate with the emphasis on global self-esteem in the literature or the desire for valid and informative global measures in clinical-health settings.

The first phase of the research was aimed towards the construction and validation of a new measure for the assessment of self-reported phenomenological self-esteem. The scale named, the York Self-esteem Inventory (YSEI), consists of 30 items that pertain to demonstrably important self-evaluative domains: personal, social, family, achievement, perceived physical attractiveness, and ambiguity in self-evaluations across these dimensions. The YSEI was shown to be approximately normally distributed across different student populations (standardization and replication samples in chapter two) as well as more dysfunctional populations (chapter six), and there were no observed effects for age or gender for the total scale score across different studies. There was, however,

some suggestion that family-related self-evaluations were less relevant for global self-esteem in males than in females (see section 7.2.6.1 for further discussion regarding these differences). In both the initial standardization sample, and the replication sample, the factor structure of the YSEI was shown to be unidimensional and to possess satisfactory psychometric properties. The items drawn from the various self-evaluative domains that contribute to the YSEI total, have been shown in the literature to contribute to global self-esteem and, importantly, each self-evaluative domain has been shown to constitute a potential source of threat and stress (see chapter two for discussion). Further, the collective results from the dissertation research demonstrate the predictive validity of the YSEI in somatic health, psychological distress, and more serious psychopathology. In summary, the broader construct of global self-esteem as assessed by the YSEI, as well as its demonstrated reliability and validity, make it an appropriate scale for use in clinical-health research and practice, with potential advantages over existing measures although standardization on populations other than `normal' adolescent and young adults is still required.

7.3 Self-Esteem, Coping and Emotion Control

Self-esteem and Coping

The explicitly adopted model of stress in this research, as outlined, was premised on the interactional model of stress (Lazarus & Folkman, 1984). As defined, stress refers to "any event in which environmental demands, internal demands, or both tax or exceed the adaptive resource of an individual, social system, or tissue system" (Monat and Lazarus, 1991, p.3). In accordance with this definition of stress, coping

is seen to be the changing cognitive and behavioural efforts to manage external and internal demands that are appraised as taxing or exceeding the resources of the person (Lazarus & Folkman, 1984). As reviewed in chapter one, the two most consistently identified and tested coping patterns in health research (Endler & Parker, 1990) are instrumental, task-oriented coping behaviours, referring to direct action to change aspects of the situation, and second, emotion-oriented coping, which refers to intrapsychic efforts to manage negative, upsetting emotions. The preponderance of the literature has shown only the deleterious effects of emotion-oriented strategies on health and mental well-being and a range of living variables, while instrumental coping strategies have typically failed to produce a positive moderating influence (main effects) or `buffering effect' (interaction effects). More recent and methodologically advanced research (Kohn et al., 1994) continues to demonstrate this pattern. The results observed in chapters three and four, however, point to important findings for coping research and clinical practice; particularly as a function of self-esteem.

First, in both the first study (chapter three) and the second study (chapter four), self-esteem was significantly related to both rational (instrumental) and emotion-oriented (intrapsychic) dispositional coping patterns. As anticipated, self-esteem was positively anchored to instrumental efforts to manage stress, and inversely with negative, palliative approaches to reduce upset. Further, self-esteem was found to relate positively with the newly identified coping dimension, detachment. There was less relation between self-esteem and avoidant coping, where in the first study they were found to be unrelated and in the second study, only weakly, inversely related. These patterns were also replicated between self-

esteem and more situationally-dependent coping behaviours over time. Hence, self-esteem and coping strategies appear to influence each other in a reciprocal, cyclical fashion. For instance, it may be that low self-esteem leads to reduced efforts at control and mastery over the environment and subsequent negative feedback and frustration lead to the reliance on palliative coping, which in turn lowers self-esteem and instrumental coping efforts. Further, the observed relationship between self-esteem and detached coping suggests that individuals with high self-esteem may have a comparative advantage in being able to stand back and to positively re-frame when faced with challenging life circumstances. This may draw on research findings that have shown that individuals with high self-esteem have both a comparative advantage in maximizing positive experiences and derogating, ignoring or overcoming negative experiences. The absence of a significant relationship between self-esteem and avoidant coping challenges the model proposed by Bednar et al. (1989) linking the etiology and maintenance of low self-esteem to avoidant coping strategies.

Second, the relationship between self-esteem and coping had interactive effects on somatic health and well-being; results that support and challenge the accumulated findings. Similar to most published reports on the role of emotion-oriented coping on well-being, the results in this research pointed to a direct moderating influence of emotion-oriented coping. In each analysis in both studies, when the outcome variable was either the frequency or severity of somatic complaints or psychological distress, emotion-oriented coping was found to be a significant (and sometimes, sole) predictor of health status and/or level of

psychological distress. This was also demonstrated in chapter four after accounting for the importance of negative (and positive) life events. The absence of a direct, positive moderating influence of problem-focused coping on health is also consistent with the other reports (Aldwin & Revenson, 1987; Kohn et al, 1994). However, the results from chapter three showed a positive, moderating influence of an adaptive coping style, detachment, in the interaction with self-esteem. These results suggest that one reason why adaptive coping mechanisms fail to predict function outcomes is that their effects are embedded within other person-related variables. Further, the influence of detached coping on health is still more important as it relates the positive effects of an intrapsychic coping mechanism for positive health whereas past research has only pointed to negative effects of intrapsychic coping (i.e., emotion-oriented).

Third, when the approach to studying coping practices was changed from a trait to a state, more situation-dependent examination (chapter four), the influence of coping on health outcomes increased substantially, not just for emotion-oriented coping, but for rational and detached strategies as well. The correlation patterns between state detached coping strategies and somatic illness and distress were nearly as large as the patterns witnessed between emotion-oriented coping strategies and these outcomes in the first half of the study. These results support Roger et al's (1993) contention that detachment is a unique and significant coping process in health.

These results also suggest that the positive benefits of adaptive coping on health may be understated by the trait coping approach. Further, the improved results from assessing more state-dependent coping strategies provides more fuel

to the interactional model, which emphasizes the importance of the environment-person fit over time. Even more supportive of the important role of coping in relation to health and psychological well-being was the absence of effects for social and academic adjustment. While it could by hypothesized that if self-esteem and coping processes reflect fairly stable personality processes they should be shown to influence a range of living variables, the results from this study point to the discrimination and specific role of coping behaviours for health outcomes.

In summary, knowing an individuals level of self-esteem provides a basis for predicting how that person is likely to cope with stress above and beyond the occurrence and nature of stressful life events themselves (as was demonstrated in chapter four). Because the covariation in the prospective studies does not imply causation, presumably this relationship operates in the opposite direction: so that by knowing how someone is coping with life difficulties provides a clue as to how they think and feel about themselves. The identification and focus on the inter-relationship between negative self-evaluations and maladaptive coping practices may provide a basis for clinical assessment and therapeutic treatment for stress disorders. For instance, Epstein's (1992; Epstein & Katz, 1992) model of stress management follows these lines. This model has drawn attention to the relationship between constructive thinking as a coping mechanism and self-produced stress where part of the constructive thinking construct is the tendency to hold negative self-evaluations and to overgeneralize to negative feedback. His treatment model aims toward providing insight to the person regarding their tendency to cope as founded upon their tendency to evoke unrealistic and negativistic thinking patterns. In a study offering support for the model, Epstein

(1992) found that poor constructive thinking best predicted accumulated life stress and moreover, demonstrated that most of the variance of the total stress measure was accounted for by self-generated stress following poor constructive thinking.

Self-esteem and Emotion Control

A central aim of the research was to replicate and extend Roger's (Roger, 1988, 1995; Roger & Najarian, 1989) model of emotion control and stress. As elaborated throughout the work, the model comprises four discriminable scales entitled rehearsal, emotion inhibition, aggression control, and benign control. While rehearsal refers to the tendency (process) of ruminating on past emotional upset, emotion inhibition relates to the holding back or inhibiting the expression of emotion. Aggression control relates to managing feelings of anger as well as the ability to inhibit the expression of hostility, and benign control has been shown to relate to measures of impulsivity (Roger & Najarian, 1989). Because the focus in this research was on the inter-relationship between self-esteem and cognitive rehearsal, the results associating self-esteem with the other dimensions of emotion control will be discussed first and the latter part of this section will focus on the patterns with rehearsal.

Empirical research has suggested that emotion inhibitors (or suppressors) are likely to experience heightened, and prolonged physiological activation following challenging experiences that may place them at greater risk for disease (Notarius & Levenson, 1979). The results emanating from the studies in chapters three and four, however, do not replicate the previously documented role of inhibiting emotions and physical health nor does it appear important to experienced

psychological distress. These results are in accordance with Roger's (Roger, 1988; Roger & Jamieson, 1988) findings where emotion inhibition was found to be unrelated to prolonged physiological arousal; the candidate mechanism by which inhibition could lead to poorer health.

Despite the failure of emotion inhibition to predict health outcomes, it was shown to relate to self-esteem in chapter three and then replicated again in chapter four, with individuals with low self-esteem being more likely to inhibit the expression of emotion, and this relationship was especially significant in individuals diagnosed with an anxiety disorder (chapter five). Fear of embarrassment and losing control by expressing pent-up emotions are cardinal symptoms in the anxiety spectrum. Taken together, the results seem to suggest that self-esteem relates to the ability to express emotion and for individuals with anxiety disturbances, threatened self-esteem may particularly lead to difficulties in self-expression.

Aggression control was also found to be associated with self-esteem with individuals low in trait self-esteem being less able to regulate feelings of anger and the expression of hostility. These results bear relation to published reports on anger-regulation difficulties and hypertension and CHD (MacDougall et al., 1985; Dembroski & Costa, 1987). While Aggression control did not effect health status directly, it could be that greater psychological distress and poorer social adjustment, as influenced by aggression control (chapter four, time two), reflect vulnerability factors for additional stress-related experiences, which, in turn, increase susceptibility for illness. The inter-relationship between self-esteem and aggression control and their cumulative effects on distress and adjustment may also inform the current Zeitgeist in Type A research (Price, 1982; Strube et al., 1987;

Yuen & Kuipers, 1992) that is increasingly focused on the role of negative self-evaluations and anger as the "toxic" components in the Type A construct.

Self-esteem was found to be associated with impulsivity, with people low in self-esteem tending to be more impulsive. While benign-control has been conceptualized as a dimension of emotion regulation, Lazarus (1981) has suggested that the ability to inhibit action or resist taking action when such action would increase the likelihood of harm, danger or conflict, is a fundamental coping mechanism. While impulsivity was not shown to influence health outcomes in this research it may relate to other dimensions of stress-related behaviour. For instance, Epstein and katz (1992) found that self-produced stress led to significantly more injurious accidents and it may, in turn, be that impulsive actions lead to misadventure which creates additional stress albeit indirectly. Moreover, the positive relationship observed between low impulsivity and detached coping (chapter three) suggests that impulsivity is inimical to calm, positive re-framing when faced with life stress.

Cognitive Rehearsal

A central aim of this research was to re-examine individual differences in cognitive rumination in relation to trait and state self-esteem and to test again, the effect of cognitive rehearsal on prolonged physiological arousal following an emotionally engaging experience (Roger,1988; Roger & Jamieson, 1988). These findings led Roger to suggest that the tendency to ruminate may reflect an important moderating variable in the stress-illness relationship. It was hypothesized that individuals with low self-esteem may be particularly prone to ruminate over

perceived personal inadequacy (and the incipient interpersonal failures) and it was anticipated that this relationship would have interactive effects on somatic health. Chapters three and four allowed for the testing of these hypotheses, and chapter five provided the context to test the causal sequence between self-esteem and rumination. Finally, chapter 6 provided the context to assess the association in more serious psychopathology.

In chapters three and four self-esteem was shown to be significantly associated with the tendency to rehearse, and in chapter three, while both self-esteem and rehearsal produced main effects in relation to the frequency and severity of somatic complaints and psychological distress, at both time one and again at time two, after controlling for the law of initial values, the best predictor of somatic health was the interaction term between self-esteem and rehearsal. Hence, as predicted, individuals with low self-esteem as well as a greater disposition to ruminate had the worst health status across the study period. While the relationship between self-esteem and rehearsal was once again shown in chapter four, and while both personality variables showed main effects on health status depending on the phase of study, the interactive effects were not replicated. Self-esteem and rumination may be independent vulnerability markers for the development of somatic illness, and may produce multiplicative effects on health depending on the corresponding environmental conditions.

The clinical study conducted in chapter six is the first attempt to place cognitive rehearsal in psychopathology. It was shown that rumination tended to be more common in both anxious and depressed clinical groups when compared with student controls, and depressed patients were particularly prone to rumination.

The most interesting finding that emerge in this study was the degree to which rumination was elevated in the depressed patient group yet independent of (low) self-esteem. Conversely, in the anxious group it was only those subjects with low self-esteem who were especially likely to ruminate. As discussed in chapter six these results may demonstrate separate roles for rumination depending on the disorder, where it is an important symptom of depression although relatively independent of clinical anxiety, but yet constituting a concurrent vulnerability if self-esteem is threatened. These results linking cognitive rumination to depression are also consistent with Nolen-Hoeksema's research (1991; Nolen-Hoeksema et al., 1993, 1994) which has not only shown rumination to be prevalent in depressive disorders, but also to be an important mediating variable in response to treatment, prolongation and worsening of the disorder, and propensity for relapse following successful recovery.

The results in chapters three, four, and five which demonstrate a significant relationship between self-esteem and the cognitive rumination do not, however, imply a causal relationship. The three studies in chapter five did offer some evidence, albeit mostly in the form of statistical trends, that self-esteem elicits rumination. This tendency was especially borne out in study two when subject's state self-esteem level was shown to relate significantly to the tendency to ruminate following the stressful laboratory task. Further, the trend in the interaction in study one between unstable self-esteem and rumination is in need of replication.

Finally, the laboratory studies in chapter five provided a re-assessment of Roger and Jamieson's (1988) findings linking rehearsal to prolonged physiological activation following a stressful task. The results observed in this research did not

replicate Roger and Jamieson's findings linking rehearsal scores to prolonged activation although the differences may have been due to methodological variation in the assessment of the heart-rate measure and/or differences in sample size.

Before discussing the treatment implications resulting from the research on self-esteem and rehearsal, issues related to self-esteem, independent of other personality processes examined will be considered.

7.4 Self-esteem, Somatic Health, and Well-Being

The influence of self-esteem on health and adjustment has already been introduced via its tendency to influence health outcomes interactively with coping and emotion-control strategies. The results across the two prospective studies, chapters three and four, demonstrated a consistent main effect for self-esteem on the frequency and severity of somatic health; on the frequency and severity of psychological distress, and in chapter four, social and academically-related adjustment.

The two principal hypotheses in this research were that self-esteem would demonstrate a moderating influence in health and well-being and this influence would be shown to exceed that of other personality variables and secondly, that this moderating influence of self-esteem would be mediated by coping and emotion-control processes. As seen, there was support for these hypotheses in the two prospective studies, although while self-esteem always generated a main effect on health outcomes, it did not always exceed the impact of other moderators.

The interactive effects in these studies appeared to be due more to joint stable personality processes than to aspects of the situation. That is, in chapter 4 where life events were assessed, there was no suggestion that negative life events

triggered the moderating influence of self-esteem on health and well-being nor was there any suggestion that negative life events triggered interactions between self-esteem and coping or emotion-control processes. The results contrast with the majority of `buffering' effect models such as the hardiness model (Kobasa, 1979; Williams, 1992), the optimism-pessimism construct (Scheier & Carver, 1987), self-complexity theory (Linville, 1987), self-discrepancy models (Cantor et al., 1987) and psychosocial models of depression (Brown & Harris, 1978) where it is argued, and typically been empirically demonstrated, that personality only plays an influence under periods of high stress (following significant negative life events). Further, the first laboratory study in chapter five provided the direct assessment of the main effects versus the buffering effects models insofar as the stress level in the situation was under direct manipulation. Here again the results pointed to a moderating influence of self-esteem in both high and low stress conditions. In contrast, the only suggestion across the different studies for an interactive relationship with life events was for an additional `buffer' in light of the occurrence of positive life events. In contrast to Brown and McGill (1989) who found negative consequences for positive life events with individuals with low self-esteem, positive events were not found to create greater distress or health-related difficulties with those with low self-esteem but rather offered a `buffering' advantage to those with high self-esteem. This is a novel finding and it may reinforce the findings from experimental analysis on self-esteem and self-regulation which have shown that individuals with high self-esteem are superior at capitalizing on positive life experiences and minimizing the impact of negative life experiences.

Possessing high self-esteem was shown to relate to better health status,

lower psychological distress, and better academic and social adjustment for adolescent student populations. Also, consistent with models linking self-esteem to poor mental health (Brown & Harris, 1978; Kohut, 1979; Segal, 1988; Roberts & Monroe, 1994), self-esteem was shown to be more debilitated in depressive and anxiety disorders, although especially in the former. Finally, the laboratory studies pointed to two important aspects regarding the role of self-esteem in health. It is hypothesized that self-esteem may influence health by direct and indirect mechanisms. The direct mechanism reflects the influence of self-esteem on the primary appraisal process, the degree to which life events are customarily construed as positive challenges for growth, or negative threats. To the degree to which the latter is invoked may implicate underlying autonomic arousal, which if prolonged, may lead to greater taxing of body organs and subsequent illness. Chapters three and four successfully demonstrated an association between self-esteem and health status and subjective well-being reports, but the underlying mechanism of this relationship, the implicated influence of self-esteem on stress-appraisal was only inferred. However, the lab studies provided some tentative support for the causal role of self-esteem in the stress-appraisal process and subsequent autonomic arousal. For those subjects who were exposed to the high self-esteem manipulation they appeared comparatively inoculated to stress; as evidenced in subjective reports and physiological indices. The results also extend the recent findings of Greenberg et al. (1992) and Strauman et al. (1993) who have found a causal role for self-processes in induced laboratory stress.

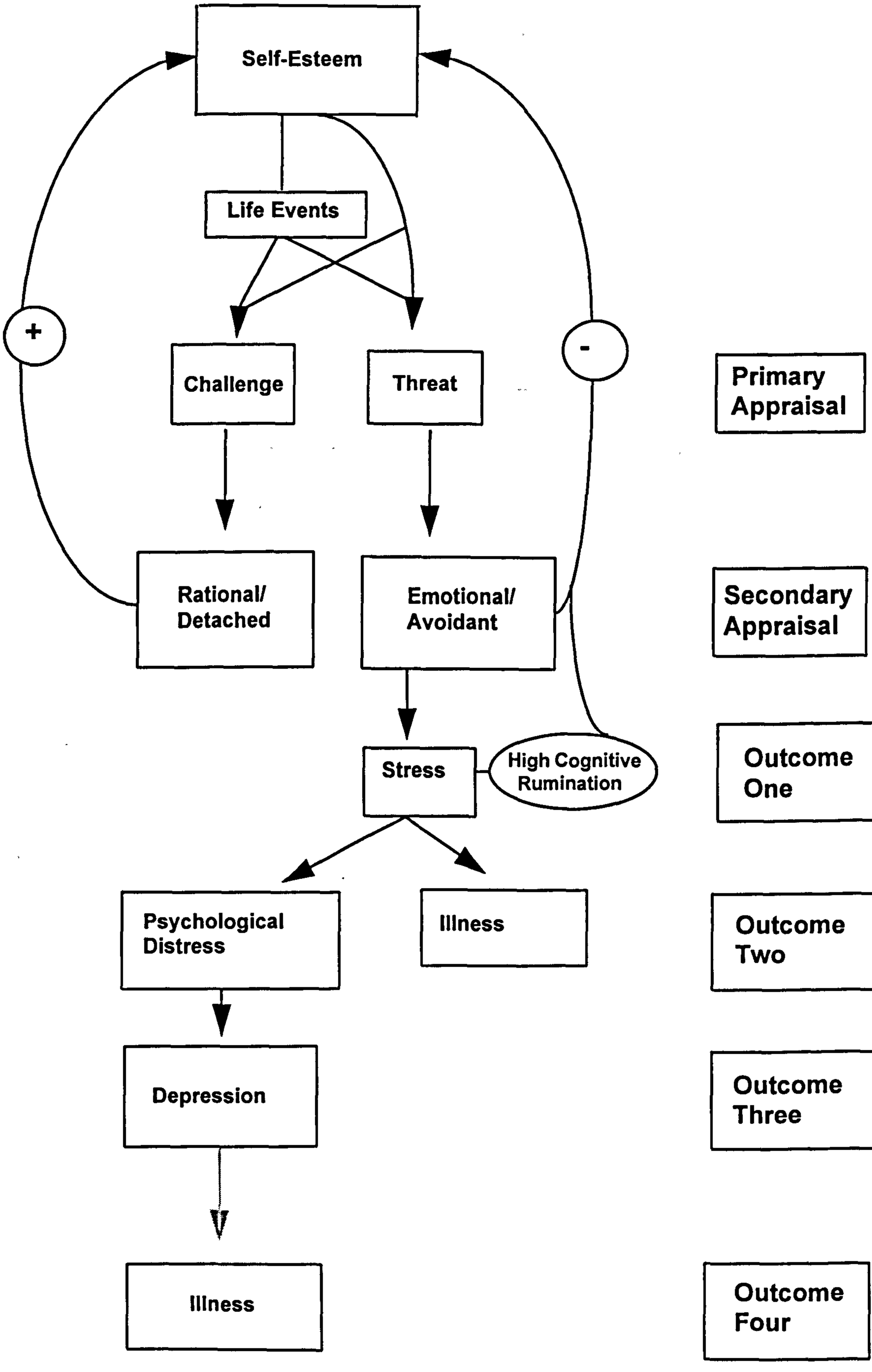
The second, indirect, route by which self-esteem was hypothesized to influence health in this research was via secondary stress appraisal; or the chosen

coping mechanisms to deal with challenges or threats once they had been identified. As discussed, this research points to the inter-relationship between self-esteem and coping patterns typically employed to deal with stress. As also reviewed, the inter-relationship did show anchoring to health status, thus pointing to the expected mediating effects of coping on health via self-esteem. The findings reach beyond those models espoused by Linville (1987), DeLongis et al. (1988), Brown and McGill (1989), which suggest that high self-esteem (or high self-complexity in the case of Linville) leads to the *belief* that one can cope when faced with life adversity. This research shows that individuals with high trait self-esteem actually *employ* more adaptive coping measures. One caveat related to this point, however, is the assumption that using rational (problem-focused, task-oriented) coping or detached coping means that they are inherently effective across different stressors. This research (chapters three and four) did not explicitly test the effectiveness of coping nor the goodness-of-fit between particular coping responses and the nature of the specific stressors. A more micro approach to assessing self-esteem and coping adjustments to specific stressors would contribute to a greater understanding of the self-esteem-coping process.

7.5 Self-esteem and Well-being: A model

One possible model that may adequately draw together the seemingly disparate findings in this research can be seen in Figure 7.1 This model takes as its basis the model proposed by Lazarus and Folkman (1984) where the biological model of stress is extended from an stimulus-response model to a stimulus-organism-response model where the organism variables are primary and secondary

– Figure 7.1 :
– Self-Esteem and Health Taxonomy



cognitive appraisal. As seen, the model may be extended to account for the moderating influence of self-esteem in the perception, judgment and subsequent ascribed meaning to events. As shown in this research (chapter five) and other reports (Greenberg et al., 1992; Strauman et al., 1993), individuals with threatened self-esteem are more likely to perceive events as threatening whilst individuals with high self-esteem are more likely to perceive events as a challenge for self-enhancement. Note that the arrows linking self-esteem to the primary appraisal process are joined via the experience of life events but also independent of life events. Low self-esteem reflects an intrapsychic process that, in and of itself, may impact on the perception of threat in the world independent of major life events. To some extent this application was supported in chapter four where it was shown that self-esteem influenced subsequent health and distress relatively independent of life events.

Next, the secondary appraisal process, where particular coping strategies are employed, is influenced by the valence of self-esteem. In this way, individuals with low self-esteem may have a dispositional tendency to employ palliative efforts to manage stress whilst individuals with high self-esteem utilize assertive, adaptive efforts to change aspects of the environment and/or detach and positively reframe to overcome negative emotion associated with noxious stimuli as was demonstrated in chapters three and four. While individuals are likely to use a wide range of coping strategies across different situations, these patterns may reflect modal tendencies. Following the arrows down from the secondary appraisal process, the degree to which chosen coping patterns meet the needs of the situation may result in relative success (e.g., goal obtainment), positive feedback and subsequent

support for self-esteem, or it may result in failure and impinge negatively on self-esteem. Second, it is at this juncture that cognitive rumination may be provoked as a response to perceived failure and inadequacy to cope with life's challenges and as indicated by the arrow, this may function to lower self-esteem by keeping perceived inadequacies in mind. As indicated by the arrows moving from coping outcomes back to trait self-esteem, and in keeping with the interactionist model of stress, this model can be seen as transactional and cyclical where organismic variables are constantly in interaction with the environment and providing the basis for future responses.

The evolving effects of this pattern can also be seen in the self-esteem and health taxonomy. First, the cumulative effects of stress can become represented in terms of physical illness (as a result of chronic autonomic arousal) and/or psychological disturbance (where increasingly stress becomes prolonged psychological distress). Research on the effects of stress have provided some tentative support for this notion that some individuals somatize their distress, while others experience greater psychological disturbance (e.g., Conger, Lorenz, Elder, Simons, & Ge, 1993).

As indicated by the arrows, heightened psychological distress may be a precipitant for actual clinical depression. Psychosocial models of depression such as Brown and Harris's (1978) which has shown that the combination of low self-esteem as well as increasing number of negative life events is a good predictor of first onset clinical depression. The research in chapters three and four suggested that self-esteem was the best predictor of psychological distress, and in chapter five, the results suggested that self-esteem was most impaired amongst the

depressed patients. Finally, the light arrow linking depression to greater illness was not tested in this research but increasing evidence suggests that clinical depression impedes on immune functioning and may increase susceptibility to illness and even premature mortality (Herbert & Cohen, 1993). Following this strain of thought, self-esteem may represent a vulnerability marker for illness via depression.

This model outlines an idealized path by which self-esteem differences emerge and influence health and well-being, but it is not being suggested that individuals with high self-esteem are free from health problems, distress or poor adjustment across time. Notwithstanding, future research on self-esteem and health may be best served by examination of multiple paths that join moderator variables to health and mental health disturbance. This proviso offers multiple points of entry to preventing health disturbance and offering relative inoculation against the pernicious effects of stress.

7.6 Implications for Clinical Treatment

Typical approaches to stress management focus on such techniques as massage, exercise, nutrition, progressive relaxation, medication, and biofeedback. All of these approaches have in common a stress-response model of stress. The relationship between self-esteem, coping and cognitive rumination and their influence on health and psychological distress point to support for clinical approaches that focus on the role of conscious, cognitive mechanisms in the etiology and continuance of stress. These would include well-established cognitive-behavioural models that emphasize change in unrealistic (Beck, 1976) and irrational (Ellis & Dryden, 1987) cognitive processes founded upon negative self-evaluations. Consistent with the

construction of self-esteem as a cognitive-affective variable, therapeutic approaches that also focus on the emotional aspects of self-evaluations, such as those that focus on developmental aspects of self-esteem (e.g, Kohut, 1979) and self-acceptance (e.g, Rogers, 1951) are also in keeping with the results. However, it is the view here, that self-esteem is first and foremost a cognitive variable and so treatments that deal explicitly with cognitive sources of self-evaluation and related aspects that concern the valence of self-evaluations may be most helpful in managing stress. This emphasis in treating stress by directly focusing on the cognitive foundations of self-esteem is to juxtaposed with Seligman's (1994) recent argument that self-esteem is merely an epiphenomenon of other cognitive functions. The experimental studies in this research and other recent findings (Greenberg et al., 1992; Strauman et al., 1993) refute Seligman's recent arguments, where self-esteem has been shown to possess, a causal, moderating influence in stress reactivity.

Second, the results are consistent with cognitive-behavioural approaches (Epstein, 1992; Epstein & Katz, 1992; Meichenbaum, 1985; Roskies & Lazarus, 1980) that emphasize the development of coping skills to deal with a variety of life demands. Emphasis on instrumental approaches to coping, such as information gathering, problem-solving, communication and social skills training are well developed. The importance of detachment coping suggests that the emphasis in cognitive-behavioural efforts (e.g. ABC charts, diary keeping) to help clients positively re-frame upsetting experiences and establish a meta-cognitive position vis-a-vis their involvement in challenging situations is supported by the beneficial effects of detached coping. Linking coping skills training to cognitive tendencies to

over perceive threat, as a result of unrealistically negative self-perception, may be most helpful.

Third, the importance of emotion control, particularly cognitive rehearsal in stress management has been developed by Roger and colleagues (Roger, 1988; Roger & Nash, 1994) over the past decade. Roger and colleagues have developed a stress management programme for occupational contexts that emphasizes attention control; that is, teaching clients how to `let go' of stress and prevent rumination over negative life events, hassles, and perceived personal inadequacies. This research suggests that associated with the tendency to ruminate are underlying feelings and thoughts associated with perceived inadequacy and Roger (1995) has recently acknowledge this component in his updated approach to stress management in the work force.

In summary, the role of self-esteem, coping, and emotion-control in stress and well-being points to the important psychological component in stress. In contrast to the majority of stress programmes that emphasize non-direct cognitive mediational factors in their approaches, this research suggests that an important component in identifying vulnerability to stress and ways of alleviating stress, would be enhanced by attending to the stable personality processes that influence stress appraisal and cognitive and behavioural coping efforts.

7.7 Remaining Issues

7.7.1 Gender (Sex) Differences

Differences between male and female subjects emerged across the different studies in this project. Collectively, the results point to probable differences

in the structure of self-esteem, between coping efforts typically evoked to deal with stressful situations, emotion-control patterns, and in the reporting of health based on gender.

First, in the construction and validation of the YSEI responses by females to family-based self-esteem items contributed to global self-esteem in both the initial standardization sample as well as in the replication sample, whilst male responses on some family-based items failed to make a consistent contribution to the total scale variance. As the valence of self-esteem may be a vulnerability factor for stress, the domains for which self-evaluations are made may also constitute the domains particularly likely to contribute life stress. For instance, if self-evaluations in the family domain are more relevant to global self-esteem for females, then the family may also constitute a greater source of stress for females when there is conflict and related difficulties within the family. This pattern has actually been demonstrated by Billings and Moos (1984) who found that while stress in men tends to be more related to work and finance, stress in women tends to be more due to issues associated with the family. Further, Kessler and McLeod (1984) found that women were more sensitive to social network events whilst men were more sensitive to income loss. Again, Conger et al. (1993) found that financial-work related strains were the greatest source of stress for men while events within the extended family were the greatest source of strain for women. This latter study also demonstrated differential outcomes despite approximately equivalent levels of stress; where events tended to predict depression scores in men and physical symptoms in women. In short, these studies suggest that gender regulates outcomes to stressors.

The different structure of self-esteem and the incipient vulnerabilities related to these domains would appear to be a most relevant arena for future research as recently proposed models of depression (Beck, 1983; Blatt & Zuroff, 1992) see clinical depression as resulting from either achievement failures (and related self-criticism) or related to failures in relationships. The logic of the potential association between self-esteem structure (men=work achievement; women=successful relationships); associated differential stress (men=work achievement; women=successful relationships) and differential depressions (achievement-related vs. relationship-based) suggests a possible model for assessing the role of gender differences in self-esteem and vulnerability to specific forms of depression.

Second, a consistent finding in this research, and one that reflects the preponderance of published reports on coping, is that females tend to utilize more emotion-oriented coping (Endler & Parker, 1990; Billing & Moos, 1984; Ptacek, Smith & Dodge, 1994; Ptacek, Smith, & Zanas, 1992). Inherent in these differences, it has been argued, are the different stressors that male and females have to deal with. For instance, if males report greater stress at work the alleviation of such stress may be dependent on problem-focused coping efforts, whereas if females are reporting more stress due to disruption in the family process, the most effective coping effort may necessitative palliative approaches or the seeking of social support (Billing and Moos, 1984). That is, the argument has been that the differences in coping are not due to individual differences between male and females in their tendency to cope in a particular way but rather, the differences are due to the needs of the situation itself, that male and females differentially construct. However, a most recent study by Ptacek and colleagues

(Ptacek et al., 1994) demonstrated that situational appraisal could not account for the observed greater tendency of females to engage in emotion-oriented coping. Male and Female subjects were asked to offer their appraisals of a stressful situation, in this case the delivery of a lecture. They found that while both groups tended to appraise the situation in very similar ways; rate the inherent stressfulness of the situation in identical ways; and show the same level of physiological arousal, the first coping efforts by women were emotion-oriented strategies whilst males were problem-focused efforts. This greater tendency for females to cope with emotion-oriented approaches may reflect wider cultural norms, where females learn earlier and are provided more support for venting or expressing emotions and turning to others for emotional support (Billing and Moos, 1984). Further, males may utilize emotion-oriented coping efforts but do so in ways which are not interpersonally directed for instance, turning to alcohol or drugs to reduce stress (Carver et al., 1989; Pearlin, 1989).

Relatedly, emotion-oriented coping was seen to be a consistent predictor of well-being. Just as females in this research were more likely to report greater use of emotion-oriented coping and less detached coping, these coping styles related to worsening and improvement in health status, respectively. And it was female subjects who tended to report poorer health status (chapter four). The tendency for females to report poorer health and well-being is consistent with large reviews of the literature (Gove & Tudor, 1973; Dohrenwend, Dohrenwend, Gould, Link et al, 1980; Newmann, 1984). In over fifty studies reviewed, females <u>never</u> appear in better health. Again a number of socialization variables have been put forth to account for these differences including the greater likelihood in childhood of young

girls to a) adopt health behaviours, b) be more aware of health prevention, c) perceive greater vulnerability to illness, d) and be more willing to adopt the sick role (Tousignant, Brosseau, & Tremblay, 1987). In accounting for the variance in greater symptom reporting in female adults, there is little suggestion that women have a greater tendency to over-report minor symptoms. Rather, it would appear that women may be a) more attentive to internal states and b) based on early socialization, hold a higher ideal of good health. However, these explanatory principles have not received consistent empirical support as Pennebaker (1982) did not find that women were more accurate in their assessment of internal sensations. Hence, the etiological basis in women's greater health complaints is not well understood and necessitates additional investigation.

7.7.2 Methodological Issues

The connection of emotion-oriented coping styles to health is based on subjectively reported coping behaviours. Consistent with the need to assess health status objectively to overcome subjective reporting biases, is the need to use peer reports and observation ratings of coping behaviours. To date, the correspondence between reporting coping preferences and approaches to specific stressors and actual coping behaviours is unknown.

When considering the findings in this study in relation to the literature it may be that the associations between the various psychological measures, self-esteem, coping, and emotion-control and health are merely the effect of a reporting artefact. While this possibility is present in any study that utilizes subjective health reports, there are several considerations from this research that limit the plausibility of this

confound. First, one could posit that the initial baseline ratings of self-esteem, coping and emotion-control styles were adversely affected due to the presence of physical symptoms or psychological distress at the beginning of the study and therefore lower ratings on these measures reflect outcomes rather than precipitants to poor health. However, in both chapters three and four the effects of self-esteem and prior symptoms at time one were removed when the relation between self-esteem and health and distress were examined at time two. Second, another potential confound could be that individuals with low self-esteem are simply more likely maintain a negative response set. The results in chapter four, however, suggested that individuals with low self-esteem were no more likely than individuals with high self-esteem to report experiencing negative life events just as individuals with high self-esteem were no more likely to report experiencing positive life events than individuals with low self-esteem thus limiting the argument that individuals with high self-esteem have a positive response set. Further, the distribution of health complaints was in the bottom range of the distribution for the entire sample in those prospective studies. This was even more true in symptom severity ratings. There did not appear, then, to be multiple global complaints suggestive of a tendency to endorse sick items. In chapter three the greatest number of complaints by any one subject did not exceed half the total number of items on the scale. Indeed, the low baseline rate of illness reported, and the relative stability in health complaints across time in both prospective studies, would appear to have offered a conservative test of the moderating influence of self-esteem. Furthermore, the results from chapter four suggested near equivalence in the magnitude of the relationship between self-esteem and the health ratings from two different scales,

despite their differing conceptual and methodological outlay, thus reducing the possibility that the observed relations were due to method variance in the design of the health measures. Finally, while self-esteem differences reported in the laboratory studies could be said to be due to demand characteristics on subjective stress reports, the differing results on task performance and physiological arousal are suggestive of meaningful differences based on the self-esteem manipulation.

Notwithstanding, the results linking self-esteem and health, distress, and psychopathology in this study are dependent on subjective reports as are all published reports linking self-esteem and self-processes to health. Some results have shown that self-reported health status shows good concordance with objectively verified illness, although it is very difficult to obtain potentially uncontaminated health information as personality processes have also been shown to relate to health-seeking behaviour such as number of visits to medical doctors, as well as rates of induced illness (e.g., Cohen et al., 1995). The future reliability and validity of research on personality and health might be improved upon by using multiple sources of personality and health status, for example, subject reports, peer reports, family reports, as well as expert reports.

7.7.3. Analyses Considered But Not Completed

It could be argued that a more sophisticated analysis of the data in chapter four would have been acheived with the use of structural equation modelling (SEM). This analysis provides a simultaneous analysis of multiple variables, both latent and observed, and allows for the examination of longitudinal trends. SEM and related trend analyses are, however, only appropriate when there is a theoretical model being tested (to account for the inter-relationships between variables and the potential time trends). Without a theoretical model faulty conclusions are likely to be drawn from simple empirical observations and the findings are not likely to be

replicated (Endler et al., 1993). In chapter four no explicit theoretical model was put forth to predict (potential) changes betweeen self-esteem, coping, and emotion-control and outcomes over time. Further, in the absence of systematic description and assessment of the situation, and the relative stability of the personality measures over time (i.e, coping), a true process-oriented analysis was not appropriate. However, future research aimed at testing the hypothetical paths presented in the model in this chapter (Figure 7.1) would be best acheived with a trend analysis.

7.8 Final Comments

This research was aimed to test the relationship between self-esteem, health and psychological well-being. While the theoretical model underlying the research on self-esteem is trait-oriented, the findings from the laboratory research also point to the situational responsiveness of self-esteem. Just as this research found that high self-esteem offers some advantage in reducing perception of threat and utilizing adaptive coping strategies to confront challenge, it may be the same situationally-based cognitive-motivational processes employed to protect and enhance self-esteem that are also related to better health and well-being. For instance, in addition to influencing primary and secondary appraisal, the demonstrated ability of individuals with high self-esteem to capitalize on positive events and derogate the significance of negative events (Brown & Monkowski, 1993); their ability to utilize compensatory self-enhancement when given the opportunity (inflating other parts of self when a part is under threat (Baumeister, Tice, & Hutton, 1989) as well as self-protection when under threat, such as utilizing selective consensus (assuming that more share your limitations (Campbell, 1986)) may offer some insight regarding common mechanisms in self-esteem regulation and health.

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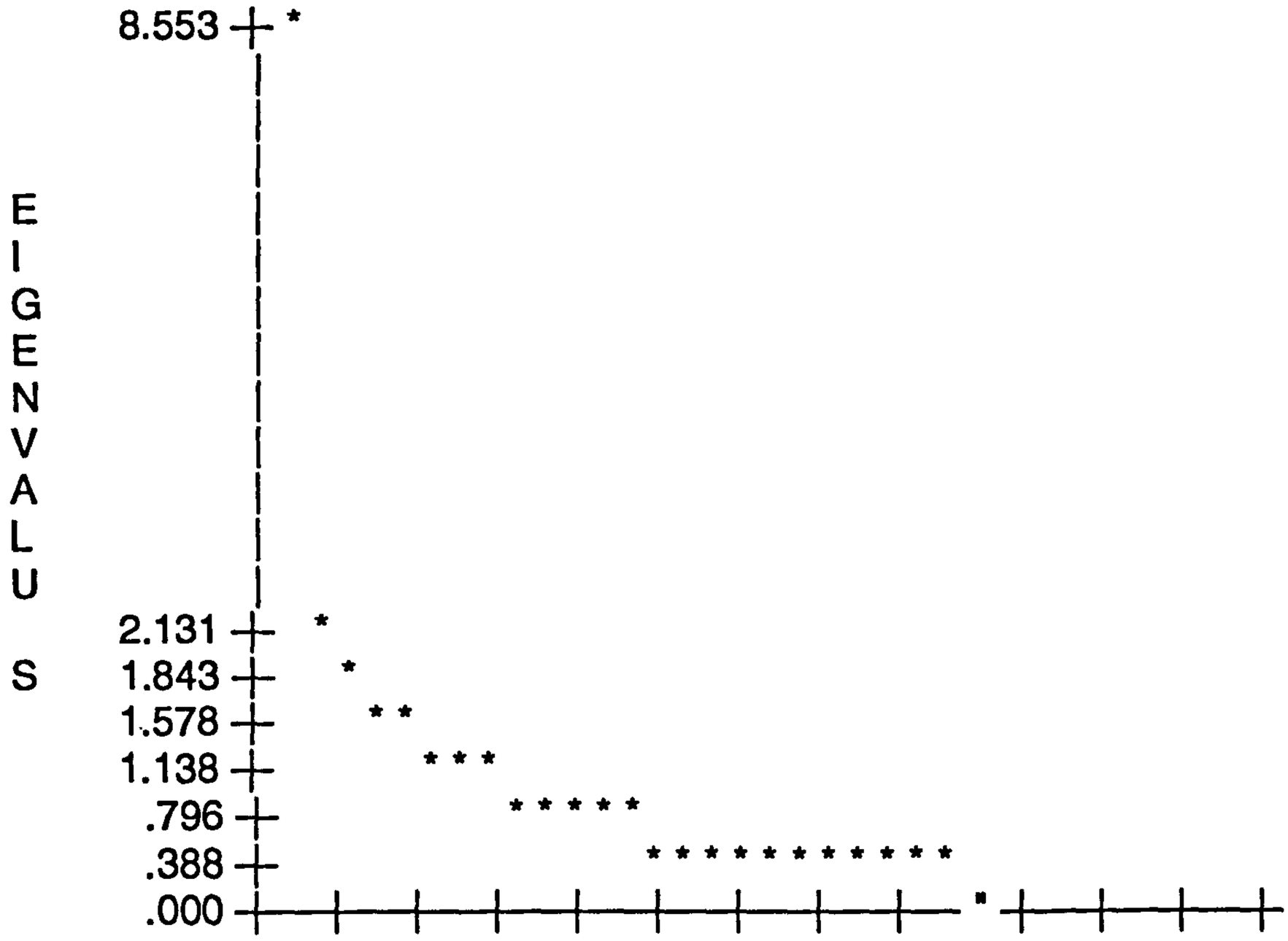
APPENDICES

APPENDIX A1
YSEI

		strongly disagree				strongly agree
1.	I am not happy with my appearance.	1	2	3	4	5
2.	I am popular	1	2	3	4	5
3.	I have good ideas.	1	2	3	4	5
4.	I am an important member of my family.	1	2	3	4	5
5.	I give up easily.	1	2	3	4	5
6.	I am uncertain of my goals.	1	2	3	4	5
7.	I am successful.	1	2	3	4	5
8.	I like being the way I am.	1	2	3	4	5
9.	I feel left out of things.	1	2	3	4	5
10.	I feel like quitting .	1	2	3	4	5
11.	I wish I were different.	1	2	3	4	5
12.	I feel that I have a place in this world.	1	2	3	4	5
13.	I am a failure.	1	2	3	4	5
14.	It is hard for me to make friends.	1	2	3	4	5
15.	I am good at most things.	1	2	3	4	5
16.	I am uncertain of how I appear to others.	1	2	3	4	5
17.	My family is disappointed in me.	1	2	3	4	5
18.	I have a pleasant face.	1	2	3	4	5
19.	I feel that I can achieve just about anything.	1	2	3	4	5
20.	I am uncertain of my intelligence.	1	2	3	4	5
21.	I am at peace with myself.	1	2	3	4	5
22.	I am easy to get along with.	1	2	3	4	5
23.	I have an attractive body.	1	2	3	4	5
24.	I am a good person.	1	2	3	4	5
25.	Other people feel relaxed when in my presence.	1	2	3	4	5
26.	I am lacking in self-confidence.	1	2	3	4	5
27.	I do not get as much out of life as I ought to.	1	2	3	4	5
28.	I feel uncertain about my future.	1	2	3	4	5
29.	I am comfortable with myself.	1	2	3	4	5
30.	I get along well with most of my family.	1	2	3	4	5

Appendix A2

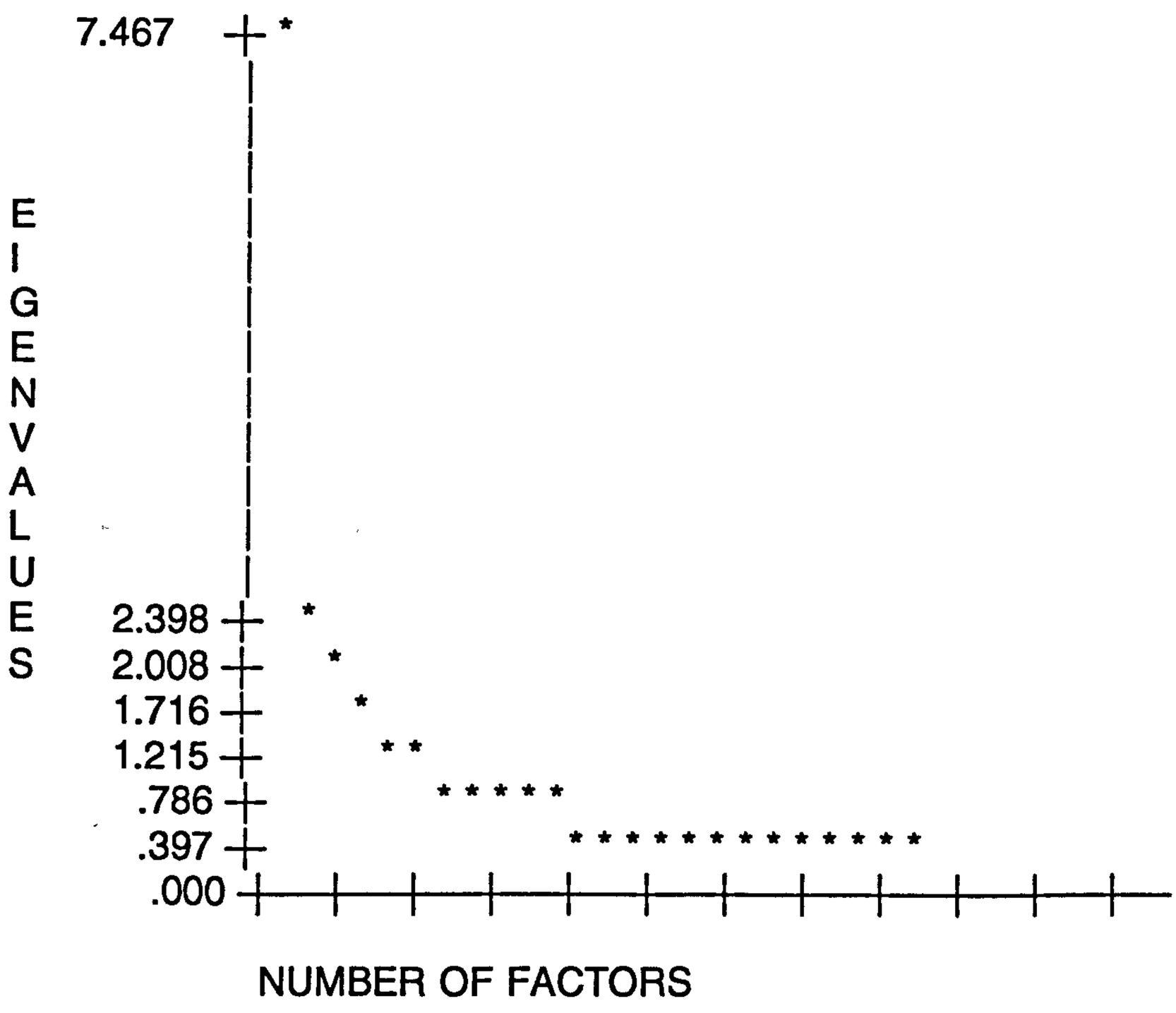
SCREE TEST OF THE SELF-ESTEEM QUESTIONNAIRE (YSEI)



Appendix A3

SCREE TEST OF THE SELF-ESTEEM QUESTIONNAIRE (YSEI)--

REPLICATION STUDY



Appendix A4

The Rosenberg Self-esteem Inventory (RSE)

	strongly disagree				strongly agree
01. I feel that I am a person of worth, at least on an equal plain with others.	1	2	3	4	5
02. All in all, I am inclined to feel that I am a failure.	1	2	3	4	5
03. I feel that I have number of good qualities.	1	2	3	4	5
04. I am able to do things as well as most other people.	1	2	3	4	5
05. I feel I do not have much to be proud of.	1	2	3	4	5
06. I take a positive attitude toward myself.	1	2	3	4	5
07. On the whole, I am satisfied with myself.	1	2	3	4	5
08. I wish I could have more respect for myself.	1	2	3	4	5
09. I certainly feel useless at times.	1	2	3	4	5
10. At times I think I am no good at all.	1	2	3	4	5

Appendix A5

HCQ-1

Name: Age: Sex:

Instructions: This questionnaire lists a variety of health problems or difficulties. Each item is followed by a three-point rating scale in which 1=better than usual for you, 2=no change, 3=worse than usual for you, and 4=don't or haven't suffered from it.

Please indicate whether each problem has been better, worse, unchanged or not present during the last 3 weeks (i.e., since you arrived at campus) by circling one number opposite each item.

Rating Scale: Better=1 Unchanged=2 Worse=3 4= Don't Have/Suffer From

1. Arthritis	1	2	3	4	15. Diarrhoea	1	2	3	4
2. More/less appetite	1	2	3	4	16. Eye infections	1	2	3	4
3. Throat infection	1	2	3	4	17. Fibrositis	1	2	3	4
4. Dizziness/fainting	1	2	3	4	18. Sinusitis	1	2	3	4
5. Cold/'flu	1	2	3	4	19. Ear infection	1	2	3	4
6. Glandular fever	1	2	3	4	20. Acne	1	2	3	4
7. Eczema	1	2	3	4	21. Asthma	1	2	3	4
8. Constipation	1	2	3	4	22. Anxiety	1	2	3	4
9. Lethargy/tiredness	1	2	3	4	23. Dandruff	1	2	3	4
10. Headache/migraine	1	2	3	4	24. Hypertension	1	2	3	4
11. Depression	1	2	3	4	25. Cold sores	1	2	3	4
12. Chest infections	1	2	3	4	26. Shingles	1	2	3	4
13. Allergies	1	2	3	4	27. Post-viral syndrome (ME)	1	2	3	4
14. Upset stomach/ vomiting	1	2	3	4	28. Insomnia	1	2	3	4

Women only:

29. Menstrual problems	1	2	3	4
30. Cystitis/vaginal infections	1	2	3	4

Thank you for your help

Appendix A6

Self-esteem Manipulation Report

Personality Profile Report

Name: Year:1

The following report is based upon your completed responses to questionnaires over the first 2 terms. If your report is not as favourable as you had hoped there will be time to discuss it later.

Abilities: Above average in mental alertness. Also above average in accuracy--rather painstaking at times. Deserves a reputation for diligence--dislikes turning out sloppy work. Has initiative; that is, ability to make suggestions and to get new ideas, open-mindedness. People like to spend time with you because you are a good listener as well as a good friend. In general, while you may have some personal weaknesses, fundamentally your personality is quite strong.

Ambitions: You are quite ambitious, and deserve credit for wanting to be well thought of by your family, fellow students and friends. These ambitions come out most strongly in your tendency to indulge in daydreams but this does not mean that you fail to get into the game of life actively. Most of your aspirations are realistic.

Emotions: You have a tendency to worry at times but not to excess. You do get depressed at times but you couldn't be called moody because you are generally cheerful and rather optimistic. You have a good disposition although earlier in life you have had a struggle with yourself to control your impulses and temper. You are not a very sickly person and typically maintain good health by coping well with life's demands.

Appendix A7

Experiment Feedback Form

	Not at all						Very Much
Did you find the experimental task stressful..	1	2	3	4	5	6	7
Did you find the experimental task disturbing.	1	2	3	4	5	6	7
Were you feeling anxious during the task.....	1	2	3	4	5	6	7
Were you feeling angry during the task.....	1	2	3	4	5	6	7
Were you feeling insecure during the task.....	1	2	3	4	5	6	7
Did you find the task Challenging.....	1	2	3	4	5	6	7
Did you find the task meaningful.....	1	2	3	4	5	6	7
Did you have a sense of personal control during the task.....	1	2	3	4	5	6	7

Appendix A8

ECQ 2R

Name: Sex: Age:

Instructions : Please indicate how you feel about each item by circling either "TRUE" or "FALSE". If you feel that an item is neither entirely true nor false, please choose the alternative that is most like you. If you haven't been in the situation described, please say how you feel you would behave in that situation.

1. When someone upsets me, I try to hide my feelings. TRUE FALSE

2. If someone pushed me, I would push back. TRUE FALSE

3. I remember things that upset me or make me angry for a long time afterwards. TRUE FALSE

4. I seldom feel irritable. TRUE FALSE

5. I often take chances crossing the road. TRUE FALSE

6. People find it difficult to tell whether I'm excited about something or not. TRUE FALSE

7. I often do or say things I later regret. TRUE FALSE

8. I find it difficult to comfort people who have been upset. TRUE FALSE

9. I generally don't bear a grudge - when something is over, it's over, and I don't think about it again. TRUE FALSE

10. No-one gets one over on me - I don't take things lying down. TRUE FALSE

11. When something upsets me I prefer to talk to someone about it than to bottle it up. TRUE FALSE

12. I've been involved in many fights or arguments. TRUE FALSE

13. I get "worked up" just thinking about things that have upset me in the past. TRUE FALSE

14. I'm not easily distracted. TRUE FALSE

15. If I'm badly served in a shop or restaurant I don't usually make a fuss. TRUE FALSE

16. If I receive bad news in front of others I usually try to hide how I feel. TRUE FALSE

17. I frequently change my mind about things. TRUE FALSE

18. If a passing car splashes me, I shout at the driver. TRUE FALSE

19. If someone were to hit me, I would hit back. TRUE FALSE

20. I seldom show how I feel about things. TRUE FALSE

21. I often say things without thinking whether I might upset others. TRUE FALSE

22. I often find myself thinking over and over about things that have made me angry. TRUE FALSE

23. If I'm pleasantly surprised, I show immediately how pleased I am. TRUE FALSE

24. I tend to snap at people. TRUE FALSE

25. If I get angry or upset I usually say how I feel. TRUE FALSE

26. If someone says something stupid, I tell them so. TRUE FALSE

27. If I see someone pushing into a queue ahead of me I usually just ignore it. TRUE FALSE

28. I can usually settle things quickly and be friendly again after an argument. TRUE FALSE

29. My interests tend to change quickly. TRUE FALSE

30. I don't feel embarrassed about expressing my feelings. TRUE FALSE

31. If I see or hear about an accident, I find myself thinking about something similar happening to me or to people close to me. TRUE FALSE

32. I think about ways of getting back at people who have made me angry long after the event has happened. TRUE FALSE

33. I'd rather concede an issue than get into an argument. TRUE FALSE

34. I never forget people making me angry or upset, even about small things. TRUE FALSE

35. I seldom "put my foot in it". TRUE FALSE

36. I lose my temper quickly. TRUE FALSE

37. I think people show their feelings too easily. TRUE FALSE

38. I find it hard to get thoughts about things that have upset me out of my mind. TRUE FALSE

39. Almost everything I do is carefully thought out. TRUE FALSE

40. I don't think I could ever "turn the other cheek". TRUE FALSE

41. I often daydream about situations where I'm getting my own back at people. TRUE FALSE

42. I find long journeys boring - all I want is to get there as quickly as possible. TRUE FALSE

43. Expressing my feelings makes me feel very vulnerable and anxious. TRUE FALSE

44. If a friend borrows something and returns it dirty or damaged, I usually just keep quiet about it. TRUE FALSE

45. I can't stand having to wait for anything. TRUE FALSE

46. If I see something that frightens or upsets me, the image of it stays in my mind for a long time afterwards. TRUE FALSE

47. I hate being stuck behind a slow driver. TRUE FALSE

48. If someone insults me I try to remain as calm as possible. TRUE FALSE

49. Thinking about upsetting things just seems to keep them going, so I try to put them out of my mind. TRUE FALSE

50. I usually manage to remain outwardly calm, even though I may be churned up inside. TRUE FALSE

51. If I lose out on something, I get over it quickly. TRUE FALSE

52. I can't help showing how I feel, even when it isn't appropriate to do so. TRUE FALSE

53. If I have to confront someone, I try not to think too much about it beforehand. TRUE FALSE

54. I like planning ahead rather than just seeing how things turn out. TRUE FALSE

55. I sometimes just come out with things that embarrass people I'm with. TRUE FALSE

56. Sometimes I just can't control my feelings. TRUE FALSE

57. My failures give me a persistent feeling of remorse. TRUE FALSE

58. Even though I try to forget about things that have upset me, they keep coming back into my mind. TRUE FALSE

59. The less I think afterwards about things that have upset me, the less important they seem to be. TRUE FALSE

60. I seem to remember things that have upset me much less vividly than other people. TRUE FALSE

61. For me, the future seems to be full of troubles and problems. TRUE FALSE

62. I often feel as if I'm just waiting for something bad to happen. TRUE FALSE

63. When I am reminded of my past failures, I feel as if they are happening all over again. TRUE FALSE

64. Upsetting things quickly lose their power to affect me. TRUE FALSE

65. I am seldom preoccupied with thoughts about events which may happen in the future. TRUE FALSE

66. Sometimes I have to force myself to concentrate on something else to keep unpleasant thoughts out of my mind. TRUE FALSE

67. I tend to get over upsets more quickly than most people. TRUE FALSE

68. Intrusive thoughts about my earlier unpleasant experiences make it difficult for me to keep my mind on a task. TRUE FALSE

69. I don't let a lot of unimportant things irritate me. TRUE FALSE

70. Any reminder about a past failure brings back emotions related to it. TRUE FALSE

71. I wish I could banish from my mind the memories of past failures. TRUE FALSE

72. Sometimes I get so involved thinking about things that have upset me I am unable to adopt a positive attitude towards anything. TRUE FALSE

73.I worry less about the future more than most people I know. TRUE FALSE

74. It takes me an unusually long time to get over unpleasant events. TRUE FALSE

75. I never worry about my past failures. TRUE FALSE

76. If someone has treated me unfairly, I don't let it annoy me. TRUE FALSE

APPENDIX A9

Table 3.5--FULL REGRESSION MODEL
Results from Hierarchial Regression Analyses Predicting
Time 1 Health and Distress Scores

		Health			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Sex	10.46**	.06	.25*	1.4	.01	.09
2.	CSQ-Main Effects	5.55**	.12		12.4**	.12	
	Emotion-CSQ			.20*			.37**
	Rational-CSQ			-.20*			
	Detached-CSQ			.10			
3	ECQ-Main Effects	4.72**			8.69**	.17	
	Rehearse-ECQ		.13	.11			.17*
	Aggression-ECQ			.08			.19*
4	YSEI-Self-esteem	4.23**	.14	-.12	12.16**	.27	-.37*
5	Two-way Interact						
	Main Effects	3.19**	.19				
	YSEI X Rehearse			-1.52*			
	YSEI X Detached			-2.41*			
Non Significant Interaction Terms							
	YSEI X CSQ-EMCOP			.20			.73
	YSEI X CSQ-RATCOP			.86			1.50
	YSEI X SEX			-.18			.48
	YSEI X ECQ-AGGRESS			.18			-1.30
	SEX X CSQ-EMCOP			-.13			.63
	SEX X CSQ-RATCOP			.52			-.04
	SEX X DETCOP			-.24			-.12
	ECQ-REH X CSQ-RATCOP			.14			.42
	ECQ-REH X CSQ-DETCOP			-.12			-.18
	ECQ-AGGR X CSQ-EMCOP			-1.31			-1.05
	ECQ-AGGR X CSQ-DETCOP			-.92			.41
	ECQ-AGGR X CSQ-DETCOP			.20			-.62

Table 3.8--FULL REGRESSION MODEL
Results from Hierarchial Regression Analyses Predicting
Time 2 Health and Distress Scores

		Health			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Time 1 Health	74.70**	.50	.71**			
	Time 1 Distress				50.30**	.28	.53**
2	CSQ-Main Effects	42.39**	.54		15.72**	.33	
	Emotio - SQ			.19			.11
	Rational-CSQ						-.06
	Detached-CSQ						-.11
3	ECQ-Main Effects	28.66**	.54				
	Rehearse-ECQ			.17			
	Aggression-ECQ			.19			
4	YSEI-Self-esteem	24.56**	.58	-.23*	15.14**	.38	-.29*
5	Two-way Interact						
	Main Effects	17.08**	.60				
	YSEI X Rehearse			-.57*			
Non Significant Interaction Terms							
	YSEI X CSQ-EMCOP			1.47			-.21
	YSEI X CSQ-RATCOP			-.19			.77
	YSEI X ECQ-AGGRESS			.18			1.30
	YSEI X CSQ-DETCOP			.98			1.39
	ECQ-REH X CSQ-RATCOP			-.66			-.51
	ECQ-REH X CSQ-DETCOP			.25			-.14
	ECQ-AGGR X CSQ-EMCOP			1.32			.65
	ECQ-AGGR X CSQ-DETCOP			.44			-1.16

APPENDIX A11

Table 4.4–FULL REGRESSION MODEL

Results from Hierarchial Regression Analyses Predicting Time 2 Health Scores

		Health Scores					
		Somatic Illness			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Time 1 Health	21.74***	.14	.37***	14.20***	.09	.31***
2.	Life Events						
	Main Effects	9.89***	.18		3.38*	.18	
	Negative			.16*			.26**
	Positive			-.19*			-.24**
3.	Subject Sex	7.67***	.19	-.09	8.54***	.20	-.18*
4.	CSQ-Trait						
	Main Effects	6.98***	.21		7.94***	.23	
	CSQ-Emotion			.17*			.19*
5.	CSQ-State						
	Main Effects	5.46***	.25		10.27***	.39	
	CSQ-Emotion			.19*			.33**
	CSQ-Rational			-.04			-.06
	CSQ-Detached			-.10			-.23*
6	ECQ-Main Effects	4.62***	.27		8.73***	.41	
	Rehearse			.11			.05
	Aggression			.10			.14*
7	YSEI-Self-esteem	4.19***	.27	-.03	7.96***	.41	-.06

APPENDIX A11 CONTINUED

APPENDIX A11 CONTINUED

Results from Hierarchial Regression Analyses Predicting Time 2 Health Scores

		Health Scores					
		Somatic Illness			Distress		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
8.	Two-way Interact.						
	Main Effects	3.14**	.34		4.87***	.44	
	YSEI X Pos.Events			-.61***			
	Non-significant Interaction Terms						
	YSEI X CSQ-RAT1			-1.99			-.64
	YSEI X CSQ-DET1			1.88			1.08
	YSEI X CSQ-EMOT1			.79			.40
	YSEI X CSQ-AVOID1			-1.01			-.41
	YSEI X ECQ-R			-.06			1.32
	YSEI X ECQ-EI			1.11			1.90
	YSEI X ECQ-BC			-.67			-.32
	YSEI X ECQ-AC			.94			.20
	YSEI X CSQ-RAT2			-.25			-.28
	YSEI X CSQ-DET2			.01			-.15
	YSEI X CSQ-EMOT2			.27			.52
	YSEI X CSQ-AVOID2			-.14			-.10
	YSEI X EVENTS-NEG			-.23			-.04
	YSEI X EVENTS-POS			--			-.15

Table 4.5-FULL REGRESSION MODEL

Results from Hierarchial Regression Analyses Predicting Time 2 Adjustment Scores

		Adjustment Scores					
		Social			Academic		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
1	Time 1 Health	9.34***	.06	.25***	2.86*	.02	-.14
2.	Life Events						
	Main Effects	4.71***	.09		3.38*	.07	
	Negative			-.12			-.23*
	Positive			.17*			.15
3.	Subject Sex	4.06**	.11	-.13	2.86*	.08	-.10
4.	CSQ-State						
	Main Effects	3.41**	.11		2.70*	.09	
	CSQ-Emotion			.08			-.13
5	ECQ-Main Effects	4.03**	.16		2.23*	.09	
	Rehearse			-.10			.06
	Aggression			-.21**			.01
4	YSEI-Self-esteem	6.97***	.27	.39***	2.54*	.12	.19*

APPENDIX A11 CONTINUED

Results from Hierarchial Regression Analyses Predicting

Time 2 Adjustment Scores

		Adjustment Scores					
		Social			Academic		
Step	Predictor	F	R^2	Beta	F	R^2	Beta
5	Two-way Interact.						
	Main Effects	3.14**	.36				
	YSEI X Pos.Events			1.27***			
Non-significant Interaction Terms							
	YSEI X CSQ-RAT1			-.20			-.41
	YSEI X CSQ-DET1			-.22			-.08
	YSEI X CSQ-EMOT1			.36			.20
	YSEI X CSQ-AVOID1			-.28			.10
	YSEI X CSQ-R			.01			.47
	YSEI X ECQ-EI			-.44			-.07
	YSEI X ECQ-BC			-.07			-.05
	YSEI X ECQ-AC			-.42			.14
	YSEI X CSQ-RAT2			.03			.02
	YSEI X CSQ-DET2			-.02			-.01
	YSEI X CSQ-EMOT2			.00			-.09
	YSEI X CSQ-AVOID2			.02			-.02
	YSEI X EVENTS-NEG			-.44			.10
	YSEI X EVENTS-POS			--			.01