

Goal Beliefs, Daily Hassles and Rumination in Depression

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For Margaret, Caroline and Ronnie.

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Abstract

Objective: Goal linking is the tendency to link achievement or failure of low level goals (e.g. weight loss) with achievement or failure of higher level goals (e.g. happiness). This study explored whether people with major depression respond to daily hassles with rumination, as a function of their tendency to goal link, as previously observed by McIntosh and Martin (1992, 1995) in students with lower mood.

Design/ Method: A between subjects design facilitated assessment of goal linking, rumination, daily hassles and life events, using self-report measures in interview, with 22 adults with major depression, compared with samples of 25 adults with other psychological difficulties and 23 adults with no depression history.

Results: Participants with major depression reported significantly greater rumination, goal linking and daily hassles than both comparison groups, and greater impact of more major life events, than never depressed controls. Rumination was found to be more strongly related to group differences in major depression than goal linking.

Conclusions: Primary findings support some role for goal linking in depressive rumination. However, while participants with major depression responded to daily hassles with rumination, it was not as a function of their tendency to goal link. Results tentatively suggest that linking is a consequence of rumination rather than a cause.

Chapter 1. Introduction

1.1 Rumination and Depression

1.1.1 Definitions of depression

Depression is a very widespread condition that causes significant suffering and undermines people's quality of life. Though variable, estimates of the incidence of depression suggest that 15-20% of adults experience significant symptoms of depression at any one point and that depression occurs more frequently among women than men; a ratio of 2:1 in western societies (Fennell, 2003). The onset and course of depression has been related to a wide range of interacting factors that include: the psychological, environmental, historical and biological (Fennell, 2003).

The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR; American Psychiatric Association, 2000) is one of the standard systems that provide classifications of clinical depression. DSM-IV-TR provides definitions for a number of categories of depression including major depressive disorder and dysthymic disorder. Major depressive disorder is characterised by depressed mood (chronic sadness) and/or loss of interest or pleasure in most previously enjoyed activities (anhedonia). These features are accompanied by a range of possible difficulties including disturbed weight or appetite, disrupted sleep, psychomotor agitation or retardation, loss of energy, feelings of guilt or worthlessness, difficulty thinking or concentrating and thoughts of death or suicide. To meet the criteria for major depression, five or more of the symptoms must have been present most of the day for at least two weeks and at least one of the symptoms must be either depressed mood or loss of interest or pleasure. In addition the symptoms must cause clinically significant distress or interfere with social, occupational or other functioning. Further, the difficulties should not be better explained by bereavement or substance use (e.g. abuse of drugs or medication) or a medical condition (e.g. hypothyroidism). Dysthymic disorder is

characterised by milder but chronic symptoms that have been present for at least two years and cause significant distress. While standardized definitions of depression cannot capture the subtleties of each individual's experience, they provide a useful, pragmatic starting point.

1.1.2 Definitions of rumination

Papageorgiou and Wells (2004) highlight that over the past 15 years there has been increasing interest in empirical research and theories of rumination, in an effort to increase understanding of the mechanisms of onset, maintenance and recurrence of depression.

In very general terms, rumination is consistently referred to as some form of persistent, recursive thinking. Often rumination is discussed as a common response to negative mood and a salient feature of major depression (Nolen-Hoeksema, 1991; Papageorgiou & Wells, 2004). Different theoretical orientations, however, define rumination somewhat differently and definitions vary in scope and in the extent to which rumination is viewed as automatic versus controllable and maladaptive versus serving some function. These differences have led to some uncertainty regarding definition and assessment of rumination within the literature (Matthews & Wells 2004). Significant contributions to the literature on rumination have been provided by a range of theories including:-

1. The Response Styles Theory of Depression (Nolen-Hoeksema, 1991)
2. The Self-Regulatory Executive Function model (S-REF: Wells & Matthews, 1994, 1996)
3. The Goal Progress Theory of Rumination (Martin & Tesser, 1989; Martin, Tesser & McIntosh, 1993)
4. The Interacting Cognitive Subsystems Model (ICS: Teasdale & Barnard, 1993)
5. The Self-regulatory Model of Depression (Pyszczynski & Greenberg 1987).

It is beyond the scope of this paper to review each theory in detail. For clarity, details of each model will be described as the issues relating to each are discussed. Given the centrality of The Goal Progress Theory to this study, this theory will be reviewed in greater detail when

discussing goal linking (part 1.2). In many respects the theories are complementary (Brotman & Derubeis, 2004); however a number of distinctions in definitions can be made.

The Response Styles Theory of depression (Nolen-Hoeksema, 1991) defines rumination as repetitive and passive thinking about symptoms of depression and the possible causes or consequences of these symptoms. Thus rumination involves:-

“Repeatedly focusing on the fact that one is depressed: on one’s symptoms of depression: and on the causes, meanings and consequences of depressive symptoms” (Nolen-Hoeksema, 1991, p569)

Examples of ruminative thoughts include repeatedly thinking “what’s wrong with me? Why can’t I get going? My mood is so bad”. This definition is one of the most focused as it refers only to responses to depressed or negative mood. The Response Styles Theory suggests that people differ in their tendency to ruminate and that ruminating in response to negative mood exacerbates and prolongs symptoms and increases depression. Rumination is viewed as the less adaptive response to negative affect; the more adaptive alternatives being engaging in distraction or using active problem solving strategies. The theory views rumination as predominantly unhelpful to individuals and in describing peoples’ responses to low mood it implies that rumination is to some extent controllable.

Matthews & Wells (2004) discuss rumination in the broader context of their self-regulatory model of depression (S-REF Wells & Matthews, 1994, 1996). The S-REF model is a detailed information processing model of general emotional and cognitive dysfunction.

In brief, the model suggests that information is processed at three levels. First, incoming stimuli are processed automatically by lower level processing networks. Secondly a supervisory executive system operates to detect and resolve discrepancies between current and desired states. This is achieved by appraising incoming stimuli and executing coping strategies to resolve discrepancies. Thirdly, appraisal and coping depend on interactions with

the third self-knowledge level. This self-knowledge level includes beliefs about the self, coping plans and importantly meta-cognitive beliefs. Meta-cognitive beliefs include beliefs about rumination which can either be positive or negative; a positive meta-cognitive belief could be “I need to ruminate in order to understand my depression” and a negative meta-cognitive belief could be “ruminating is uncontrollable and will make me lose my mind”.

In S-REF the authors define rumination as repetitive thoughts that occur in an attempt to resolve a discrepancy between desired state (e.g. positive view of self) and information that is being processed about the self (e.g. the thought “I am not coping”). They view rumination as a coping mechanism, driven by beliefs about rumination (one type of meta-cognition, for example “ruminating will help me resolve this issue”), but one that interferes with adaptive coping (e.g. problem solving) and emotional processing. Like Nolen-Hoeksema, the authors argue that rumination is a dysfunctional process. The S-REF model also accommodates findings that those who ruminate often have positive beliefs about ruminating, as also found by Lyubomirsky and Nolen-Hoeksema (1993). Wells and Matthews, however, define rumination as relating to a variety of emotional disorders and not predominantly to depression. Further the S-REF model suggests both mechanisms that are automatic (at lower level processing networks) and controlled (at supervisory executive level and self knowledge level) influence rumination.

Martin & Tesser (1989, 1996) have put forward a relatively broad definition of rumination as: any recurring set of thoughts that revolve around a common theme. More specifically, from a goal progress theory perspective (Martin & Tesser, 1989, Martin et al., 1993), the authors view rumination as the tendency to think about unattained goals. They suggest that when people do not receive clear feedback that they are making progress towards their goals, they engage in mental activities intended to assist them to make progress (e.g. formulating alternative paths to the goal). The authors acknowledge that while rumination does not always help a person to progress with their goals, that is the intended function.

This study examines rumination in the context of depression and goals. Thus an appropriate definition would draw on the work of Nolen-Hoeksema and Martin, Tesser & McIntosh, 1993. Rumination could thus be conceptualized as mentally replaying or focusing on negative thoughts and feelings, their causes and consequences, in response to the occurrence of a stressful event including depressed mood and negative affect (McIntosh et al., 1995; Nolen-Hoeksema, 1991).

1.1.3 Distinguishing rumination from related psychological constructs

Rumination has been shown to demonstrate similarities with a number of related cognitive constructs, including negative automatic thoughts, worry and private self-consciousness; however there are also important differences that distinguish rumination highlighted by Nolen-Hoeksema 2004 and Papageorgiou & Wells 2004.

Beck (1967; 1976) describes negative automatic thoughts, typical in depression, as characterised by themes of past personal loss or failure. Papageorgiou and Wells (2001a) argue that negative automatic thoughts are comparatively brief appraisals of loss and failure in depression compared with the repetitive, re-cyclic, chains of negative thought experienced as rumination. Negative automatic thoughts could therefore represent the content or a snapshot of rumination, while rumination describes the process of re-cyclic thought. Importantly a number of studies evidence that rumination predicts depression over and above its shared variance with different types of negative cognitions, for example dysfunction attitudes (Nolen-Hoeksema, Parker & Larson, 1994; Spasojevic & Alloy, 2001).

While substantial correlations have been found between rumination and worry (Segerstrom, Tsao, Alden & Craske, 2000) there are distinctions in content and process. Worry is characterised more by anticipated future threats and danger (Beck, 1967, 1976) while rumination tends to involve thoughts about current mood, past failure and loss (Wells & Matthews, 1994). In a series of two diary studies, Papageorgiou and Wells (1999a & b)

compared rumination and worry in both clinical and non-clinical samples. Results from both samples indicated that rumination was associated with less verbal content, less compulsion to act and lower effort and confidence in problem solving. Thus rumination would seem more deleterious in terms of problem solving, when compared with worry.

Rumination has been distinguished from private self consciousness (Fenigstein, Scheier & Buss, 1975), a tendency to focus on and analyze the self, regardless of mood. Nolen-Hoeksema & Morrow (1993) found that while rumination significantly predicted depression after statistically controlling for private self-consciousness, private self-consciousness did not significantly predict depression after controlling for rumination.

Collectively these results indicate that while rumination demonstrates some similarities with related constructs, there are important differences which are consistent with rumination being a distinct construct to study.

1.1.4 The negative impact of rumination on mental health

A considerable body of research from experimental, cross-sectional and longitudinal studies provides converging evidence suggesting that rumination in response to stressful events or low mood is associated with the maintenance of depression. For example, people who ruminate show longer and more severe depression or lower mood than people who tend not to ruminate (Nolen-Hoeksema & Morrow, 1991, 1993; Fennel, Teasdale, Jones & Damle, 1987; Just & Alloy, 1997; Kuehner & Weber, 1999). Rumination has also been associated with a range of deleterious outcomes including negatively biased thinking; poor problem solving; impaired motivation; inhibition of instrumental behaviour; reduced willingness to engage in pleasant/distracting events); impaired concentration; social isolation and increased stress (Lyubomirsky & Tkach review, 2004). In addition, rumination is associated with the maintenance of overgeneral memory recall, a recall style characteristic of depression and

associated with greater hopelessness, a higher number of depressive episodes and suicidal behaviour (Williams, 1996). A number of significant studies will be reviewed below.

People who ruminate show prolonged and more severe depression / low mood

1.) A considerable number of laboratory studies demonstrate that people who respond to dysphoria with rumination experience longer and more severe dysphoric mood than those who employ distraction. Several studies have asked dysphoric or clinically depressed participants to engage in rumination (e.g. “think about the kind of person you are”) or distraction (e.g. “think about the size of the statue of liberty”) and found that rumination maintains or exacerbates depressed mood while distraction provides relief (Nolen-Hoeksema & Morrow, 1993; Gibbons et al., 1985; Lyubomirsky et al., 1999). Interestingly, rumination manipulations have not induced depressed mood in non-dysphoric participants indicating that depressed mood is maintained by the combination of dysphoria and rumination (Lyubomirsky et al., 1999).

2.) Nolen-Hoeksema and colleagues have studied rumination in people experiencing naturally occurring dysphoria as a result of everyday stress or trauma. In one of a series of longitudinal studies of bereaved people, Nolen-Hoeksema, Parker & Larson (1994) followed 300 caretaking adults whose friend or relative had died from a terminal illness. Participants were interviewed one month prior to their loss and then at several time points after their loss. Relatives with a more ruminative response style, as assessed using the Response Styles Questionnaire, were more depressed six months after their loss than non-ruminators. This result was maintained even after controlling for initial depression levels, social support and concurrent stressors.

3.) Another frequently cited correlational study illustrating participants’ response to a traumatic event was reported by Nolen-Hoeksema and Morrow (1991). As part of an ongoing program of research, Stanford University students were given 16 ruminative and 16 distractive

responses and asked which they used when experiencing negative or depressed mood. Ruminative responses included items such as “I thought, I won’t be able to get anything done if I don’t snap out of this mood”. Distractive responses included items such as “I did something fun to get my mind off things”. An assessment of mood was also taken. Some students responded primarily with rumination and others primarily with distraction. Unfortunately, but pertinent to the study, a proportion of the participants then experienced the 1989 San Francisco area earthquake. Researchers followed up those involved and found that participants who reported ruminative tendencies before the earthquake were significantly more likely to be depressed ten days and seven weeks after the earthquake than those with a less ruminative style, even after initial depression, destruction witnessed and loss were statistically controlled.

4.) In relation to major depression; prospective longitudinal studies have examined the impact of rumination on people’s risk of experiencing depression. A number of studies (Just & Alloy, 1997; Spasojevic & Alloy, 2001, Nolen-Hoeksema, 2000) have found that people who are not initially depressed, but who ruminate in response to negative mood, are more likely to experience a major depressive episode from one to 2.5 years later. Such individuals are also more likely to experience severe depressive symptoms. In addition, a large community based study of, over 1,100 adults, found that people with clinical depression and a ruminative style had more prolonged and severe symptoms one year after initial assessment, were less likely to experience remission of depression and more likely to experience anxiety (Nolen-Hoeksema 2000).

A number of limitations to these studies should be acknowledged. Many, but not all (e.g. Nolen-Hoeksema, 2000), involve participants who are not clinically depressed, thus making generalization to clinical samples more difficult. Further, rumination is commonly assessed by self-report questionnaires which logically gauge people’s reported response to depressed mood. As with all self-report measures, to some extent the accuracy of people’s report is

unknown. Many of the studies have conceptualized rumination as a maladaptive and relatively controlled, conscious process and results have therefore not been considered in the context of potential adaptive and/or uncontrollable elements of rumination, findings may therefore be over simplified. Conversely the evidence is strengthened by the use of varied longitudinal and experimental studies. Despite these limitations, collectively the evidence is consistent with the assertion that ruminating in response to stressful events, low mood or depression is associated with prolonged and more severe negative affect and depression. As noted above, rumination has also been associated with other maladaptive outcomes, a few of which are discussed below.

Rumination is associated with greater negative thinking and retrieval of negative memories. For example Lyubomirsky and Tkach (2004) review experimental studies comparing dysphoric participants who have been induced to ruminate, with non-dysphoric participants or dysphoric participants induced to distract. Reports from a number of studies indicate that dysphoric ruminators report more pessimistic attributions for distressing events (e.g. "I always seem to fail"); choose more negatively biased and distorted interpretations of hypothetical life events (e.g. minimizing experiences of success); make more negative self evaluations (e.g. "I'm unattractive") and feel less in control of their lives (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1999). In other experimental studies, depressed students who ruminate spontaneously retrieved more recent negative memories and remembered more historic negative events as occurring more frequently than depressed students who employed distraction (Lyubomirsky et al., 1998; Pyszczynski et al., 1989).

Ruminating in response to depressed mood has been found to impair problem solving. Thus the evidence suggests that rumination leads dysphoric individuals to consider their problems overwhelming and unsolvable, to fail to generate effective solutions and to show reluctance to implement any solutions (Lyubomirsky et al., 1999). In a further study, Lyubomirsky and Nolen-Hoeksema 1995 gave students a distracting or ruminative task. Following the task

students were asked to imagine they were experiencing problems in different interpersonal and achievement contexts (e.g. “a friend seems to be avoiding you”). Students were then asked to write an account of the steps they would take to solve each problem. Dysphoric ruminators generated less effective solutions than dysphoric students who distracted or non-dysphoric students who either ruminated or distracted.

One mechanism by which rumination could undermine problem solving is by reducing motivation and the ability to initiate coping behaviour (Lyubomirsky and Tkach, (2004). It is logically intuitive that people who dwell on feelings of depression are more likely to feel ineffectual in their ability to solve problems or alleviate low mood. Lyubomirsky et al (1999) asked students to generate possible solutions to their three biggest problems. Dysphoric students who ruminated were able to generate what they believed were effective solutions, but engaging in rumination lowered the likelihood that they would take steps to implement these solutions. Similarly Lyubomirsky and Nolen-Hoeksema (1993) gave dysphoric ruminators the opportunity to engage in rumination or distraction. These participants chose rumination, despite previously indicating on a questionnaire that distracting activities would be enjoyable and that, perhaps surprisingly, they felt capable to carry out distraction successfully.

The range of negative consequences associated with rumination can generate additional difficulties including stress and impaired interpersonal relationships (Lyubomirsky and Tkach, 2004). For example several studies find associations between rumination and the desire for revenge following interpersonal tension (McCullough et al., 2001); a tendency to assume undue responsibility for others (Nolen-Hoeksema & Jackson, 2001); dependency and neediness (Spasojevic and Alloy, 2001) – factors which could plausibly generate greater social friction and contribute to reports that people who ruminate in response to depression are perceived less favourably by others (Schwartz & McCombs Thomas, 1995). The research evidence for these associations come only from correlational studies, thus limiting conclusions

relating to the direction of influence, however findings are consistent with the suggestion that chronic ruminators style of interacting may be counterproductive.

Rumination is one factor associated with the maintenance of overgeneral memory (Williams, 1996). A body of literature has developed, indicating that overgeneral memory is a characteristic feature of depression (Williams, 1996; Goddard et al., 1996). In overgeneral autobiographical memory, people report general summaries of events (e.g. waiting at bus stops) rather than producing specific autobiographical memories (e.g. standing at the bus stop, at 8am this morning, with my sister Rosalind). Thus when asked to recall specific autobiographical memories to positive and negative cue words, people who are parasuicidal (Williams & Dritschell, 1988) and people with depression (Kuyken & Brewin, 1995) generate more overgeneral memories and fewer specific memories than non-depressed control participants.

Overgeneral memory is found to be clinically significant and is associated with more episodes and poorer outcome in depression; impaired interpersonal problem solving; maladaptive cognitive processing; greater hopelessness and suicidal behaviour (Kuyken & Brewin, 1995; Sidley et al., 1997; Goddard et al., 1996; Williams, 1996; Brittlebank et al., 1993). The process of recalling specific events, is thought to involve two stages: first people access general descriptions and subsequently more specific information (Rubin, 1996). However in depression, memory appears to end the search for specific details early (Williams et al., 2000). This style of processing may reflect an attempt to cope with distressing memories, however it prevents complete processing of specific details of events, helpful in the resolution of strong feelings. Further this style prevents people accessing the details in memory of previously successful strategies, for example in social problem solving (Goddard et al., 1996). Studies suggest that rumination is one of the processes associated with the maintenance of overgeneral memory, which in turn increases individuals' vulnerability.

Overall, the collective evidence suggests that rumination in response to negative affect is associated with a series of harmful consequences, which Lyubomirsky and Tkach (2004) propose most likely interact, creating a vicious cycle of prolonged negative affect and depression, negatively biased thinking, impaired problem solving, lowered motivation and inhibited coping, overgeneral memory recall, impaired concentration and increased stress. Thus there are many mechanisms by which rumination could contribute to depression and wider emotional distress. Critics highlight that while these relationships are plausible they are not necessarily exclusive to rumination (Matthews & Wells, 2004).

1.1.5 Individual differences in rumination

The response styles theory emphasizes that people differ in their tendency to ruminate (Nolen-Hoeksema, 1991). Rumination is viewed as a repetitive thought process that people employ when sad or depressed. While many people may ruminate to some extent when sad or depressed, longitudinal community based studies find that the tendency to ruminate when distressed is a stable individual characteristic (Nolen-Hoeksema & Davis, 1999). Specifically, while many people engage in some rumination when low, others ruminate a great deal and others seem not to ruminate much at all. Nolen-Hoeksema reports that these differences are relatively stable, even as depressed moods exacerbate and remit (Nolen-Hoeksema, 2004).

Rumination has been found to be associated with a number of personality characteristics including neuroticism, pessimism and helplessness. While rumination correlates significantly with neuroticism (Nolen-Hoeksema et al., 1994) it is not redundant with neuroticism; in fact rumination continues to predict depression after controlling for neuroticism. Nolen-Hoeksema suggests that perhaps rumination is a mechanism through which neuroticism contributes to depression. Thus, high levels of neuroticism may yield a particular cognitive style that focusses attention on depressed mood. This cognitive style may increase the probability of developing a ruminative response style, which in turn contributes to depression (see also Nolan et al., 1998). Similarly, while dispositional pessimism and helplessness are

associated with rumination – rumination continues to predict depression after controlling for these characteristics. These personality characteristics with rumination may increase vulnerability to depression (see Gillanders & Fleming, (in press); Nolen-Hoeksema, 2004).

A further source of individual difference, identified by Nolen-Hoeksema, is that people who ruminate experience more chronic stresses. She reports that in community studies ruminators report more chronic problems, and rumination both predicts and is predicted by a history of chronic stress. For example, Nolen-Hoeksema et al (1999) found that adults dealing with chronic stressors, (e.g. low income, marriage and job dissatisfaction) were more likely to ruminate – even when participants' initial depression level was statistically controlled.

In addition to personality factors and life stressors, there are important gender differences in rumination. Just as women are twice as likely to experience episodes of depression (major depression and milder symptoms) than men (Nolen-Hoeksema, 2002), it is consistently found that women are also more likely to ruminate (Butler & Nolen-Hoeksema, 1994). Nolen-Hoeksema's findings suggest that the gender difference in rumination, in part mediates the gender difference in incidence of depression. Thus when they statistically controlled for gender differences in rumination, the gender difference in depression became non-significant. Nolen-Hoeksema propose that differences in rumination are only one of multiple factors contributing to women's greater vulnerability to depression, but one that keeps women "stuck in cycles of passivity, impairing their ability to overcome other problems contributing to their depression" (Nolen-Hoeksema, 2004 p112).

There are many possible explanations for gender differences in rumination. Nolen-Hoeksema discusses several: for example women report more chronic stressors (e.g. low income) and traumatic events (e.g. sexual abuse) than men – experiences that partially contribute to gender differences in rumination (Nolen-Hoeksema et al., 1999; 1998). Furthermore a community based study revealed that: women are more likely than men to believe that negative emotions

are difficult to control; to feel responsible for relationships and to experience little control, or mastery, over important life events. These factors are associated with a greater tendency to ruminate and, though speculative, may in part result from socialization, for example girls being less frequently encouraged to use active coping strategies than boys. Nolen-Hoeksema acknowledges that no one variable fully accounted for gender differences and that within women there are marked individual differences in rumination (Nolen-Hoeksema & Jackson, 2001). Thus sources of individual difference in rumination include personality factors, life stressors and gender.

1.1.6 Developmental origins of rumination

Why do some people engage in rumination when sad, while other people seem not to? In addition to individual differences, Nolen-Hoeksema (1991) has considered a number of possible developmental factors which may contribute to a tendency to ruminate.

First, she speculates that children may learn to ruminate from their parents if parents model a ruminative style. A study by Nolen-Hoeksema, Wolfson, Mumme and Guskin (1995) provides some evidence for the impact of modelling. The authors found that compared with children of non-depressed mothers, 5-7 year old children of depressed mothers were more likely to display passive and helpless responses to frustrating situations. Further, children whose mothers demonstrated more ruminative responses to depressed mood were more likely to respond to challenges with a passive and helpless style.

Secondly, rumination may become an overused response to negative mood if children are not taught alternative adaptive coping strategies such as problem solving. Children may thus be limited in their repertoire of coping responses. In the above study (Nolen-Hoeksema et al., 1995) the authors examined the way that parents interacted with their children when their children were frustrated in a task. They found that when mothers were (a) intrusive and did not allow the child to problem solve, (b) did not teach their child to attempt alternative

strategies and (c) criticized the child for failing, children were less able to regulate emotion becoming helpless when upset and demonstrated poorer problem solving. Nolen-Hoeksema speculates that social reinforcements may also operate. Traditional social expectancies, of men to be “active and strong” and women to be “nurturing” may influence parents to be more likely to actively teach or expect sons to adopt a problem-solving approach than daughters (Maccoby & Jacklin, 1974; Siegel & Alloy, 1990). Thus while parents may not actively encourage rumination in girls, they may be less likely to encourage active problem solving when daughters are upset relative to sons.

Thirdly, biological mechanisms are likely to contribute to the development of a ruminative response to low mood. People with stronger physiological responses to stress may be less able to distract themselves from negative emotions and overcome distress, as children and adults, resulting in greater self focus and helplessness. Nolen-Hoeksema (2004) highlights studies indicating that children with a history of abuse or neglect may develop dysregulation in their stress responses – indicated by differences in cortisol, hormone and cardiac measures between people with and without a history of abuse (Heim et al., 2000). Thus children with a biological vulnerability to emotional dysregulation that impedes adaptive coping may develop a stronger ruminative response style. Biological reactivity is also associated with increased likelihood of major depression in adulthood (Nolen-Hoeksema, 2004). Nolen-Hoeksema notes that research on the developmental origins of rumination is to date relatively sparse.

1.1.7 Functions of rumination – why do people choose to ruminate?

As reflected in different theories and definitions of rumination, there is a degree of debate regarding the extent to which people do in fact choose to ruminate or whether rumination is a more uncontrollable process, these issues will be explored more fully in section 1.1.9.

To the extent that rumination may be within conscious control (Nolen-Hoeksema, 1991), why would people choose to ruminate given that it is associated with extensive negative outcomes?

The work of several authors, from different theoretical perspectives, is of relevance to this question.

From their goal progress perspective, Martin and Tesser (1989, 1996) propose that people engage in rumination in an attempt to attain important goals which are not yet achieved. Rumination thus serves a function of responding to a discrepancy between a person's current and desired state in relation to attainment or progress towards a goal. Rumination enhances self regulation by keeping information related to the unattained goal accessible in memory for as long as the discrepancy is detected. The authors highlight that although rumination may ultimately not be beneficial or result in goal progress, this is the intended function. Thus individuals may choose to ruminate as they believe it will help them to progress towards goals.

From the response styles theory perspective, Nolen-Hoeksema (1991) proposes that by focusing attention inwardly on people's depressive feelings and the possible causes, consequences and meaning of these feelings and problem situations – rumination may be an attempt by individuals to gain insight. Significant to this proposal is the study by Lyubomirsky and Nolen-Hoeksema (1993). As previously noted, in this study dysphoric undergraduates who were given the option of engaging in rumination or distraction chose to ruminate. This choice was made even though participants had previously reported that they anticipated distracting activities would be enjoyable and feasible. In fact, dysphoric participants' self reported efficacy to undertake the distraction task did not differ significantly to ratings by non-dysphoric participants. Interestingly, dysphoric participants believed that rumination would lead to insight about themselves and their problems, thus undertaking rumination even though they were aware it made them feel worse and resulted in relatively poor problem solving. Findings were also consistent with a goal progress viewpoint in that participants indicated that insight represented a valued goal, such that the attainment of insight (low level goal 1) would lead to resolution of depression (higher level goal 2). Nolen-

Hoeksma notes anecdotally that ruminators will report feeling that they are “finally being realistic about facing their problems” when ruminating. Such positive beliefs and senses about rumination, in combination with demanding feeling of low mood, most likely reinforce a ruminative response style. People may choose to ruminate as they believe it will lead to insight.

In their S-REF model, Wells and Matthews (1994) view rumination as one of several factors involved in increasing vulnerability to and maintaining different emotional disorders. Rumination and worry are viewed as coping strategies that people can, on several levels, choose to engage in. They propose that the choice to ruminate is based on a meta-cognitive belief (a belief about beliefs, including rumination) in the value or purpose of rumination. Thus the information people hold in their knowledge base, the model’s third level, makes them more or less vulnerable to select and engage in rumination as a coping strategy. Empirical support for the model and the role of meta-cognitive beliefs about rumination has been found in a series of studies by Papageorgiou and Wells (2001a & b; 2003).

Papageorgiou and Wells (2001a & b) carried out semi-structured interviews with participants with major depression to assess the presence and content of meta-cognitive beliefs about rumination. They found that all participants reported holding both positive and negative beliefs about rumination. Themes within positive beliefs reflected viewing rumination as a coping strategy, for example “I need to ruminate in order to understand / find answers to my depression”. Themes within negative beliefs reflected viewing rumination as (a) uncontrollable and harmful and (b) resulting in negative interpersonal outcomes. Examples include “ruminating about my problems is uncontrollable” and “people will reject me if I ruminate”.

From initial interviews the authors developed two self-report scales to assess positive and negative beliefs about depressive rumination: the Positive Beliefs about Rumination Scale

(PBRS Papageorgiou & Wells 2001a) and the Negative Beliefs about Rumination Scale (NBRS Papageorgiou, Wells and Meina, in preparation) that show good psychometric properties. Subsequent studies revealed that positive and negative metacognitive beliefs are significantly and positively correlated with rumination and depression in samples of people with clinical depression (Papageorgiou and Wells, 2003) and non clinical samples (Papageorgiou and Wells, 2001a & b; 2003). Path models revealed that, higher endorsement of meta-cognitive beliefs is associated with greater tendency to ruminate and in turn with higher levels of depression (Papageorgiou & Wells, 2001c; 2003).

In relation to metacognitive beliefs, the S-REF model suggests that positive beliefs about rumination will encourage people to engage in repeated rumination. However, once rumination is operating, people appraise the experience as (a) uncontrollable and harmful and (b) likely to generate negative social responses. Negative beliefs about rumination thus exacerbate the experience of depression and a cycle of interactions between rumination, depression and metacognition may contribute to the maintenance of depression (Papageorgiou & Wells, 2004). Nolen-Hoeksema (2004) points out that the origins of positive and negative metacognitions are as yet unknown.

Though considered separately by the different studies, there is overlap between the concepts of goal attainment, insight and wider metacognitive beliefs. Metacognitive beliefs refer to any belief about thinking. This broad category includes all positive and negative thoughts about rumination. The valued goal related beliefs are an example of a subset of metacognitive beliefs, the subset of beliefs that goal attainment (e.g. promotion) is necessary for the individual to attain their desired state (e.g. self worth). The belief that rumination will result in insight to relieve depression is an example of one specific positive metacognitive belief, that as previously described could also belong the subset of goal related beliefs. Distinction between the concepts reflects the focus of different studies. Overall it would seem that to the extent that people are able to choose to ruminate in response to depressed mood, they may do

so as they initially believe it will be helpful: in an effort to attain valued goals, gain insight or as a response to other positive metacognitive beliefs about rumination.

1.1.8. To what extent is rumination adaptive versus maladaptive?

As previously indicated, different theoretical approaches explore to a differing degree, the possibility that rumination may be adaptive and functional as well as maladaptive. Nolen-Hoeksema's work has focused predominantly on the deleterious impact of rumination, emphasizing that even efforts to self-reflect in the context of problem solving can result in recyclic negative thinking leading to impaired mood (Nolen-Hoeksema, 1996). In contrast Martin and Tesser (1996) propose that, though not always, rumination can be adaptive in leading an individual towards solving a problem. Wells and Matthews (1994;1996) view rumination as a coping strategy but highlight that it can become unhelpful, interfering with adaptive coping, where people are unable to resolve a discrepancy between current and desired state or to give up a goal.

Nolen-Hoeksema (2004) and others consider that the evidence found depends very much on how you define or operationalise rumination. Treynor et al (in press) carried out a recent factor analysis of the Ruminative Response Scale (RRS of the Response Styles Questionnaire: Nolen-Hoeksema & Morrow, 1991), a measure used in many studies to assess people's tendency to ruminate when distressed. Two factors were found, labeled as "reflection" and "brooding". Reflection represented "a purposeful turning inward to engage in cognitive problem solving to alleviate depression"; while brooding represented "a passive comparison of ones current situation with some unachieved standard" (Nolen-Hoeksema, 2004 p116). Although reflection was associated with greater current depression, it was associated with less depression over time in longitudinal analysis. Brooding, however, was correlated with greater depression both currently and in the long term. The authors suggest that in contrast to brooding which appears generally maladaptive, reflection may either trigger or result from low mood in the short term, but eventually lead to adaptive responses (e.g. such as problem

solving) with concurrent reduction in depression. Thus perhaps not all forms of rumination are maladaptive. Further evidence for this suggestion comes from the recent work of Watkins, Teasdale and Baracaia in the context of the Interacting Cognitive Subsystems model (ICS: Teasdale & Barnard, 1993).

Watkins and Teasdale (2004) highlight that in addition to the large body of research that reveals maladaptive consequences of ruminative self focus, there is evidence suggesting that cognitive focus on mood, problems and self experience can be of benefit. In brief, studies indicate that a form of self focus is necessary for successful emotional processing of negative mood in the short term (Hunt 1998). Self focus also facilitates more effective self regulation and greater self awareness and self-knowledge (Carver & Scheier, 1990). Furthermore, reducing the negative effects of ruminative self focus by distracting attention away from self related information may not be ideal in terms of dealing with recurrent depression. Watkins and Teasdale (2004) point out that firstly many people with depression find attempts at continuing distraction too effortful; secondly distraction may strengthen thought suppression and avoidance which are both associated with recurring negative mood; thirdly, distraction removes the likelihood of knowing ones thoughts and feelings or developing alternative interpretations of experiences – both key components to cognitive therapies for depression (Beck, 1979; Teasdale, 1999).

Teasdale (1999) reconciles these contrasting findings in the suggestion that there are distinct types of self-focused attention that impact on functioning differently. Specifically the authors contrast experiential self-focus with an analytic, conceptual-evaluative style of self focus. Experiential self-focus is characterised by focusing attention on one's intuitive experience and raising awareness of emotions. This form of self-focus is thought to be adaptive and shares some similarity with Nolen-Hoeksema's "reflection" factor (e.g. purposeful attending). In contrast conceptual-evaluative self focus is characterised by analytical thinking about the meanings, consequences and causes of emotions in an effort to make sense of ones

experience. This form of self-focus more closely resembles “brooding” and is associated with maladaptive outcomes. The distinction between these types of self focus is consistent with assumptions from Teasdale and Barnard’s Interacting Cognitive Subsystems (ICS: 1993) model and supported by a growing number of studies, a few of which will be considered shortly.

ICS provides a very detailed framework of how people may process information and the impact of information processing on emotion and cognition. As part of the ICS model, Teasdale and Barnard propose that incoming information can be synthesized and represented at two qualitatively different levels of meaning: the propositional level and the implicational level. The propositional level processes information that includes specific facts that can be explicitly represented in language (e.g. Edinburgh is the capital of Scotland). The implicational level processes information that takes the form of an implicit “felt sense” based on patterns of experience (e.g. a sense of belonging or national pride). The model suggests that, at any one time, people can only process information at one of these two levels. Furthermore it is proposed that it is only implicational representations that are involved in the generation and experience of emotion. The suggestion is that processing information mainly at the propositional level is characterised by a conceptual-evaluative or analytical thinking about the self that focuses on discrepancies. In contrast processing information predominantly at the implicational level is characterised by a non-evaluative experiential awareness (Watkins, 2004).

A growing body of research supports the distinction of different types of self focus. Several studies investigate the impact of different types of self focus on people’s recall of overgeneral memories. As previously noted, overgeneral autobiographical memory (Williams, 1996) is sometimes observed in people when they are asked to recall a specific personal memory. Watkins and Teasdale (2004) also report that overgeneral memory has previously been found to be higher in people with depression than non-depressed individuals (Williams, 1996); is

associated with maladaptive cognitive processing and poorer outcome in depression and other difficulties (e.g. PTSD). In an experimental study, Watkins and Teasdale (2004) induced participants with major depression to engage in either experiential or analytical self focus and then gave participants an autobiographical memory test. They found that engaging in experiential self focus reduced overgeneral memory recall in depressed participants relative to depressed participants who undertook analytic self focus. In this study the format of self focus did not result in different effects on mood. This study replicates a similar study by Watkins and Teasdale (2001). The authors acknowledge that the studies are somewhat limited by the absence of a control group (e.g. patients not currently engaged in any form of rumination) making it uncertain if overgeneral memory was maintained by analytical self focus or reduced by experiential self focus. It is also perhaps surprising that no difference in mood was detected. However the differential impact of types of self focus on emotional experience was demonstrated in a further study by Watkins (2004).

Watkins (2004) asked university volunteers who did not have major depression to write about an induced failure experience on a problem solving task. Participants were also led to believe that performance on the task was associated with intelligence. Instructions for writing about participants' experience of the task induced them to process information in either a conceptual evaluative manner (why did you feel this way? What were the causes, meaning for your performance) or an experiential manner (how did you feel moment by moment during the test and now?). Watkins found that 12 hours after the failure experience, people with a tendency to ruminate experienced greater negative mood in the conceptual-evaluative condition than in the experiential condition. Further, the conceptual-evaluative style of processing was associated with participants experiencing more intrusions about the failure experience than from experiential processing.

Type of self focus has also been demonstrated to influence problem solving. Watkins and Baracaia (2002) gave currently depressed, recovered depressed and never depressed

participants a social problem solving test. For each problem scenario participants were asked to review either (a) state type questions on the causes of the problem, similar to a conceptual evaluative style of self focus (e.g. what caused this problem?); (b) process type questions on how they are deciding to solve the problem, similar to a reflective / experiential style (e.g. how am I deciding on a way to solve this problem?) or (c) no questions. As expected, in the no questions condition, depressed participants were more impaired at social problem solving than the other participants. Process focused questions resulted in significantly better social problem solving in depressed patients compared with the state or no questions. Further, compared with process questions, state questions impaired social problem solving among recovered depressed participants.

The collective evidence would suggest that while certain forms of ruminative self-focus (conceptual-evaluative; brooding) are consistently associated with negative outcomes, other types of self-focus (experiential; reflection) may be less deleterious in the long term and would appear to be of benefit in raising self awareness and facilitating many of the processes often undermined in ruminative self-focus (social problem solving, specific memory recall, recovery from failure and mood). The studies also highlight the value of clarity in defining what aspects of rumination are being assessed in research.

1.1.9 To what extent is rumination automatic versus controlled?

Many studies and models view rumination as a predominantly conscious, controlled process that people choose to engage in, as opposed to distraction or problem solving (Nolen-Hoeksema, 1991). This choice is made in the pursuit of goals (Martin and Tesser, 1989, 1996), to gain insight or in response to wider metacognitive beliefs (Lyubomirsky & Nolen-Hoeksema, 1993; Wells & Matthews, 1994). There is also evidence and discussion in the literature to suggest that rumination, particularly in depression, demonstrates an uncontrollable and automatic quality (Teasdale & Barnard, 1993; Pyszczynski & Greenberg, 1987).

Within S-REF (Wells & Matthews, 1994) distinctions are made between processes that are controlled and those which may operate more automatically. Thus while the model maintains that level two S-REF processing (appraisal and initiating coping strategies) and level three activation of self knowledge (including metacognitive beliefs about rumination) are controlled, conscious processes – it also suggests that coping strategies operate in part by attempting to influence lower level automatic processes such as intrusive thoughts and bodily sensations.

An important component of Teasdale and Barnard's ICS information processing model (1993) is the concept of depressive interlock. The authors suggest that each level or subsystem of the model, including implicational and propositional subsystems, sends codes of the particular type of information generated at that subsystem, to the other subsystems, as appropriate on the basis of learned co-occurring regularities of experience. In other words there is transmission of information between components. Depressive interlock occurs between processing at the propositional and implicational levels of meaning, in response to depression and self relevant information. Specifically, interlock occurs when propositional meanings (e.g. I failed this task last time) generate implicational information (e.g. a felt sense of being useless or worthless) which in turn feeds back into the propositional model from which it was generated, adding to the propositional model (e.g. I can't do this, it's my fault). Thus information processing becomes locked or stuck on a theme, in a reciprocal feedback cycle that in turn maintains depressed mood. This cycle of information exchange between different levels of meaning is conceptualized to operate automatically rather than, for example, as a conscious attempt at coping. There is some evidence to support the concept of depressive interlock, for example where individuals with depression demonstrate perseveration, becoming stuck, in their responses to negatively and positively toned self related information, but not to neutral information (Gillanders & Fleming, (in press)). Correlations of rumination with neuropsychological processes are consistent with elements of repetitive thinking being less

conscious and controllable (see DeglInnocenti, Agren & Backman, 1998). Though testing the model is somewhat limited by its complexity and lack of definition of implicational representations, evidence for an automatic element to rumination also emerges in further models and studies detailed below.

Another model suggesting that rumination in depression may be less controllable than sometimes assumed comes from Pyszczynski and Greenberg's self-regulatory model of depression (1987). The model suggests that depression is initiated by loss of an important source of self worth (e.g. a relationship / job / role). The person will try to reduce the discrepancy between their current state (loss of worth) and desired state (self worth) for example by replacing what was lost or devaluing / minimizing the lost object. If they are unable to replace or devalue what is lost, they become stuck in an automatic cycle of self-regulation and self focus, locked onto the discrepancy between actual and desired state. This constant mental cycling is effortful and leads to strong negative emotions.

The authors develop their model in relation to Abramson, Seligman & Teasdale's (1978) Revised Learned Helplessness theory. Specifically it is suggested that when someone becomes stuck in a self-regulatory cycle they begin to make more internal, stable and global attributions for negative events (e.g. explaining a redundancy as "I have nothing to contribute"). Such attributions may be the only way that a person can stop the unpleasant self-regulatory cycle; however they generate the formation of a negative identity. Given that exiting the self-regulatory cycle is negatively reinforcing, through relief from mental effort and distress, further negative attributions are likely, thus building on a negative identity and maintaining low mood and ultimately depression (Pyszczynski & Greenberg, 1987).

Experimental evidence in support of Pyszczynski and Greenberg's model includes work by Carr, Teasdale and Broadbent (1991). In this study non-clinically depressed participants were given a sentence completion task that assessed the extent to which participants were self-

focused versus externally focused. The task was given to participants before and immediately after they were induced to experience elated or dysphoric mood. It was found that in comparison to elated mood, dysphoric mood significantly increased self focus but did not reduce positive or neutral external focus. The findings are consistent with the model's hypothesis that negative mood is associated with an increased self focus. As previously discussed, the finding that self-focused dysphoric rumination is associated with negative outcomes such as increase in retrieval of negative autobiographical memories (Lyubomirsky et al., 1998) and poorer social problem solving (Watkins & Baracaia, 2002) supports the suggestion that a self-regulatory system such as Pyszczynski and Greenberg's is unhelpful in managing mood, particularly for people with significant life stressors and few coping resources.

It would seem important to recognize the contribution of models and studies highlighting an uncontrollable quality to rumination – particularly within the context of depression. Just as different types of self focused thinking may be more or less adaptive and harmful, different aspects of mechanisms of rumination may be more or less within a person's conscious control. This would have implications for treatment of rumination in depression and in broadening our understanding of why people may continue to ruminate even when it fails to effectively manage mood.

1.1.10 Therapeutic Implications

The research findings outlined to date have resulted in a number of treatment approaches that aim, in part, to address rumination and relieve depression. No one theory or conceptualization is dominant in terms of efficacy (Robinson et al., 1990) and Nolen-Hoeksema suggests that perhaps a rationale to understand rumination and steps to overcome the associated negative outcomes and distress are the common factors in therapeutic benefit. The main suggested therapeutic approaches, that most directly address rumination, include cognitive-behavioural therapy (CBT: Beck et al., 1979); work that targets metacognitive beliefs (Papageorgiou &

Wells, 2001a&b) and mindfulness based cognitive therapy for depression (MBCT Segal et al., 2002; Teasdale et al., 2000) discussed in brief below.

The cognitive component of CBT involves patients identifying negative thoughts within patterns of rumination and considering alternative interpretations of the situation. Nolen-Hoeksema (2004) reports a suggestion given by Teasdale et al (1995): that CBT is helpful, not because the content of negative thoughts at times of low mood change, but because patients learn to step back from distressing cognitions when they occur, consider the validity of the thought and replace the message with a more adaptive one (Nolen-Hoeksema, 2004). The behavioural component of CBT would involve teaching patients skills in active problem solving and distraction to interrupt or prevent an unhelpful cycle of ruminative thought. Distraction and problem solving have been shown to be beneficial (Lyubomirsky & Nolen-Hoeksema, 1995) particularly where problem solving addresses overcoming the tendency to feel uncertain about implementing solutions (Ward et al., 2003). Given previous considerations of uncontrollable elements to rumination and the adaptive features of some elements of self-focus, these strategies alone may be insufficient to treat people experiencing a near continuous state of analytic rumination.

In the context of the S-REF model, Papageorgiou and Wells (2001a&b) propose that interventions should focus on addressing patient's metacognitive beliefs about rumination that maintain analytic rumination as a viable coping strategy. Positive beliefs about rumination could be countered but further negative beliefs (rumination will make me kill myself), that exacerbate negative mood, could be addressed to normalize the experience of repetitive thinking, highlighting the adaptive elements of experiential self-focus.

Mindfulness based cognitive therapy (MBCT Segal et al., 2002) suggests that people with depression practice becoming mindfully self-aware, observing ruminative thoughts and emotional states in a non-judgmental and non-evaluative manner. Mindful self awareness is

akin to experiential self focus (Teasdale, 1999) and aims to help people disengage from thoughts that seem, and perhaps to an extent are, uncontrollable. The process of detachment may provide a better state from which to consider alternative coping strategies. MBCT was originally developed to teach recovered but recurrently depressed people to disengage from rumination at times of possible relapse. Two randomized controlled trials (Ma & Teasdale, (in press); Teasdale et al., 2000) found that in comparison to treatment as usual, MBCT reduced relapse rates by 50% in patients with three or more previous episodes of major depression. Therapeutic approaches that promote adaptive self reflection while equipping patients with alternative coping mechanisms to analytic rumination would reflect the breadth of empirical evidence on rumination to date.

1.1.11 Summary

The issues considered thus far, within the literature on rumination, are summarized below. DSM-IV-TR (APA, 2000) provides a pragmatic definition of major depression as characterised by chronic sadness and / or loss of interest or pleasure in most previously enjoyed activities, accompanied by a range of possible biopsychosocial difficulties. Rumination can be broadly defined as persistent, recursive thinking. Definitions of rumination vary, however, from different theoretical perspectives in scope and the extent to which rumination is considered controllable and maladaptive. This study focuses on rumination in the context of people's beliefs about their goals. Following Nolen-Hoeksema (1991) and Martin, Tesser & McIntosh (1993) rumination will be defined as mentally replaying or focusing on negative thoughts and feelings, their causes and consequences, in response to the occurrence of a stressful event including depressed mood and negative affect. Though sharing some similarities, rumination can be distinguished from related mental constructs such as negative automatic thoughts, worry and private self consciousness (Nolen-Hoeksema, 2004; Papageorgiou & Wells, 2004).

Rumination in response to depressed or dysphoric mood has been associated with a range of harmful outcomes, particularly a prolonged and more severe depression (Just & Alloy, 1997; Nolen-Hoeksema, 2000). Wider associated negative outcomes include greater negative thinking and retrieval of negative memories (Lyubomirsky et al 1998; 1999); poorer general and social problem solving (Lyubomirsky et al., 1999; Watkins & Baracaia, 2002); reduced motivation, autobiographical over general memory (Williams, 1996), reduced instrumental behaviour and associated stress and interpersonal difficulties (Lyubomirsky & Tkach, 2004).

Some people appear to engage in rumination following low mood and stress far more than others. A tendency to ruminate is associated with various personality characteristics (e.g. neuroticism) and increased life stressors (Nolen-Hoeksema et al., 1994; 1999). Gender differences exist, with women demonstrating a greater propensity to ruminate as well as a greater vulnerability to depression than men (Butler & Nolen-Hoeksema, 1994). Nolen-Hoeksema (1991) suggests a number of developmental origins for rumination including children learning to ruminate from their parents, lack of alternative coping strategies and biological mechanisms.

One area of discussion within the literature examines why people might engage in a ruminative style of response. Research indicates that pursuit of goals (Martin & Tesser, 1989; 1996), gaining insight (Lyubomirsky & Nolen-Hoeksema, 1993) and other metacognitive beliefs about the functionality of rumination are of relevance (Papageorgiou & Wells, 2001a & b). Studies exploring different facets of self-focused attention reveal that experiential, reflective self focus seems adaptive for example by raising self awareness and facilitating social problem solving. In contrast a conceptual-evaluative, analytical style of self focus is associated with maladaptive outcomes (Teasdale & Watkins; Watkins, 2004; Watkins & Baracaia 2002). This study will consider the impact of goal beliefs in relation to the more maladaptive analytical style of rumination. Finally, while some aspects of rumination may be conscious and controllable (Nolen-Hoeksema, 1991) other elements would seem far less

controllable or automatic (Wells & Matthews, 1994; Teasdale & Barnard, 1993; Pyszczynski & Greenberg, 1987). This debate within the literature provides a broader understanding of rumination in depression and is reflected in different therapeutic suggestions such as distraction; problem solving and mindfulness based cognitive therapy (Segal et al., 2002).

As this study will focus on goal beliefs and rumination, the next section will examine the literature on goal linking and Martin et al's (1989; 1993) goal progress theory in more detail. It is helpful to consider these issues within the broader background of research on rumination previously discussed.

1.2 Goal Linking

1.2.1 The Goal Progress Theory of Rumination

For clarity, the goal progress theory will be presented first and evidence to support the model considered subsequently. To recap, authors of the goal progress theory (Martin & Tesser, 1989, 1996; Martin, Tesser & McIntosh, 1993) offer a broad definition of rumination as recurring thoughts that revolve around a common theme (Martin & Tesser, 1989), that are often experienced as intrusive and aversive, remaining conscious for some time despite people's efforts to reduce them (McIntosh & Martin, 1992). A key aspect of the model is the view that rumination is a tendency to think repeatedly about important unattained goals. Rumination is thought to be triggered when people perceive that they have failed to reach an important goal or that they are failing to progress towards a goal at a sufficient rate. People engage in rumination as an attempt to make progress towards the goal (e.g. generating alternative paths to the goal, possibly enhancing the salience of the goal thus increasing motivation). The model suggests that rumination continues until the goal, or progress, is attained or the individual gives the goal up. In this respect the model shares similarities with Pyszczynski & Greenberg's self regulatory cycle and the S-REF view of rumination as an attempt to resolve a discrepancy between current and desired states.

Important to one of the model's proposed underlying causes of rumination is the Zeigarnik effect. Zeigarnik (1938) found that information that relates to incomplete tasks tends to be held in memory for longer than information relating to completed ones. Specifically, participants were given several repetitive tasks to do (e.g. stringing beads), some they were allowed to complete while others were interrupted. Participant's recalled more of the interrupted tasks. This finding was replicated by a number of authors (Millar et al., 1988; Wicklund & Gollwitzer, 1982). This supports the suggestion that failure to reach a goal keeps information about the goal highly accessible in mind. Information related to unattained goals has also been found to be more easily cued and more likely to be drawn on than information which is as relevant but less accessible (Martin et al., 2001). Therefore information which might be otherwise ignored or not noticed, may trigger rumination. Clark, Henry and Taylor (1991) illustrate these processes with an example: a woman who wishes to have a baby but discovers she is infertile (unattained goal) may experience highly accessible thoughts about infertility. Thus if she passes displays of baby food in the supermarket, she may be induced to ruminate about infertility even though the display would have little effect on others in whom thoughts related to infertility were less accessible, or in herself prior to diagnosis. Thus the theory proposes that it is the increased accessibility of goal related information that gives rise to rumination. It is interesting to consider, in such an example, what the purpose of rumination might be? The woman knows that she will not reach her goal of conceiving a baby; therefore rumination cannot result in goal progress. Perhaps where goals cannot be attained, rumination occurs as an attempt to process the associated emotional distress and reduce the discrepancy between actual and desired states.

Within the context of goal progress, rumination is viewed as serving a function through self-regulation. Accessible goal related information gives rise to rumination and in turn rumination keeps goal related information accessible, increasing the likelihood that goal related information that might assist with progress will be detected and processed. Arguably

rumination could detect information that facilitates problem solving strategies, resulting in progress and termination of rumination, an adaptive outcome; or it may result in more rumination and prolonged recursive thinking, ultimately maladaptive if not leading to goal progress. Thus, the authors acknowledge, while rumination does not always help someone progress with goals, that is the intended function. This part of the model is compatible with Wells and Matthews's S-REF model and with Pyszczynski and Greenberg (1987), in that rumination is perceived as promoting self-regulation, serving a function and is triggered by a discrepancy between current and desired state.

The authors suggest that people's goals are structured in hierarchies, such that people pursue lower order, day to day, goals (e.g. losing weight or writing a letter) to reach important higher order goals (e.g. being happy or communicating love to a partner). Goals lower in the hierarchy are considered easier to substitute or abandon than higher goals. Martin et al (1993) illustrate that if a person was unable to write their partner a letter, they could telephone to communicate love. Being unable to attain lower order goals will engender rumination only to the extent that it blocks higher order goals. For example, if writing a letter is the only option available to communicate with a partner, then inability to write is more likely to lead to rumination than where multiple options are available. The higher a goal in the hierarchy, the more likely a threat to this goal will engender rumination. For example, for someone who only links weight to a health goal, failing to lose weight will be more likely to lead to rumination if it is putting health at serious risk than if it only means making clothes a little tight. For another individual who links weight to a social acceptability goal, however, clothes being tight may lead to much rumination. Furthermore, it is proposed that while some hierarchies are objective and inevitable (e.g. must unlock a door before opening it), others are quite personal and subjective (e.g. does being rich really lead to happiness?). This subjectivity means that different people can draw different conclusions from the same goal threat. McIntosh, Harlow and Martin (1995) provide an illustration: thus two people may wish to lose some weight, but over a week neither does. Person one links weight loss (a lower order goal)

to being able to start a romantic relationship, being loved and ultimately being happy (a higher order goal), while person two does not. The hierarchy assumption would suggest that person one is more likely to ruminate than person two, for whom not losing weight is just this and not linked to not being happy, even though both have experienced the same objective stress (e.g. being 5lbs overweight).

By definition “goal linking” is where people link the achievement or failure of a low level day to day goal (e.g. losing weight) to the achievement or failure of a higher level goal (e.g. being happy) (McIntosh & Martin, 1992). Importantly, the authors suggest that people differ in the extent to which they link goals (McIntosh & Martin, 1992). People who make a lot of links between lower and higher level goals, “linkers”, maintain that achieving the low level goals (e.g. weight loss) are *necessary* for attaining the higher order goal (e.g. happiness). In contrast “non-linkers” may see specific low level goals as desirable but not view higher order goals as contingent on day to day goals. Linking, as a set of beliefs, thus represents a further form of metacognition. Further people who link lower order goals (e.g. having a new car) to higher order goals (e.g. improved social life /status) are more likely to ruminate and experience lower mood until the lower order goal is met than people who don’t make such links.

Although the authors often discuss linking and non-linking as separate styles, they recognize that linking is perhaps better conceptualized as a continuum with people being more or less linked to any given goal. It is suggested that one mechanism by which rumination may influence mood is by a polarizing affect: thus the more people consider something that makes them feel positive or negative, the more extreme the initial emotion becomes (McIntosh & Martin, 1992). In addition a distinction is made between linking and viewing a goal as important. In other words, people can view a goal as worth striving for without considering that higher order goals (e.g. happiness) are contingent on it. It is well recognised as necessary for day to day functioning and health to pursue goals (Millar & Seligman, 1975; McIntosh & Martin, 1992).

The model thus suggests that goal linking, the belief that attaining specific sub goals leads to attainment of important higher order goals, can cause people to ruminate when lower order goals are threatened and in turn will be associated with greater low mood and depression. The model predicts that compared with non-linkers, people who link goals are more likely to experience rumination and prolonged depression following stressful events. Further it is predicted that rumination mediates the relationship between linking and negative affect (McIntosh & Martin, 1992; Martin et al., 1993; 1996). Figure one below illustrates the role of goal beliefs in rumination and negative affect. Evidence for these predictions will be explored more fully shortly.

Finally, the authors note that ironically the attainment of many objective life situations (new car, weight loss) are not good predictors of long term happiness. Thus Kammann (1982) found that most objective life circumstances accounted for less than 5% of the variance in people's judgements of subjective well being. The authors explain this phenomenon in relation to Adaptation-level-theory (Brickman et al., 1978; Helson, 1964) which suggests that well being judgements are made by comparing experience to an internal subjective neutral point which shifts with experience. Thus events that at one time seem very positive (having a new car), may seem less so after people get used to experiencing them. According to the theory what is important in well being and happiness judgements are people's perceptions of events (McIntosh & Martin, 1992). Why therefore do some people, linkers, believe that attaining certain low level goals are necessary for higher goals such as happiness? It is suggested that perhaps linkers are following culturally shared theories rather than attending to their own feelings. The next sections will consider the evidence for goal progress theory and goal linking.

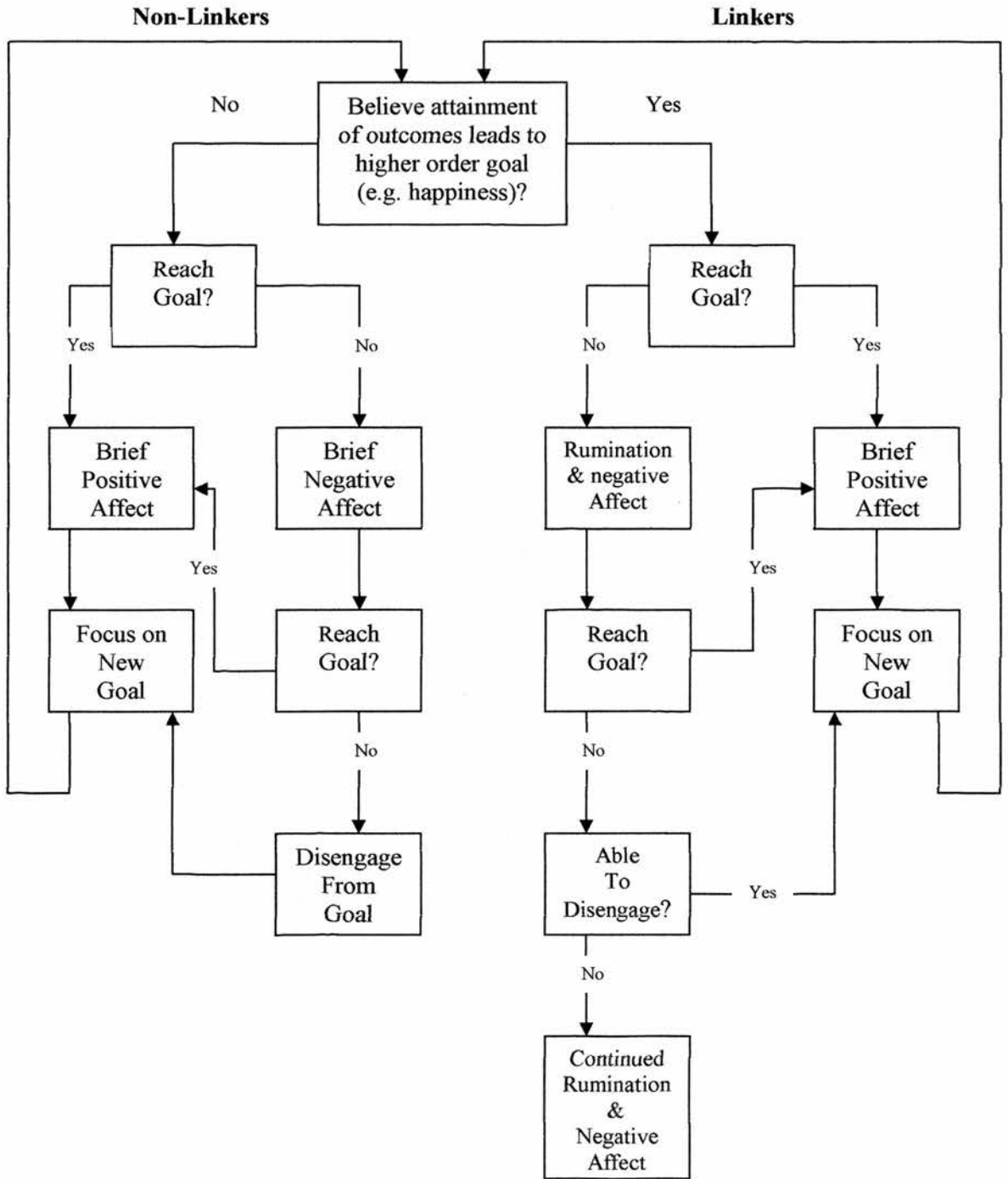


Figure 1. Adapted from The Linkage Model (McIntosh & Martin 1992; Martin et al 1993; 1996).

1.2.2 Evidence for the Goal Progress Model

Evidence for the role of goal progress in rumination is reviewed by Martin, Tesser & McIntosh 1993. In one study, participants were given a task in which they were asked to report on their stream of thoughts. In one group, participants were told to think about anything they wanted, including a white bear, they were also asked to put a mark on a sheet of paper each time they experienced white bear thoughts. Two other groups of participants were instructed not to think of a white bear and were given a similar sheet to mark if they did.

The format of this study followed Wegner, Schneider, Carter and White (1987) who had previously demonstrated that attempts to suppress a thought can result in it coming to mind more often. From a goal progress point of view, heightened accessibility of the thought does not result directly from attempts at thought suppression, but rather from participants failing to attain the higher order goal of maintaining self control, resulting in a “Zeigarnik” type effect of increased accessibility of white bear thoughts (see Martin et al., 1993).

As a test of this hypothesis, after the task, Martin et al gave positive feedback to one of the groups of participants who had been attempting to suppress white bear thoughts. For these participants, the researcher noted the number of times participants had recorded experiencing this thought and informed them that they had done much better than most people at thought suppression and had good thought control. The rationale was that success feedback would represent goal attainment for these participants, even though participants in both suppression groups found the task equally difficult.

To assess accessibility of thoughts, participants were given a word recognition task. Words were presented letter at a time on computer screen and participants were asked to identify the words as quickly as possible. Some words presented related to a white bear (e.g. iceberg, polar). As with many reaction time experiments (e.g. Fuhman & Shavitt, 1990) the

assumption was that the more accessible white bear information was to participants, the faster their recognition of white bear related words.

It was found that participants who attempted suppression and did not receive success feedback demonstrated fastest reaction times to white bear related words only. There was no difference in reaction times between participants who did not suppress and those who had been given success feedback. Thus providing participants with an indication that they had attained the goal of thought control, appeared to reduce the heightened accessibility of white bear / goal related thoughts that usually follows thought suppression, as experienced by the no feedback suppression group. The study supports the goal progress model's proposal that goal non-attainment is related to increased accessibility of goal related thoughts. Reduced accessibility of thoughts is presumed to reduce the likelihood of rumination (Martin et al., 2004).

Martin, Shira and Startup 2004 highlight another study, by Koole, Smeets, Van Kippenberg and Dijksterhuis (1999), which provides evidence that attaining higher order goals is involved in ending rumination. Undergraduate students were given a mock intelligence test and then given false failure feedback that they had performed poorly. As predicted, the failure induction produced ruminative thinking in participants and reduced mood. In terms of goal progress the assumption is that the failure feedback frustrated participant's sense of attaining the higher order goal of being intelligent, leading to rumination.

After the failure feedback, participants were provided with an opportunity to express or affirm a range of personal values. The values affirmed by some participants were those that they had previously indicated were central to their self-identity. Other participants affirmed values that they had noted were more peripheral to their self-identity. Giving expression to values central to participant's identity is a form of self affirmation (Steele, 1988) that could remind participants of their general competence. From a goal progress perspective the self affirmation reminded participants that they had already achieved the higher order goal of competence.

Again, a reaction time task, where participants were asked to identify whether a group of letters were real words or not as quickly as possible, was used to assess accessibility of goal related information. It was found that participants who did not reaffirm values central to their identity demonstrated the fastest reaction times to intelligence related words only, compared with participants who did express central values. Thus while all participants had the same experience of failure feedback, participants who had no opportunity to confirm their previous attainment of the higher order goal (competence, intelligence), still had more accessible goal related information in mind than those who self-affirmed and were potentially more vulnerable to rumination.

Two studies by McIntosh & Martin (1992) provide empirical support for the predicted connections between failure to attain higher order goals and the impact of goal linking on rumination and affect. In the first study, the authors developed a measure of global linking which assessed the extent to which participants believe that higher order goals (e.g. happiness) are dependent on certain kinds of lower order goals (e.g. weight, being in a romantic relationship). Participants also completed a ten item measure of rumination: items such as “when I have a problem I tend to think about it a lot of the time” were rated on a 7 point Likert scale from “does not describe me well” to “does describe me well”. To assess happiness, participants estimated the percentage of time they felt happy, unhappy or neutral. Positive and negative affect was assessed with the Positive and Negative Affect Scale (Watson, 1988).

Correlational analysis demonstrated that, consistent with the model, the more people linked day to day goals with the higher order goal of happiness, the greater levels of reported rumination ($r=.30$, $p<.001$). The more people ruminated, the more negative affect ($r=.29$, $p<.01$) and unhappiness ($r=.37$, $p<.001$) they reported. The more people believed attaining currently unattained goals would make them happy, the more negative affect was reported

($r=.18$, $p<.05$). Linking was not initially related to unhappiness until goal importance was statistically controlled for – then linking was related to greater unhappiness. The findings support the prediction that linking of desired but unattained goals is related to rumination, negative affect and unhappiness.

Following Baron and Kenny's (1986) criteria for determining if a variable is a mediator, the authors found that when rumination was included with linking in the regression equation, the relationships between linking and unhappiness and between linking and negative affect were removed, while the relationships between rumination and happiness and between rumination and negative affect remained significant. Thus the study provides support for the authors' suggestion that rumination mediated the relationships between linking and unhappiness and between linking and negative affect.

In a second experiment, using their linking measure, McIntosh and Martin split undergraduate students into groups of linkers and non-linkers. The goal of having a romantic relationship was chosen as an important goal to the majority, which some participants would want and have, while others would want and not have. Participants then completed a brief survey of questions about their love life such as "do you have a steady girlfriend?" and "when were you last out on a date?" The survey enabled researchers to divide participants according to who was currently in a relationship and to remind participants whether this goal was attained or not. Participants completed a reaction time task, in which words were presented on computer one letter at a time, where participants had to identify the word as quickly as possible. Some of the words related to romantic relationships (e.g. romance). As before the task was considered an assessment of accessibility of relationship related information that is presumed to underlie rumination.

Consistent with the model's hypothesis that rumination is a function of unattained higher order goals: linkers who wanted a romantic relationship had faster reaction times, only to

relationship related words (greater rumination), than linkers who were currently in a relationship. There was no significant difference in reaction times for non linkers whether in a relationship or not. Interestingly, linkers currently in a relationship demonstrated slower reaction times to relationship related words than non-linkers in relationships. Though speculative, the authors suggest this difference reflects that for linkers in a relationship, the relationship goal has been met, is less urgent and other goals now take priority. Non-linkers are less occupied by other unmet goals and completing the questionnaire has recently made relationships more salient.

If, as the model predicts, relationships exist between goal attainment, rumination and depression – then it could be predicted that the more goals a person fails to attain, the greater rumination and depression they will experience (Martin et al., 1993). A naturalistic study by Millar, Tesser and Millar (1988) supports this suggestion. Undergraduate students in their first term at university were asked to identify the person closest to them prior to moving away to university. They also made a list of activities they had regularly done with this person and which activities they had resumed at university. An inventory by Horowitz et al (1979) was used to assess how much participants ruminated about the person. The Beck Depression Inventory was used to assess mood. Disrupted activities which had not been replaced were considered to reflect goal non-attainment.

As predicted the study found that the more interrupted activities students reported, the greater their ratings of rumination and depression, while the more resumed activities students reported, the less their ratings of rumination and depression. Arguably disrupted activities may not be the only factors related to differences in rumination and mood ratings. The findings are, however, consistent with predicted links between goal non-attainment and rumination in a natural setting. The findings also mirror McIntosh & Martin's (1992) and Koole et al's (1999) findings that goal attainment, whether through positive feedback, self

affirmation or resuming activities, is associated with lower levels of rumination. Further the results also demonstrate predicted differences in mood.

In relation to questions about depression, the studies above are limited by their reliance on non clinical samples which limits the extent to which findings can be generalised to a clinical population. No attempt was made in the reaction time experiments to follow up this assessment of information accessibility with an assessment of rumination about the specific goal (e.g. intelligence / thought control) to confirm the presumed link. Many of the studies are correlational thus only tentative conclusions can be drawn about the direction of relationships: specifically whether goal linking generates or is generated by rumination. McIntosh & Martin's analysis, suggesting rumination mediates the relationship between goal linking and unhappiness, did begin to consider such questions. Similar difficulties exist, however, in making interpretations about the relationship between rumination and mood in the literature focusing on rumination. Despite these common limits, the studies provide evidence, which supports the goal progress and linkage models tenant, of a role of goal non-attainment and linking in rumination and negative affect. The next section will consider findings of parallels between the goal progress view of rumination and hemisphere specialisation.

1.2.3. Relationships between hemispheric function, goal progress & rumination.

Martin, Shira and Startup (2004) report further support for goal progress theory from studies suggesting that right hemisphere activity is associated with efforts to progress with goals and rumination.

The following question is considered: what general skills do people need to make progress towards a goal? To accomplish the goal people need to a) remain focused on the goal even in the face of distraction and frustration and b) to change strategies when initial efforts are not working. It appears that these two functions are associated with left and right hemisphere functioning respectively (Martin et al., 2004). Thus left hemisphere activity enhances rapid

execution of routine thinking, is thought to be based on set internal representations (e.g. schema / scripts) and facilitates repression of distractions. In contrast right hemisphere activity promotes awareness of external influences and distractions, detects anomalies and activates information that deviates from routine representations. Left hemisphere activation is thought to better assist execution of responses to predictable situations. Right hemisphere activation is thought to detect when routine responses are no longer working and make new information available. Thus right hemisphere functioning is thought to be involved in a ruminative search for alternative routes to a goal (Martin et al., 2004).

Studies involving participants who have experienced brain damage and healthy participants indicate that: left hemisphere activity facilitates routine processing while right hemisphere activity supports shifting from the dominant response and changing strategy (see Burgess & Simpson, 1988; Rauch, 1977); the right hemisphere is more active in generating novel responses to new challenges (see Gordon & Carmon, 1976; Fink et al., 1999); and that the right hemisphere is more active in keeping unsolved, goal related, information in mind (Bowden & Beeman, 1998).

For example in one study Bowden and Beeman (1998) showed participants three cue words (e.g. high, district & house) and asked them to generate a fourth word that could be meaningfully paired with each cue word (e.g. school). The cue words were presented either in participants left or right visual field, and thus to either their right or left hemisphere respectively. Participants were then shown words, to both hemispheres, that either did or did not provide a solution – participants were asked to name this word and their response times measured. They found that for problems that participants managed to solve: solution words were named just as quickly when presented to right or left hemisphere. For problems that participants failed to solve, they named solutions quickly only when information was presented to the right. Thus while information related to solved problems was active in both hemispheres, information relating to unsolved problems was active only in the right. Martin

et al (2004) suggest that the right hemisphere maintains activation relevant to unattained goals (Zeigarnik effect).

In a follow up study Bowden and Beeman 1998 investigated whether right hemisphere activation would facilitate problem solving. The same study was repeated except that rather than naming the solution/non-solution words, participants were asked to decide whether or not the presented word was a solution or not. Participants were able to identify words as solutions more quickly when problems were presented to the right hemisphere compared with the left. The findings suggest that right hemisphere activation helped participants in identifying a solution and is arguably consistent with the goal progress suggestion of the functionality of rumination.

Martin et al (2004) conclude that from a goal progress perspective, when information relating to goal progress is positive, the left hemisphere is successfully responding to demands and no rumination occurs. When information suggests goal progress is threatened, the right hemisphere is activated, in an effort to generate an alternative strategy. If an alternative solution is found, the dominant left hemisphere activity resumes and rumination ceases. If new strategies are not found however or are unhelpful, the right hemisphere remains activated – keeping goal related information live and facilitating rumination.

Collectively studies provide convergent evidence for links between rumination, right hemisphere activation and elements of the goal progress model (see Martin, Shira & Startup, 2004 for a more detailed review). Significantly, right hemisphere activation has also been found to be associated with other relevant factors including greater depression (Tomarken & Keener 1998), greater negative emotion (Merckelbach & Van Open, 1989) and slowing of action (Tucker & Williamson, 1984).

1.2.4 Summary

The points addressed thus far, in discussion of goal linking and rumination, are summarized below. Goal progress theory (Martin & Tesser, 1989, 1996; Martin et al., 1993) views rumination as the tendency to think repeatedly about unattained goals, in an attempt to make progress. Rumination is triggered when people perceive that they have failed to attain, or make sufficient progress towards, a goal and continues until progress is made or the person gives up the goal. The model proposes that a mechanism underlying rumination is that information related to unattained goals remains in mind for longer, is more accessible and gives rise to rumination, an example of the Zeigarnik effect. The authors acknowledge that while rumination may serve a self-regulatory function, it does not always result in goal progress, nor in the goal being relinquished.

Within the context of goal linking, it is proposed that goals are structured in hierarchies. The subjectivity of some hierarchies (e.g. does being one's ideal weight really lead to self worth?) means that people respond differently to the same event and only some may perceive a goal threat. Threats to higher order goals are more likely to result in rumination. Goal linking describes the tendency to link the achievement or failure of low order goals (e.g. going on a date) to the achievement or failure of higher order goals (being loved). People differ in their tendency to goal link and linkers maintain that low level goals are necessary in the attainment of higher order goals. Linking can be viewed as another form of metacognition. The model suggests that linking causes people to ruminate in response to threats to low level goals as the threat is perceived as an obstacle to higher order goals. Rumination in turn is associated with low mood and depression. Rumination is thought to mediate the relationship between linking and negative affect. Objective life events are poor predictors of happiness but perhaps linkers base their beliefs on culturally shared theory.

Supportive evidence for elements of goal progress theory was provided by Martin et al (1993) and Koole et al (1999) who demonstrated that failure to attain higher order goals was

associated with increased accessibility of goal related information, presumed to reflect rumination. This effect was reduced by positive feedback and self affirmation that facilitate goal progress. McIntosh and Martin's (1992) findings were consistent with hierarchy assumptions and the proposal that rumination is a function of unattained goals. They demonstrated that a tendency to goal link is associated with greater rumination, negative affect and unhappiness. The study provided some support that rumination mediates between linking and unhappiness. Millar et al's (1988) finding that the more unattained goals people experience the greater their reported rumination and depression further highlights links between goal linking and negative mood. Finally, convergent evidence from studies of hemisphere functioning suggest that the right hemisphere is more active both in efforts to progress goals and rumination. Studies suggest that the right hemisphere activity facilitates changing strategies (Burgess & Simpson, 1988), generating novel solutions (Fink et al., 1999), retaining unsolved information and identifying solutions (Bowden & Beeman, 1998). It is less clear to what extent increased right hemisphere activation may remain functional, given associations of right hemisphere activation with greater depression (Tomarken & Keener, 1998) and slowed action (Tucker & Williamson, 1984); particularly as depression is characterised by difficulty in making progress or relinquishing goals and a sense of becoming stuck. The next section will consider studies which further explore relationships between goal linking, rumination and depression but in the context of daily hassles and life events.

1.3. Goal Linking, Daily Hassles and Life Events.

1.3.1 Daily Hassles

Daily hassles can be defined as everyday, mundane irritants and stressors that are experienced as inconvenient or harassing (Kohn & Macdonald, 1992; Oxford University Press: New Oxford Dictionary of English, 2001). Examples include time pressure, financial difficulties, problems at work and being taken advantage of by others. It is well established that hassles

and stressful events can have a detrimental impact both on people's physical and mental health. Thus more frequent daily hassles are associated with greater mental distress and physical complaints (e.g. Kohn et al., 1994a; Nakano, 1989; Kanner et al., 1981), though this finding does not always emerge (Baer et al., 1987). Positive relationships have been found between daily hassles and difficulties including depression (Jung & Khalsa, 1989) and trait anxiety (Kohn & Gurevich, 1993).

Importantly, the onset of depression has been associated with relatively minor everyday hassles as well as more major life events such as divorce or losing a job (Kanner et al., 1981). Perhaps somewhat counter-intuitively, some studies find that daily hassles are more strongly related to wellbeing and than major life events (Kanner et al., 1981; Holahan & Holahan, 1987; Russell & Davey, 1993). Some authors have suggested that the impact of more major life events on well being is mediated through daily hassles, for example due to disruption of social relationships and patterns of activity following a life event (Eckenrode, 1984; Kanner et al., 1981). Kohn & Macdonald (1992) report that Wagner et al (1988) found a good quantitative match between their data and a model based on this causal relationship between life events and daily hassles. Other studies, however, strongly suggest that life events and daily hassles predict health related outcomes independently (Chamberlain & Zika, 1990).

McIntosh et al (1995; 1997) suggest that perhaps one reason why everyday hassles, as well as major life events, can lead to depression is related to goal linking and subjective hierarchies. Specifically, people with a tendency to goal link, may perceive small everyday hassles as threats to higher order life goals. They illustrate, for example, that someone who goal links may interpret a small argument with a friend as a threat to the friendship as a whole, or to their social life generally and the higher order goal of being accepted. According to this hypothesis people who goal link will be more vulnerable to rumination and depression when faced with relatively minor everyday hassles. So while Marco and Suls (1993) report that many daily hassles impact people only over the short term (24hrs), linkers who ruminate in response to

minor hassles may experience longer term detrimental effects on mood compared with people who do not interpret hassles as a threat to higher order goals. These questions were addressed in a study by McIntosh, Harlow and Martin (1995) detailed below.

1.3.2 McIntosh, Harlow & Martin (1995) - Key Study

McIntosh, Harlow and Martin (1995) describe a study that is particularly relevant to the questions asked by the current study. The authors examined the impact of goal linking in undergraduate students in relation to their experience of daily hassles. Their hypothesis was that people who link the attainment or blocking of lower order goals (e.g. being ideal weight) to higher order goals (e.g. happiness) would be more likely to interpret daily hassles as threats to higher order goals and consequently would experience a greater impact of hassles on their mood.

Based on assessment with McIntosh and Martin's Linking Inventory (McIntosh & Martin, 1992), 45 student participants were grouped on their dispositional tendency to link attainment of lower order goals to higher order goals. On two occasions, two weeks apart, participants completed a battery of self report measures assessing rumination, number of daily hassles experienced in the preceding two weeks, depression level and physical symptoms of depression.

At session one, participants with a tendency to goal link (linkers) experienced greater rumination, depression and physical symptoms than non-linkers. Consistent with the hypothesis, at session two linkers who experienced a high level of hassles at session one reported greater depression and physical complaints than non-linkers or linkers with few hassles. Non-linkers mood and physical symptoms were unrelated to hassles. The study replicates McIntosh and Martin's earlier finding (1992) of greater rumination in people who link lower and higher order goals relative to those who do not; provides further support for a goal progress view of rumination and suggests that goal linking may be related to rumination

and depression. It is uncertain if goal linking is a cause or consequence of rumination, or if both are caused by a third variable. The authors make a further tentative suggestion that perhaps hassles predict depression only for people who experience frequent hassles which they perceive as a major event. A related study has also examined goal linking in the context of more major life events considered below.

1.3.3 Life Events

In contrast to daily hassles, life events involve greater change, adjustment or disruption. In one of the earliest measures of life events, the Schedule of Recent Experiences (SRE: Holmes & Rahe, 1967) life events are referred to as any event or occurrence that involves significant change and readjustment (Holmes & Rahe, 1967; Harris, 1997), the significance of events being based on people's subjective judgements. Examples include an estrangement, new child or death. As noted above, major life events, like daily hassles, are frequently considered as one factor associated with onset of psychological distress, including depression (Brown et al., 1978; 1995) and physical health difficulties (e.g. chronic fatigue syndrome Theorell et al., 1999; stroke, House et al., 1990). With life events, however, there appears more debate within the literature regarding the accuracy of their measurement and strength of association.

While many studies report associations between more frequent and severe life events and the onset of mental health difficulties and physical illness (Bennett 2003), the strength of association is often found to be weak, particularly in relation to physical health (Lin et al., 1979; Kanner et al., 1981). This has led to the consideration noted above that the cumulative effects of minor hassles may be more strongly associated with distress than life events (Kanner et al., 1981).

While life events show weaker associations with distress than daily hassles, associations have been detected. For example, in a series of studies by Brown & Harris (1978; Brown et al.,

1995), women both in in-patient and community settings identified major life events as one factor contributing to depression onset, as assessed using the Life Events and Difficulties Schedule interview (Brown & Harris, 1978). It is fully acknowledged that life events represent only one of a wide range of factors that contribute to difficulties, other factors including individual vulnerability factors (e.g. lack of a supportive partner, loss of mother before age 11). Later studies further identified negative life events associated with depression as those involving loss of valued ideals, people or objects and loss associated with humiliation, death or feeling trapped (Brown, Harris & Hepworth, 1995).

In contrast, Bergh et al (2005) surveyed the prevalence of a number of factors among people who frequently attend primary health care services compared with those with average attendance. One factor was life events, assessed using a condensed version of Holmes and Rahe's Social Readjustment Rating Scale. To counter criticisms, the scale was supplemented by asking participants to rate the significance of the event to them. In this study frequent attenders did not experience more frequent life events than regular attenders, nor did they report being more affected by these life events. Overall, while Life events may represent only a small component in the variance of onset or maintenance of physical and mental distress it would still seem valuable to consider. A further study by McIntosh, Martin and Jones addresses the influence of thoughts about life events on goal linking and happiness judgements.

1.3.4 Life Events & Goal Linking

McIntosh, Martin and Jones (1997) studied the impact of goal linking and reflecting on life events on undergraduate students' ratings of their long term happiness. They hypothesized that people who goal link, who believe that higher order goals (e.g. happiness) are contingent on attaining lower order goals, would be more influenced by thinking about life events when judging their long term happiness, than people who do not goal link. Firstly, 87 participants were either asked to think and write about a negative life event from their past, or a positive

life event from their past, or a negative current life event or a positive current life event. Participants then gave ratings of their estimated happiness on a scale from 1-10. Finally participants completed McIntosh and Martin's (1992, 2001) linking inventory to assess their dispositional tendency to goal link. Consistent with expectation, while linkers' ratings of happiness differed significantly depending on whether they wrote about negative or positive events, non linkers' ratings of happiness were unrelated to writing about life events.

Thus when life events occur, people who goal link may be more vulnerable to perceive life events as a threat to higher order goals, to their happiness and as previously discussed may experience greater rumination and depression. In the context of the literature on daily hassles and life events, it would be interesting to consider further the relative impact of each on goal linking and rumination.

1.4 Research Aim, Question & Hypotheses

1.4.1. Research Aim

While McIntosh et al (1992; 1995; 1997; 2001) have explored relationships between goal linking, daily hassles, life events, rumination and depression within undergraduate student populations, it seems that to date these relationships have not been extensively studied within a clinical population, limiting the extent to which findings can be translated to people's experience of clinical depression. The main aim of this study therefore is to explore if people with clinical depression respond to daily hassles with rumination as a function of their tendency to goal link, as observed in students with lower mood (McIntosh et al., 1995). A secondary aim is to determine if these relationships are specific to depression or observed in people experiencing other forms of psychological distress. Understanding goal linking within a clinical sample would lend weight to research on targeting beliefs about goals and metacognitions in the treatment of depression.

1.4.2 Research question and Hypotheses

Main Question: Do people with clinical depression respond to daily hassles with rumination as a function of their tendency to goal link?

Hypothesis 1. People with clinical depression will experience similar levels of daily hassles and life events to a comparison clinical group of people with psychological difficulties other than depression.

Hypothesis 2. People with clinical depression, however, will demonstrate a greater tendency to goal link and greater rumination

Hypothesis 3. A non clinical comparison group of people with no history of clinical depression will experience (a) fewer daily hassles and life events than clinical groups, (b) less rumination and will have a lower tendency to goal link.

Question 4. What is the relative impact of daily hassles and life events on goal linking and rumination?



Chapter 2. Method

2.1 Design

The study took the form of a cross-sectional, between subjects design in which the responses of three independent groups were compared. A clinical sample of people experiencing major depression; a clinical sample of people experiencing other psychological difficulties but not major depression and a non-clinical, never depressed, sample from the general population were compared on the six self-report questionnaires detailed below. The independent variable was major depression and the dependent variables were goal linking, rumination, daily hassles, life events and mood. The design was chosen to enable comparison of any group differences in participants' degree of goal linking, rumination, daily hassles and life events – specifically to compare people with and without clinical depression.

2.1.1 Ethical considerations

The research design was given favourable ethical approval by Highland NHS Board Local Research Ethics Committee and management approval by NHS Highland Research and Development (appendix 1). The main ethical issues considered in the application were minimizing potential distress to participants and ensuring participant confidentiality and informed consent.

To minimize the likelihood of distress, measures were chosen that have previously been used in clinical and research settings with no published reports of difficulties. In the event of participants becoming distressed the researcher was available to offer support at the time or offer alternative support if required. In the event of participant's disclosing information that indicated a need for support with a particular mental health issue, participants would be encouraged to disclose this information to the professional currently supporting them or to their GP. Participants were made aware that if they indicated that their, or someone else's,

safety was at risk then the researcher would notify the relevant agencies. Participants were also informed that they could withdraw from the study at any point without explanation or penalty.

To ensure confidentiality, questionnaires and interviews were coded and stored anonymously and securely. All identifiable information, such as the consent form, was stored separately from questionnaires and interview schedules. To ensure informed consent, participants were provided with the participant information sheet, time to consider whether or not they wished to participate, opportunity to ask questions and all participants were required to sign the consent form.

2.1.2 Power Calculation

The number of participants to be recruited in each group was estimated using a statistical power calculation. Rumination and mood have previously been shown to clearly differentiate between people with depression and those without (Nolen-Hoeksema, 2004). Since rumination is associated with goal-linking, a large difference and effect size was anticipated between groups on this primary measure. David Clark-Carter (2004) reports statistical power tables based on measures suggested by Cohen (1992). These power tables indicate that for a between subjects analysis of variance ($df = 2$), 22 participants in each condition would be required to detect a large effect size, where power is 0.8 and significance level is $p = 0.05$. Thus the aim was to recruit 22 participants in each group.

2.1.3 Literature Search Strategy

The study's design was based on the review of the literature previously introduced. The literature search took the following format. Regular literature searches were made using a range of Ovid Technologies databases for example: PsychINFO, Medline, EMBASE, Ovid full text and CINAHL. Searches were made using combinations of the following key terms: rumination; daily hassles; life events; depression / affect / mood; goal linking, goal beliefs,

goal progress, linking, happiness; self-focused attention, depressive self-focus and overgeneral autobiographical memory. Further searches were carried out for articles and chapters by specific authors: McIntosh, W.D.; Martin, L.L.; Nolen-Hoeksema, S.; Teasdale, J.D., Watkins, E. & Baracaia, S.; Pyszczynski, T. & Greenberg, J. and Papageorgiou, C. & Wells, A. The references of key papers and books (e.g. including McIntosh, Harlow & Martin, 1995; Papageorgiou & Wells, 2004) were reviewed and related articles followed up. As related topics emerged (e.g. adaptive self-reflection), the relevant literature was searched for using the databases above. Current and past issues of specific journals (e.g. Journal of Applied Social Psychology) were scanned for related articles. Discussion of topics with the supervising psychologist generated further related areas of literature to follow up.

2.2 Participants

2.2.1 Inclusion and exclusion criteria

Participants were recruited from one site, NHS Highland, and had to meet the following inclusion and exclusion criteria. All participants were adults aged 18 years up to 65 years. Participants were excluded from the study if they lacked English comprehension; had known current co-morbid drug or alcohol problems; had known organic pathology; learning disability; or formal diagnosis of personality disorder or bipolar mood disorder. Inclusion and exclusion criteria specific to each group are detailed below.

Participants in the clinical depression group were required to meet the diagnostic criteria for a current major depressive episode as determined using the mood disorders section of the Structured Clinical Interview for DSM-IV (SCID-CV for DSM-IV: First, Spitzer, Gibbon and Williams, 1996). To retain distinct groups, adults experiencing low mood but not major depression were excluded from this group. Given the high level of co-morbidity between depression and anxiety, anxiety symptoms were not criteria for exclusion.

Participants in the other psychological difficulties group were adults who had been referred to psychological services for emotional difficulties (e.g. anxiety, anger) where depression was not the main complaint and who did not currently meet DSM-IV criteria for major depression as determined using the mood disorders section of the SCID.

Participants in the non-clinical control group were adults who were not currently experiencing major depression and had no history of major depression as determined from the screening SCID-IV interview. Control participants were not currently experiencing any other form of emotional distress for which they had sought professional help.

2.2.2 Source and method of recruitment - Clinical Samples

Potential participants for the major depression and other psychological difficulties groups were identified from primary care and community mental health team referrals to the clinical psychology service waiting lists of a busy adult psychology service in the north of Scotland. Potential participants were approached initially by letter (appendix 2). The letter was accompanied by an information sheet introducing the study (appendix 3) and a copy of the consent form (appendix 4). Participants who were willing to consider taking part were asked to contact the researcher by telephone, or by returning a stamped addressed envelope with their contact details. Those interested were contacted by the researcher, by telephone, to provide an opportunity for participants to ask any questions about the study. If a potential participant wished to take part in the research, a time was arranged for them to meet with the researcher, either at the psychology department or the participant's home. During this single meeting, participants gave written informed consent (appendix 4), were given the screening SCID interview to establish if they met the criteria for major depression or not and completed the questionnaires outlined below. Invitations were sent to 230 clinical participants and 55 interviews were carried out. 47 clinical participants met the criteria: 22 with major depression and 25 with other psychological difficulties.

2.2.3 Source and method of recruitment - Non-clinical control sample

A convenience sample of never depressed control participants were recruited through associates of the author. Control participants were approached in person or by letter and provided with the information sheet about the study, a copy of the consent form and an opportunity to ask questions. As before, if a potential participant wished to take part, a time was arranged to meet with the researcher at a familiar and private setting (e.g. psychology department or home visit). At the single meeting participants gave written, informed consent (appendix); were screened using the SCID-IV to confirm that they were neither currently experiencing, nor had any history of, major depression; and subsequently completed the questionnaires outlined below. 25 participants were invited to attend, 23 interviews were carried out and all 23 participants met the criteria.

2.3 Measures

2.3.1 Demographic Information

Brief demographic information on age, date of birth and gender were collected.

2.3.2 Mood Disorders Subsection of the Structured Clinical Interview for DSM-IV - Clinical Version (SCID-CV for DSM-IV: First, Spitzer, Gibbon & Williams, 1996)

The mood disorder section of the SCID-CV (appendix 5) was used to confirm the presence or absence of major depression. The SCID is a structured interview schedule within which the diagnostic criteria for all axis I diagnostic categories in DSM-IV (Diagnostic and Statistical Manual of Mental Disorders: American Psychiatric Association, 1994) are covered. The whole SCID interview was not administered, for brevity and to reduce demands on participants. The mood disorder section includes 15 questions to assess the specific DSM-IV diagnostic criteria for a major depressive episode. Past history questions within the SCID were used to establish no previous episodes of depression among participants in the non-clinical sample. In the current study a random sample of 9 (13%) SCID interview tapes were

independently reviewed by a qualified clinical psychologist, experienced in administering the SCID. There was 100% agreement, regarding the presence or absence of major depression in participants, between the researcher and the qualified psychologist, confirming inter-rater reliability.

The SCID interview is a common screening tool in research studies and has been found to possess good reliability and validity in the diagnosis of Axis I disorders (Spitzer et al., 1992). Specifically, Zanarini et al (2000) found good inter-rater reliability ($Kappa=0.80$) and fair test-retest reliability ($Kappa=0.61$) in diagnosing Major Depressive Disorder using SCID for DSM-IV. Lam, Smith, Checkley, Rijdsdijk and Sham (2003) found 100% independent agreement between the SCID interview and a clinical diagnosis of major depressive disorder. Several studies (Basco et al., 2000; Fenning et al., 1994) evidence superior validity of the SCID over standard clinical interviews at intake episode. Some studies have used the SCID to provide a “gold standard” in determining the accuracy of clinical diagnoses (Shear et al., 2000).

2.3.3 The Linking Inventory (McIntosh and Martin 1992)

The Linking Inventory (appendix 6) is a 13 item, forced choice, questionnaire that measures the extent to which participants believe that higher order goals (e.g. their happiness) are dependent on the outcome of lower order goals (e.g. being an ideal weight). For example, one item asks “Does being outgoing affect your happiness?” Participants then choose between responses a) “I would be happier if I was more outgoing” or b) “I would be about as happy as I am right now if I was more outgoing”. The authors indicate that response a) represents a linking perspective while response b) represents a non-linking perspective. The measure is used to assess the extent to which participants link lower order with higher order goals. The item scores range from 0-13 with higher scores representing greater linking. Previous studies have categorized participants scoring 0-6 as non-linkers and those scoring 7-13 as linkers (McIntosh, Martin and Jones, 1997). The Inventory was developed by McIntosh and Martin

(1992) and the authors report that the linking scale had demonstrated reasonable internal reliability ($\alpha=0.73$) and test-retest reliability ($r=0.78$) (McIntosh, Martin and Jones, 1997).

The authors have employed the measure in a series of studies (McIntosh and Martin, 1992; McIntosh, Harlow and Martin, 1995; McIntosh, 1996; McIntosh et al., 2001) that have detected significant group differences in linking. Further, Martin, McIntosh, Chen, Scott-West and Chang (1996) suggest that while linking is related to rumination and negative affect, it does not correlate with a tendency to make internal, stable or global attributions for negative events (Peterson et al., 1982); nor is it related to locus of control (Rotter, 1966) or other related constructs. While linking is related to neuroticism it is not redundant with neuroticism (Martin et al., 1996). Collectively the evidence is consistent with the linking scale's validity as measure of a construct related but distinct from rumination and negative affect.

2.3.4 The Short Response Styles Questionnaire (Nolen-Hoeksema & Jackson 2001)

The Short Response Style Questionnaire consists of 10 items; drawn from the 22 item Ruminative Response Sub-Scale (RRS), of the original Response Style Questionnaire (RSQ Nolen-Hoeksema & Morrow, 1991). The SRSQ assesses participants' tendency to ruminate in response to depressed mood (appendix 7). The items represent aspects of rumination as described by Nolen-Hoeksema (1991), specifically: focus on emotions, focus on self-evaluations, focus on the consequences of depressive symptoms and questions on reasons for being depressed. For example, item one is "I think about how alone I feel". Participants rate the frequency of each response to depressed mood on a four-point Likert scale ranging from "never" to "always". Total scores range from 10 to 40 with higher scores representing more frequent rumination.

The RRS has evidenced high internal reliability ($\alpha=0.88$ to 0.92 : Just & Alloy, 1997; Nolen-Hoeksema, Larson and Grayson, 1999), test-retest reliability ($r= 0.80$ after 6 months

Nolen-Hoeksema, Parker & Larson, 1994) and, though sometimes questioned, predictive validity is evident in many studies (Nolen-Hoeksema, 2000).

The ten item scale was derived by selecting items from the RRS that had the highest item-total correlations with the full-scale RSQ. Reports indicate (Luminet, 2004) that the short version is highly related to the full version of the scale ($r=0.90$) and has high internal reliability ($\alpha = 0.85$). While the construct validity and test-retest reliability of the short version have yet to be demonstrated, the scales correlation with the RSQ supports its validity as a measure of rumination. The brevity of the short version was also a consideration in designing the study to minimize the collective demands on participants.

2.3.5 The Survey of Recent Life Experiences (SRLE Kohn & MacDonald 1992)

The SRLE is a self-report measure of daily hassles in adults. The condensed scale consists of a checklist of 41 items, from the original 51, that relate to social and cultural difficulties, difficulties at work, time pressure, financial issues, obstacles to social acceptability and social victimization. Participants indicate the extent to which they have experienced each hassle over the past month on a four-point scale from “1=not at all part of my life” to “4=very much part of my life” (appendix 8). Total scores range from 41-164 with higher scores representing greater experience of everyday hassles.

The authors report that the SRLE demonstrates adequate reliability and validity: the alpha reliability of the SRLE was high ($\alpha=0.92$, $p<0.01$). The SRLE correlated highly with the Perceived Stress Scale (PSS, 0.57 , $p<0.01$), a reliable, valid and widely used measure of subjectively experienced stress, supporting its validity as a measure of hassles. The short form (41 items) of the SRLE is only marginally less reliable than the 51 item version ($\alpha =0.90$) and also correlates (0.55 , $p<0.01$) with the PSS. The value of minimizing participant demands was considered, on balance, to justify use of the short version. Further, reports indicate that the measure is relatively free from contamination by participants' response to

stress; a frequently cited criticism leveled at the most commonly used Hassles Scale (Kanner et al., 1981). Majella de Jong, Timmerman and Emmelkamp (1996) further evaluated the psychometric properties of the SRLE with a Dutch population and conclude that the SRLE is a highly reliable and cross-culturally valid measure of daily hassles.

2.3.6 The condensed version of the Social Readjustment Rating Scale (Life Changes List) (SRRS Holmes & Rahe 1967)

The life events measure employed was a condensed version of the original life change list developed by Holmes and Rahe (1967). The list is comprised of 14 of the most serious life changes and includes major changes in personal and family relationships, work, residential and financial situation (appendix 9). Participants were asked to indicate, “yes” or “no”, if any of the listed life events had occurred during the last two years. Following previous studies (e.g. Theorell, Blomkvist, Lindh and Evengard, 1999) that employed this measure, the researcher clarified, giving an example, the difference between long term difficulties and life events/ life changes to ensure that the items participants endorsed reflected life events. Participant’s total scores ranged from 0-14. A scaled score was derived by summing the weighting values assigned to each item on the original life change list. These values reflect estimates of the degree of readjustment each event demands (Holmes and Rahe, 1967).

Participants then rated their subjective experience of the impact of each event they endorsed on a five-point rating scale from “1= affected me in a very positive way” to “5=affected me in a very negative way”. These supplementary questions have been used in a number of recent Swedish studies (Theorell et al., 1999; Bergh, Baigi, Fridlund and Marklund, 2005), in conjunction with the condensed version of the SRRS, with the aim of reflecting the significance of life events to the individual.

The Social Readjustment Rating Scale is one of the most widely used measures of stressful life events (Hock, 1995) and perhaps consequently has also been widely criticized. Criticisms

include possible confounding from inclusion of items that could result from stress as well as contribute to it. Despite such criticisms, Scully, Tosi and Banning (2000) review the rating scale and literature, concluding that criticisms are as yet unequivocal and that the measure remains a robust measure of life events. Evidence of the temporal stability of the measure was found by Gerst et al (1978). Psychiatric out-patients and non-patients rank ordered the degree of readjustment required by life events on three occasions, over two years, showing a high degree of consistency ($r= 0.96-0.89$ for control participants, and $r=0.91-0.70$ for the patient sample). Convergent evidence for the validity of the short form of the SRRS, though limited, comes from recent studies in which the measure has found significant differences between samples on life events (e.g. Theorell et al., 1999). In designing the study, inclusion of this brief measure was considered a helpful marker of life events, while keeping participant demands to a minimum.

2.3.7 Center for Epidemiological Studies – Depression (CES-D Radloff 1977)

To assess current level of depressive symptomatology, the Center for Epidemiological Studies–Depression Scale was employed (CES-D Radloff 1977). In comparison to measures specifically designed to detect features of clinical depression, the CES-D was developed for assessing depression in the general population, and thus felt to be a sensitive measure of depression among both control and clinical sample participants. The CES-D consists of 20 items of both clinical and normal symptoms with an emphasis on the cognitive and affective elements of depression (appendix 10). Items include “You felt you could not shake off the blues even with help from family or friends”. Participants rate how often they have experienced each item during the past week on a four-point Likert scale from “0= rarely or none of the time(less than one day)” to “3=most or all of the time (5-7 days)”. Total scores range from 0 to 60, with higher scores indicating higher depressive symptoms.

The CES-D is widely used in both research and clinical settings (Thase and Lang, 2004). Reliability and validity of the CES-D have been assessed in general and clinical populations

(Radloff, 1977; Hann, Winter & Jacobsen, 1999). Reports indicate that the internal reliability of the CES-D is highly satisfactory within the general population ($\alpha=0.85$) and psychiatric population ($\alpha = 0.90$). Test-retest reliability was satisfactory ranging from 0.51 to 0.67 over a 2 to 8 week period. The CES-D demonstrated significant correlations with other measures of depression (e.g. Hamilton Clinician's rating scale, 1960) supporting the convergent validity of the scale. Construct validity was established from differences between psychiatric inpatients and the general population.

2.3.8 Hospital Anxiety and Depression Scale (HADS Zigmond & Snaith 1983)

The HADS is a widely used scale to assess anxiety and depression. The scale is composed of 14 items divided into two subscales measuring anxiety (A-scale) and depression (D-Scale), which are scored separately (appendix 11). Participants rate the extent to which they have experienced each symptom, in the previous week, on a scale from 0-3. Scores on each subscale range from 0-21 with higher scores representing greater anxiety or depression. Scores of 11 or greater are considered to reflect clinical levels of distress.

A frequently cited advantage of the HADS is that the scale avoids items that focus on physical aspects of depression (e.g. appetite, sleep), which may yield artificially inflated scores among clients experiencing physical illness. It is common that people referred to psychology services experience additional physical illness, thus this feature of the HADS may be advantageous. The depression scale focuses on affective elements of depression. A further advantage for this study is that the scale briefly combines a measure of both mood and anxiety. Given the high co-morbidity of anxiety and depression it was thought helpful to include a measure of anxiety in addition to mood.

The HADS has demonstrated satisfactory to good internal consistency and test-retest reliability (Moorey et al., 1991; Zigmond and Snaith, 1983; Clark and Fallowfield, 1986). In a recent literature review of the HADS validity based on 747 papers, Bjelland, Dahl, Haug and

Neckelmann (2002) found evidence of good internal consistency. Cronbach's alpha coefficients all exceeded 0.6 with mean Cronbach's alpha for HADS-A at 0.83 and for HADS-D at 0.82.

Though reports vary, a number of factor-analytic studies provide support for the construct validity of the two anxiety and depression scales (Bennett, 2003; Moorey et al., 1991). Bjelland et al (2002) found most studies (11/19) reporting factor analysis of HADS found a 2 factor structure supporting independent dimensions of anxiety and depression. Further, significant correlations have been found in several studies between the two subscales and independent assessments of anxiety and depression (Bramley et al., 1988; Aylard et al., 1987; Zigmond and Snaith, 1983). Bjelland et al (2002) report good to very good concurrent validity, with medium (0.49) to strong correlations (0.83) between the HADS and other common assessments of anxiety and depression (e.g. Beck Depression Inventory, Beck et al., 1961). The HADS has been found to show good face validity and participants, in research and clinical settings, find the scale accessible (Zigmond and Snaith, 1983).

2.4 Procedure

The researcher met with participants in a private room in their own homes; in the psychology department or, in the case of control participants, in another private and familiar setting. The participant was presented with another copy of the information sheet and the researcher highlighted the purpose of the study and confidentiality. The participant was given a further opportunity to ask questions. The researcher reviewed a copy of the consent form, which the participant had previously been sent, highlighting that participation is voluntary and the participant could withdraw, without penalty, at any point (appendix 4). The participant then provided written consent.

Brief demographic information (age and gender, appendix 12) was collected and the participant was asked if they would like to receive a summary of the research findings when the study was completed. If so, the participant provided their postal address.

The participant was then administered the mood disorders subsection of the SCID – IV interview to establish the presence or absence of major depression. A proportion of participants (25%) consented to having this interview tape recorded for the purpose of establishing inter-rater reliability. An explanation of the purpose of tape recording the interview and confidentiality were discussed and the participant signed a further consent form (appendix 4) prior to commencing the interview.

The participant was then taken through a pack of questionnaires with the researcher reading aloud the instructions and items for each questionnaire and completing participant's responses. The participant first completed the Linking Inventory and then the Ruminative Response Scale. Next the participant was presented with the Survey of Recent Life Experiences and then the Social Readjustment Rating Scale. The participant then completed the CES-Depression and finally the HADS.

Following completion of the questionnaires the participant was thanked for taking part in the study and given a full explanation of the study's hypotheses. The researcher asked the participant about their experience of taking part in the study including whether they had found any aspect distressing. No participant found the process to be unduly distressing and all responded positively to the study's aims. For each participant the procedure took an average of 50 minutes. Consent forms and participant addresses were stored separately from the interview schedules and measures to ensure participant anonymity. Participant's data was allocated a code for entry to the database. The outcome of the SCID interview determined which group the participant's data was finally allocated to, or if participant data could not be included.

2.5 Analytic Plan

Data was analysed using SPSS for Windows (version 10). In the first stage of primary analysis, hypotheses 1-3 were explored using a series of one-way analysis of variance (ANOVA), for between group comparisons, with three levels of group (depressed, other difficulties, never depressed) as the independent variable. This enabled detection of any significant group differences across the main dependent variables: linking; rumination, daily hassles, life events and mood. Group differences were then unpacked using post-hoc Bonferroni T-tests for multiple comparisons.

In the second stage of analysis, a series of one-way analysis of covariance (ANCOVA) with three levels of group as the independent variable were employed to further explore the study's overall question. The impact of the main dependent variables, goal linking and rumination, on group were explored when the effect of other variables (daily hassles, impact of life events, rumination and goal linking) were partialled out. To consider question 4, the relative impact of hassles and life events, Pearson's r correlations and partial correlations were carried out on hassles, impact of life events, rumination and goal linking data from the whole sample. Finally, to further explore the impact of goal linking, participants were divided into linkers and non-linkers and one way ANOVA, ANCOVA, Pearson's r correlations and partial correlations were performed with link type (linkers and non-linkers) as the independent variable. Following convention, the significance level was set at 0.05.

Chapter 3. Results

3.1 Sample Characteristics

Seventy adults met the criteria for participation in the study, 36 women (51%) and 34 men (49%) with a mean age of 40.0 years (SD 12.2; range 18 to 62 years). Table 1 shows the brief demographic characteristics, age and gender, of participants within the depression, other difficulties and never depressed control groups.

Table 1. Demographic characteristics of participants by group

	Group 1 Depressed	Group 2 Other Difficulties	Group 3 Never depressed
Number of participants n	22	25	23
Gender			
Number of Female participants	13	12	11
Number of Male participants	9	13	12
Age			
Mean	42.1	42.8	35.1
Standard Deviation SD	12.0	12.7	10.7
Range (min-max)	18-59	18-62	24-60

As indicated, the depressed group consisted of 22 participants, 13 women and 9 men. The other difficulties group consisted of 25 participants, 12 women and 13 men. The never depressed group consisted of 23 participants, 11 women and 12 men, thus the groups were considered to be gender balanced.

With respect to age, participants in the never depressed control group were found to be slightly younger (mean age 35.1 years) than participants in the depressed (mean age 42.1 years) and other difficulties groups (mean age 42.8 years). A one way analysis of variance (ANOVA), with three levels of group, revealed an age difference between groups that approached significance ($F(2, 67) = 2.99; p=0.057$). However, a series of ANOVA tests for age found no significant effect of age on any dependent variable; therefore the results below are reported without age included as a covariate.

For clarity, each stage of the analysis will be presented in sequence. Results will be discussed in relation to the relevant hypotheses at each stage.

3.2. Primary Analysis

Hypotheses one to three were first explored using a series of one-way ANOVA, with three levels of group, to ascertain the presence of any significant group differences across the main dependent variables of goal linking, rumination, daily hassles, life events and mood. Table 2 shows the mean scores, range and standard deviations found on each outcome measure.

Table 2. Means, range and standard deviations from main outcome measures by group

Outcome Measure	Group	Mean	Range (min – max)	Standard Deviation
Total Linking Score (0-13)	1 (depressed)	6.9	1-11	2.99
	2 (other)	4.8	1-12	2.80
	3 (control)	4.1	0-10	2.75
Total Rumination (SRSQ 10-40)	1 (depressed)	31.5	24-40	4.28
	2 (other)	23.2	16-38	5.46
	3 (control)	19.4	11-29	4.70
Total Daily Hassles (SRLE 41-164)	1 (depressed)	90.5	58-138	18.06
	2 (other)	72.0	52-112	15.86
	3 (control)	66.5	50-100	13.24
Total number of Life Events (0-14)	1 (depressed)	4.1	0-8	2.01
	2 (other)	3.8	0-7	1.83
	3 (control)	2.8	0-7	1.78
Life Events Scaled Score (0-600)	1 (depressed)	148.1	0-302	80.77
	2 (other)	135.3	0-254	72.12
	3 (control)	92.8	0-238	54.06
Total Impact of Life Events (0-70)	1 (depressed)	16.0	0-31	8.76
	2 (other)	13.0	0-24	5.94
	3 (control)	8.3	0-25	6.34
Total CES-D score (depression:0-60)	1 (depressed)	39.5	10-57	11.70
	2 (other)	15.0	4-37	9.25
	3 (control)	4.6	0-13	3.76
HADS-Anxiety Total (0-21)	1 (depressed)	15.4	8-20	3.25
	2 (other)	10.8	3-21	4.73
	3 (control)	5.1	0-13	3.44
HADS-Depression Total (0-21)	1 (depressed)	11.8	3-19	4.15
	2 (other)	5.5	0-14	4.08
	3 (control)	2.2	0-8	2.13

Prior to running the ANOVA analysis, histograms and box plots for each dependent variable were examined, illustrating that distributions were a sufficient approximation of normality and

equal variance to meet the assumptions for parametric analysis. While data derived from questionnaires arguably falls between an ordinal and interval scale, research frequently subjects data from questionnaires to parametric analysis. Further, it was considered that as ANOVA is relatively robust with respect to these assumptions, any violation caused by scaling would be small (Dancey & Reidy, 2004) and insufficient to prevent the use of the more powerful ANOVA analysis. Thus overall the assumptions for use of parametric analysis were met.

The one-way ANOVAs revealed significant group differences on the following dependent variables: total linking score ($F(2, 67) = 5.767; p=0.005$); rumination total ($F(2, 67) = 35.778; p<0.001$); hassles total ($F(2, 67) = 14.325; p<0.001$); life events scaled score ($F(2, 67) = 3.932; p=0.024$); total impact of life events ($F(2, 67) = 6.883; p=0.002$); total CES-Depression ($F(2, 67) = 92.180; p<0.001$); total HADS-anxiety ($F(2, 67) = 39.292; p<0.001$) and total HADS-depression ($F(2, 67) = 41.425; p<0.001$).

There was no significant group difference for total number of life events ($F(2, 67) = 2.848; p=0.065$) suggesting that there were no differences between the depression, other difficulties or never depressed control group in the number of life events participants experienced in the preceding two year period. The implication of these findings for the study's hypotheses will be explored shortly below.

To unpack which group differences were being observed in the significant differences detected by ANOVA, the data was subjected to post hoc, multiple comparisons using Bonferroni T tests within SPSS. Performing multiple comparisons increases the risk of making a Type I error, however Bonferroni incorporates a statistical adjustment to control for multiple comparisons and remove the increased risk. Specifically, the Bonferroni correction involves dividing the desired significance level, here 0.05, by the number of comparisons being made. For example where three means are being compared, the Bonferroni adjusted

significance would be $0.05/3 = 0.016$. To achieve significance at $p < 0.05$, the probability of each T value must be less than 0.016. Thus Bonferroni provides a conservative estimate of significance and reduces the otherwise inflated likelihood of making a Type I error. Group differences on mood and anxiety will be reported first, followed by differences on goal linking, rumination, daily hassles and life events that relate to the hypotheses.

Post hoc comparisons revealed that all three groups, depressed, other difficulties and controls differed significantly from each other on mood revealed by comparisons of both total CES-D scores and total HADS-D scores. Thus CES-D scores for the depressed group were significantly greater than for the other difficulties group (effect size $d=2.35$; mean diff 24.59, SE 2.59; $p < 0.001$) and the never depressed controls (effect size $d=4.51$; mean diff 34.89, SE 2.64; $p < 0.001$). CES-D scores for the other difficulties group were significantly lower than the depressed group (effect size $d=2.35$; mean diff -24.59, SE 2.59; $p < 0.001$) but significantly higher than the never depressed control group (effect size $d=1.58$; mean diff 10.31, SE 2.56; $p < 0.001$). Logically, CES-D scores for the never depressed control group were significantly lower than both the depressed group (effect size $d=4.51$; mean diff -34.89, SE 2.64; $p < 0.001$) and other difficulties group (effect size $d=1.58$; mean diff -10.31, SE 2.56; $p < 0.001$). Thus, as expected, the three groups differed significantly on CES-D mood scores with the depression group evidencing greatest low mood, the controls least low mood and other difficulties falling in the middle. This pattern is reflected in mean CES-D scores. The mean CES-D score for the depression group was 39.5 well above the CES-D threshold (24) for “severe” depressive symptoms. The mean CES-D score for the other difficulties group was 15 falling within the “mild” category and below the threshold for clinical symptomatology (16 & above). The control group mean CES-D score was 4.6, falling within the lowest “not depressed” category. Group differences on the CES-D were mirrored by results from the HADS-D. Thus HADS-D scores for the depressed group were significantly higher than for the other difficulties (effect size $d=1.52$; mean diff 6.25, SE 1.05; $p < 0.001$) and never depressed control groups (effect size 3.06; mean diff 9.60, SE 1.07; $p < 0.001$). HADS-D scores for the other difficulties group

were significantly lower than the depressed group (effect size $d=1.52$; mean diff -6.25 , SE 1.05 ; $p<0.001$) but significantly higher than the never depressed group (effect size $d=1.08$; mean diff 3.35 , SE 1.04 ; $p=0.006$). As on the CES-D, the three groups differed significantly on HADS-D mood scores with the depression group evidencing highest levels of low mood, the controls least low mood and other difficulties group falling in the middle. These findings support the successful manipulation of the independent variable (major depression) and suggest that on mood the three groups were distinct.

Post hoc comparisons found significant differences between all three groups on HADS-A total anxiety scores. Thus HADS-A scores for the depressed group were significantly higher than for the other difficulties (effect size $d=1.15$; mean diff 4.57 , SE 1.14 ; $p<0.001$) and never depressed control groups (effect size $d=3.07$; mean diff 10.28 , SE 1.16 ; $p<0.001$). HADS-A scores for the other difficulties group were significantly lower than depressed group (effect size $d=1.15$; mean diff -4.57 , SE 1.14 ; $p<0.001$) but significantly higher than never depressed controls (effect size $d=1.40$; mean diff 5.71 , SE 1.13 ; $p<0.001$). Thus the three groups differed significantly on HADS-A with the depression group showing highest anxiety levels, then the other difficulties group and never depressed controls showing lowest anxiety levels. These findings suggest that the depression group also experience high levels of co-morbid anxiety, commonly found in clinical samples.

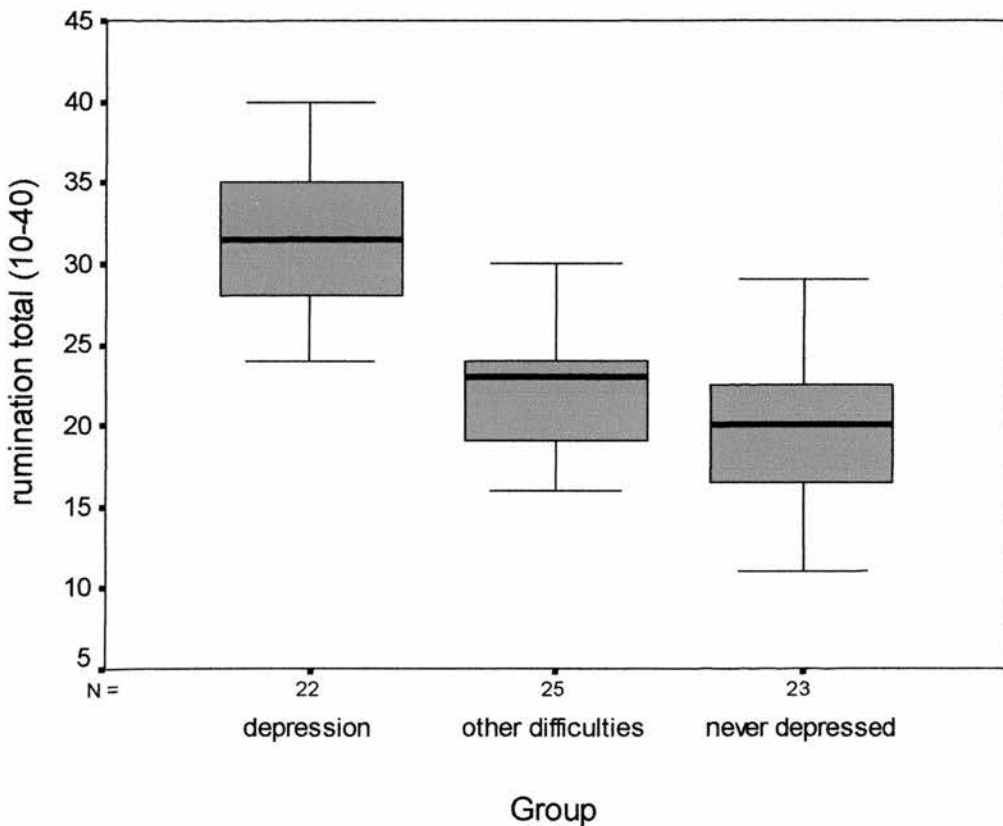
3.2.1 Hypotheses 2 and 3b

Results that relate to goal linking and rumination are critical to hypotheses 2 and 3b. In hypothesis 2 it was hypothesised that people with clinical depression would demonstrate a greater tendency to goal link and greater rumination than the comparison clinical group of people with other psychological difficulties. Hypothesis 3b suggests that people with no history of depression will experience less rumination and have a lower tendency to goal link than the clinical groups. It was therefore predicted that scores on the measures of linking and rumination will be highest in the depression group and lowest in the never depressed group.

For rumination, post hoc comparisons revealed significant differences between all three groups. Rumination (SRSQ) scores for the depression group were significantly higher than for the other difficulties group (effect size $d=1.69$; mean diff 8.21, SE 1.42; $p<0.001$) and the never depressed control group (effect size $d=2.68$; mean diff 12.02, SE 1.45; $p<0.001$). Rumination scores for the other difficulties group were significantly lower than the depression group (effect size $d=1.69$; mean diff -8.21, SE 1.42; $p<0.001$) but significantly higher than the never depressed control group (effect size $d=0.75$; mean diff 3.80, SE 1.41; $p=0.026$). Thus, as predicted, the three groups differed significantly on rumination with the depressed group showing highest rumination, the never depressed controls least rumination and the other difficulties group falling in the middle. This result is interpreted as supporting hypothesis 2 and 3b. Figure 2 below illustrates the medians and distributions of rumination scores by group in a box plot.

Figure 2

Medians & Distributions of Rumination Total Scores by Group



For goal linking, post hoc comparisons found significant differences between some groups but not all. Goal linking scores in the depression group were significantly higher than in the other difficulties group (effect size $d=0.71$; mean diff 2.06, SE 0.83; $p=0.047$) and never depressed control group (effect size $d=0.97$; mean diff 2.06, SE 0.83; $p=0.005$). While, logically, goal linking scores in the other difficulties group were significantly lower than the depression group (effect size $d=0.71$; mean diff -2.06, SE 0.83; $p=0.047$) there was no significant difference on linking between the other difficulties and never depressed control groups (effect size $d=0.26$; mean diff 0.71, SE 0.81; $p=1.00$). In other words, goal linking was significantly higher in the depression group than both the other groups and, though the mean score for linking was lowest in the never depressed controls, the difference between groups 2 and 3 was non-significant. The results are consistent with hypothesis 2, that people with clinical depression demonstrated a greater tendency to goal link than participants with other difficulties. The finding that people with no history of clinical depression do not differ significantly on linking to those with other difficulties does not support hypothesis 3b, however the finding that those with no history of clinical depression demonstrated significantly lower linking than those with depression is consistent with hypothesis 3b. Thus overall the results are interpreted as providing partial support for hypothesis 3b. It is of note that while the majority of differences explored above are large and reach significance, effect sizes indicate that those for rumination are greater than goal linking. Figure 3 below illustrates the medians and distributions of goal linking scores by group in a box plot.

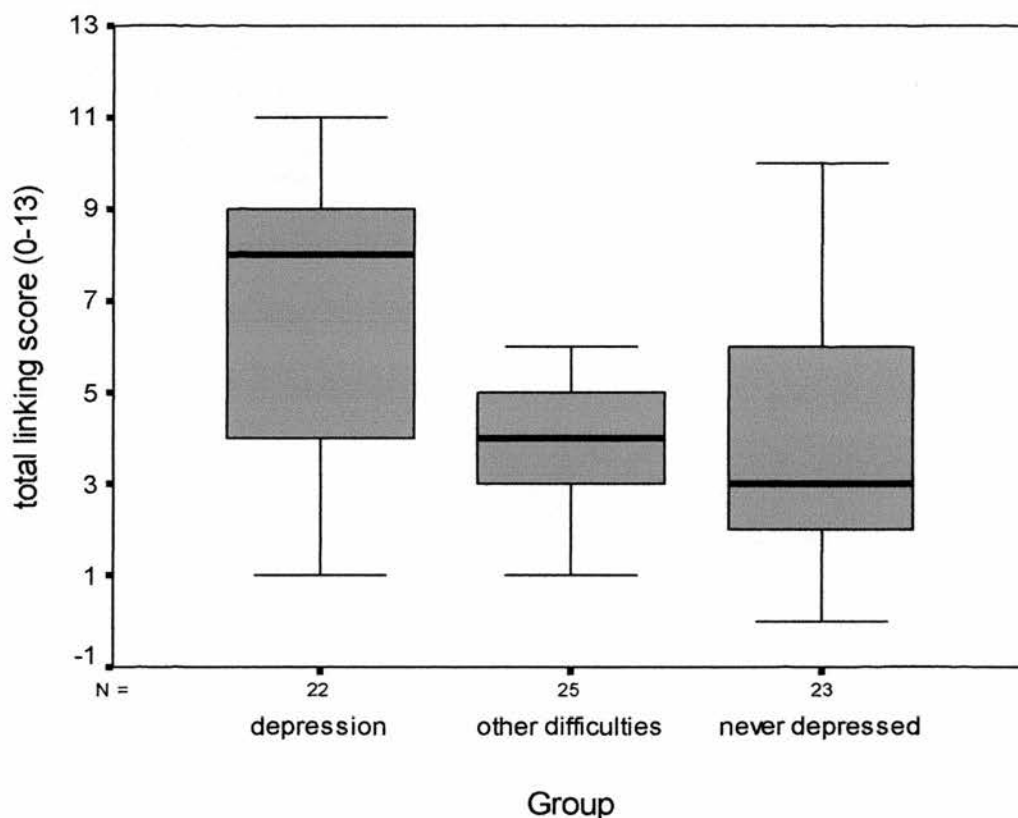
3.2.2 Hypotheses 1 and 3a

Results that relate to daily hassles and life events are key to hypotheses 1 and 3a. Hypothesis 1 suggested that people with clinical depression would experience similar levels of daily hassles and life events to a comparison group of people with psychological difficulties other than depression. Hypothesis 3a suggested that people with no history of clinical depression would experience fewer daily hassles and life events than the clinical groups. It was therefore

predicted that scores on daily hassles and life events measures would be lowest in the never depressed group.

Figure 3.

Medians & Distributions of Total Linking Scores by Group

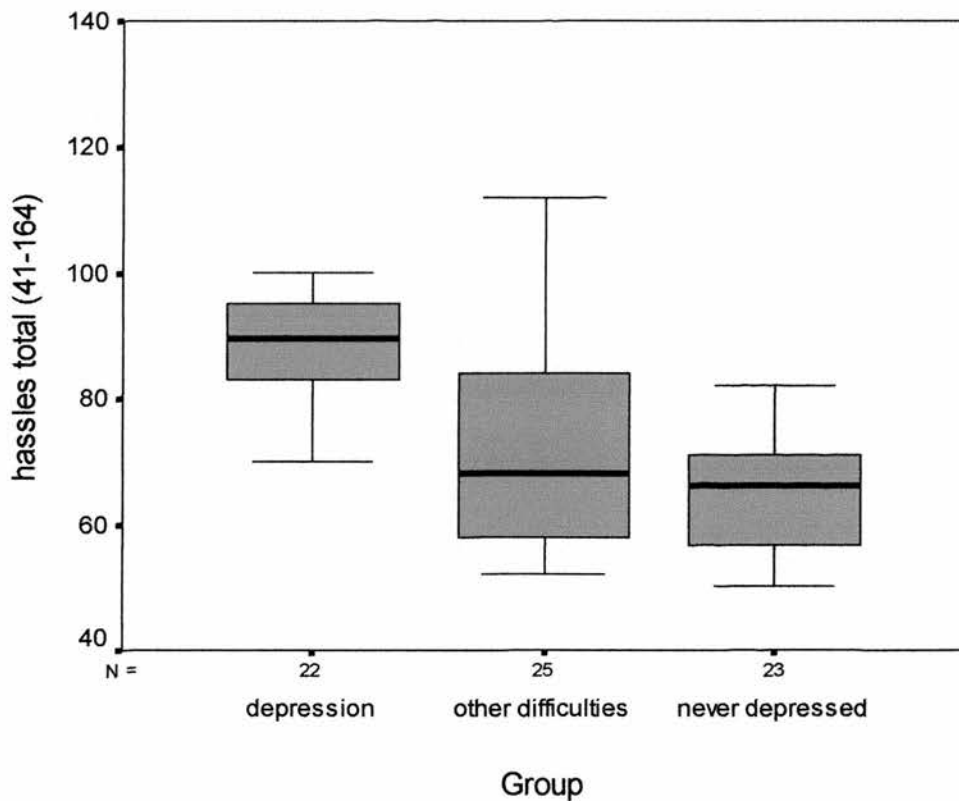


For total extent of daily hassles experienced in the preceding month, post hoc comparisons show that, like linking, significant differences were detected between some groups but not all. The total extent of daily hassles experienced in the depression group was significantly higher than in both the other difficulties group (effect size $d=1.09$; mean diff 18.55, SE 4.62; $p<0.001$) and the never depressed group (effect size $d=1.54$; mean diff 24.11, SE 4.71; $p<0.001$). The mean hassles total for the other difficulties group was only slightly higher than for the never depressed group and this difference was non-significant (effect size $d=0.38$; mean diff 5.56, SE 4.57; $p=0.683$). The depression group thus experienced significantly greater daily hassles than the other groups, while there was no significant difference in the extent of hassles experienced by people with other difficulties and those with no history of

depression. The findings offer partial support to hypothesis 3a in that those with no history of depression report significantly lower levels of hassles than people with depression but the result does not support hypothesis 3a in that the other difficulties and never depressed groups showed no significant difference. Similarly, the findings do not support hypothesis 1, as hassle levels between groups 1 and 2 were not similar, but significantly different. The main outcome is that those with depression experienced significantly greater daily hassles. Figure 4 below illustrates the medians and distributions of daily hassles total scores by group in a box plot.

Figure 4.

Medians & Distributions of Daily Hassles Total Scores by Group

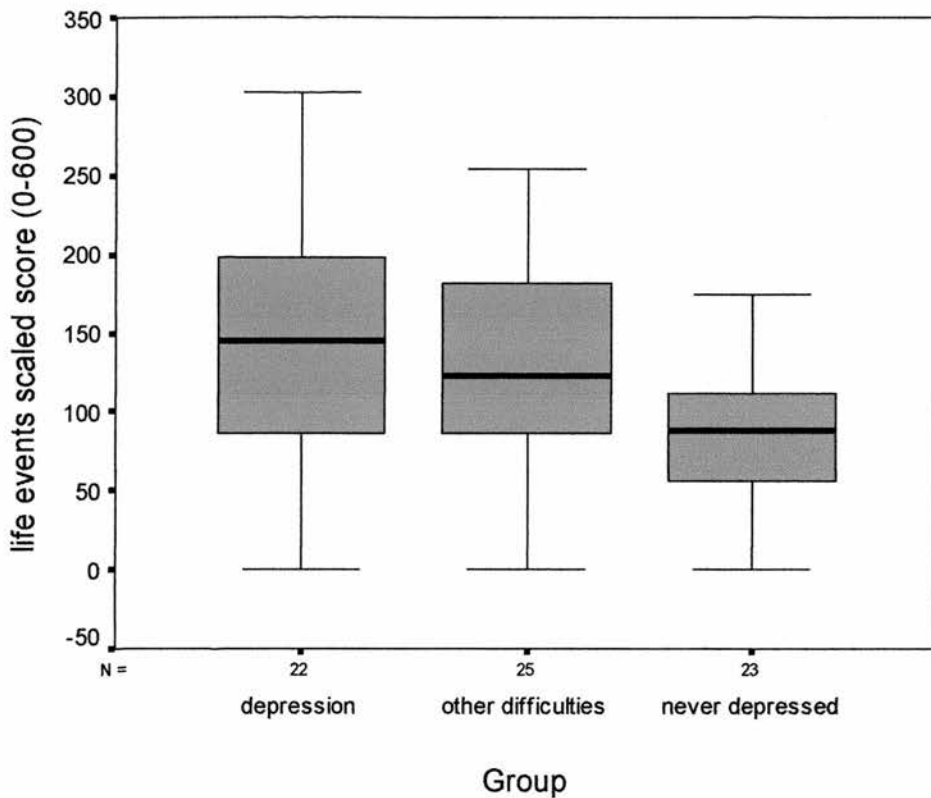


As previously noted, the one way ANOVA found no significant group difference for total number of life events experienced in the previous two years ($F(2, 67) = 2.848; p=0.065$). Taken in isolation, the finding that there were no differences in the number of life events experienced by people with major depression, other difficulties and those with no history of depression would support hypothesis one but not hypothesis 3a. Significant differences

between groups were detected however on life events scaled scores ($F(2, 67) = 3.932$; $p=0.024$) and total impact of life events scores ($F(2, 67) = 6.883$; $p=0.002$).

Participants life events scaled score total represents the sum of the weighting value assigned to each item on the original life change list and reflects an estimate of the readjustment each event demands. Post hoc comparisons revealed a significant difference between life events scaled scores in the depression group and never depressed control group such that life events scaled scores were significantly higher (effect size $d=0.82$; mean diff 55.35, SE 20.81; $p=0.029$). No other group differences reached significance. Figure 5 illustrates the medians and distributions of life events scaled scores by group.

Figure 5.
Medians & Distributions of Total Life Events Scaled Scores by Group



The same pattern of results was found for measures of the impact of life events. Post hoc comparisons showed significantly higher impact scores in the depression group compared

with never depressed controls (effect size $d=1.02$; mean diff 7.74, SE 2.11; $p=0.001$). Again no other group differences reached significance.

Collectively the results suggest that while people experiencing major depression experienced a similar number of life events to the other groups, the degree of adjustment required (scaled score) and the impact of life events were significantly greater for those with major depression than those with no history of major depression. No significant difference was found on number, impact or scaled scores between groups 1 and 2 or groups 2 and 3. The life events results offer support for the suggestion in hypothesis 1 of similar levels of life events between clinical groups. The findings offer partial support to hypothesis 3a: people with no history of clinical depression showed lower scaled scores and experienced less impact of the life events experienced, this difference reaching significance. However the finding of no significant difference between the other difficulties group and never depressed group on any of the life events measures fails to support hypothesis 3a completely.

3.2.3 Summary of primary analysis

Thus far the primary analysis suggests:-

- 1.) The findings are interpreted to support hypothesis 2: that people with clinical depression experience greater rumination and goal linking than people experiencing other psychological difficulties. Significant group differences between the depressed and the other difficulties group were found for both rumination and goal linking.

- 2.) The results are interpreted as providing partial support for hypothesis 3b: that people with no history of clinical depression experience less rumination and a lower tendency to goal link than clinical groups. In support, the control group were significantly lower on rumination than both clinical groups. The significant group difference on goal linking between the never depressed and depressed group was also consistent. However, no significant group difference was found on goal linking between the never depressed and the other difficulties group.

Thus it would be important to qualify hypothesis 3b, that no evidence was found that people with no history of depression experience less goal linking than people with other psychological difficulties.

3.) Hypothesis 1, that people with clinical depression would experience similar levels of daily hassles and life events to the comparison group of people with other psychological difficulties, received mixed support. Significant differences on daily hassles between groups 1 and 2 do not support the hypothesis. In support however, there were no significant differences on number, impact or scaled score of life events between the clinical groups. Thus the hypothesis is supported in relation to life events but not with respect to daily hassles.

4.) Hypothesis 3a, that people with no history of clinical depression will experience fewer daily hassles and life events than the clinical groups again received mixed support. Significant differences between the control group and depression group on daily hassles, life events scaled scores and the impact of life events are consistent with the hypothesis, however these differences were not found between the control group and other difficulties group. The absence of any significant group difference on number of life events is also inconsistent. Overall the results are interpreted to provide partial support, qualified in that people with no history of clinical depression experience fewer daily hassles and lower elements of life events (impact, events requiring less adjustment) than people with depression. However there was no evidence of a different number of life events between the control group and the depression group; or of fewer daily hassles or life events between the control group and people with other difficulties.

3.3 Secondary Analysis

3.3.1 Overall Question

The study's overall question concerns whether people with clinical depression respond to daily hassles with rumination, as a function of their tendency to goal link? To help explore

this question further, secondary analysis was performed on the data to unravel the relative contributions of specific dependent variables on the group differences revealed in the primary analysis and to provide suggestions about the direction of relationships.

A series of one-way analysis of covariance (ANCOVA) were performed separately on the rumination and goal linking variables, with group (depressed, other difficulties, never depressed controls) as the independent variable. This analysis enabled exploration of the impact of these key variables on group differences when the effect of another variable (goal linking, rumination, daily hassles, life events or mood) was partialled out.

Firstly, it was found that group differences on rumination previously detected remained highly significant, when the effects of goal linking are controlled for ($F(2, 66) = 27.54; p < 0.001$). Conversely, group differences on goal linking were reduced from highly significant ($F(2, 67) = 5.767; p = 0.005$) to non-significance when the effects of rumination were partialled out ($F(2, 66) = 1.31; p = 0.276$). The results show that while group differences in rumination remain strongly significant despite controlling for linking, when the effect of group differences on rumination is controlled, differences on goal linking no longer reach significance. This suggests that rumination is more strongly related to group differences of depression than goal linking.

Further ANCOVA comparisons revealed that group differences on rumination remain significant after controlling separately for the following factors: daily hassles ($F(2, 66) = 16.038; p < 0.001$); life events scaled score ($F(2, 66) = 30.160; p < 0.001$); impact of life events ($F(2, 66) = 26.005, p < 0.001$); HADS-D ($F(2, 66) = 5.148; p = 0.008$) and anxiety, HADS-A ($F(2, 66) = 7.079; p = 0.002$). Only when the CES-D mood measure was partialled out did group differences on rumination become non-significant ($F(2, 66) = 0.263; p < 0.770$).

The picture was somewhat different for goal linking. Group differences on goal linking also remained significant after controlling separately for life events scaled score ($F(2, 66) = 4.708$; $p=0.012$); impact of life events ($F(2, 66) = 3.684$; $p=0.030$) and anxiety, HADS-A ($F(2, 66) = 3.148$; $p=0.049$). Group differences on goal linking were reduced to non-significance when daily hassles ($F(2, 66) = 2.498$; $p=0.090$); HADS-D ($F(2, 66) = 2.582$; $p=0.083$) and CES-D ($F(2, 66) = 1.415$; $p=0.25$) were controlled for, in addition to rumination. Collectively the results suggest that rumination is a larger factor in group differences on major depression than goal linking. In contrast to suggestions made by goal progress theory and findings by McIntosh & Martin (1992; 1995), these results are more consistent with the suggestion that linking is a consequence of rumination rather than a cause. The finding that controlling for mood, as measured by the CES-D, reduces group differences on rumination to non-significance is suggestive of the interpretation that rumination is a response to depressed mood. Though tentative, the results are more suggestive of rumination as a mediator between depression and goal linking than as the mediator between goal linking and depression. In relation to the main question, the results, from both primary and secondary analysis thus far, suggest that while people with clinical depression do respond to daily hassles with rumination, rumination does not appear to be a function of their tendency to goal link.

3.3.2 Question 4

This is a subsidiary question of the study: what is the relative impact of daily hassles and life events on goal linking and rumination? To explore this question a number of Pearson r correlations and partial correlations were performed on daily hassles, impact of life events, goal linking and rumination data from the total sample.

Daily hassles and rumination were found to be positively and moderately related ($r = +0.654$, $n=70$, $p<0.001$, 1 tailed). Impact of life events and rumination were also positively and moderately related, though the strength of the relationship was lower ($r=+0.427$, $n=70$, $p<0.001$, 1 tailed). In contrast daily hassles and goal linking were positively but weakly

related ($r = +0.315$, $n=70$, $p=0.004$, 1 tailed). Impact of life events and goal linking were also positively and weakly related ($r = +0.268$, $n=70$, $p=0.012$, 1 tailed), again the strength of the relationship was slightly lower than with hassles and goal linking. The results suggest that with both rumination and goal linking, relationships were a little stronger for daily hassles than impact of life events. Further relationships of both hassles and life events were stronger with rumination than with goal linking.

Partial correlations were used to further unpack the relative impact of daily hassles and impact of life events. Though reduced, the correlation between hassles and rumination remained highly significant even when the variance due to impact of life events was partialled out ($r=0.559$, $n=70$, $p<0.001$, 1 tailed). In contrast, the correlation between impact of life events and rumination reduced to non significance when daily hassles was controlled for ($r=0.136$, $n=70$, $p=0.133$, 1 tailed). These findings suggest that a large part of the relationship between life events and rumination is due to daily hassles and that daily hassles are more strongly associated with rumination than impact of life events.

Similarly while reduced, the relationship between daily hassles and goal linking remained significant when impact of life events was controlled for ($r=0.214$, $n=70$, $p=0.039$, 1 tailed). Again however the relationship between impact of life events and goal linking was reduced to non significance when daily hassles was partialled out ($r=0.129$, $n=70$, $p=0.146$, 1 tailed). This suggests that a large part of the weak relationship between life events and goal linking is due to daily hassles and that hassles are more strongly associated with goal linking than impact of life events.

The ANOVA and ANCOVA results for goal linking and rumination, previously reported, provide results consistent with the suggestion that daily hassles are more strongly associated with these variables than impact of life events. Specifically, when ANCOVA controlled for daily hassles, the F value for the significant group differences on rumination was reduced

from $F=35.78$ to $F=16.03$. Though still significant this reduction is greater than when ANCOVA controlled for impact of life events: here the F value for group differences of rumination was less reduced ($F=35.78$ to $F=26.01$). Similarly, when ANCOVA controlled for daily hassles, the F value for the significant group differences on goal linking was reduced from $F=5.77$ to $F=2.50$ and was no longer significant ($p=0.09$). Again the reduction was greater than when impact of life events was controlled ($F=5.77$ reduced to $F=3.68$, still significant).

Partial correlations were performed to further explore the relative strength of relationships of both hassles and impact of life events with rumination relative to goal linking. When goal linking was controlled for; relationships remained significant between hassles and rumination ($r=+0.610$, $n=70$, $p<0.001$, 1 tailed) and between impact of life events and rumination ($r=+0.368$, $n=70$, $p<0.001$, 1 tailed). However when rumination was controlled for; relationships between hassles and goal linking ($r=+0.116$, $n=70$, $p=0.171$, 1 tailed) and between impact of life events and goal linking ($r=+0.137$, $n=70$, $p=0.131$, 1 tailed) were reduced to non significance. The findings further support the suggestion that daily hassles and impact of life events are more closely associated with rumination than goal linking.

To recap, in answer to question 4, the results suggest that both hassles and impact of life events are more strongly associated with rumination than goal linking. Daily hassles are more strongly associated with rumination than impact of life events. Hassles are also more strongly associated with goal linking than impact of life events but within these relationships a lot of the variance is due to rumination.

3.3.3 Linkers versus non-linkers

In previous studies of goal linking (e.g. McIntosh et al 1995, 1997, 2001) analysis has involved splitting participants into groups of linkers and non-linkers for comparison. Having considered the study's main question and hypotheses, further post-hoc analysis comparing

linkers and non-linkers was explored for interest – the rationale being that based on previous work, this analysis may provide further insight into relationships between goal linking and the other dependent variables. Thus, to explore the impact of goal linking further, the median value of the Linking Inventory (7) was used to divide all participants into two groups for analysis. Following McIntosh and colleagues (1995, 1997), participants scoring 7-13 were considered to report a linking style of response, while those scoring 0-6 were considered to have a non-linking response. The sample was thus composed of 21 linkers and 49 non-linkers.

A series of one way ANOVA with 2 levels of linking type, were performed across the remaining main dependent variables: rumination, daily hassles, life events and mood. Importantly, due to the unequal sample sizes, data met the assumptions of homogeneity of variance and normal distribution. Significant differences were found between linkers and non-linkers on: rumination ($F(1, 68) = 8.194; p=0.006$); daily hassles ($F(1, 68) = 7.171; p=0.009$); CES-D ($F(1, 68) = 8.130; p=0.006$); HADS-A ($F(1, 68) = 4.014; p=0.049$) and HADS-D ($F(1, 68) = 5.995; p=0.017$). In all cases linkers total scores were higher than non linkers. No significant difference was found between linkers and non-linkers for any measure of life events. The results suggest, consistent with McIntosh et al (1992; 1995), that linkers show significantly greater rumination, low mood, anxiety and experience hassles to a greater extent than non-linkers.

A number of one-way ANCOVA were performed separately on the rumination, daily hassles, and CES-D variables, with link type (linkers, non linkers) as the independent variable. In this instance all significant differences between linkers and non linkers on rumination, daily hassles or CES-D were reduced to non-significance when each of the other variables (rumination, daily hassles or CES-D) was partialled out. Together these results suggest that linkers did differ significantly from non-linkers on rumination, daily hassles, mood and anxiety. The ANCOVAs suggest that any differences in the extent to which rumination,

hassles and CES-D relate to linking are less clear or structured than the differences previously detected in the extent to which rumination and linking relate to major depression.

A number of Pearson r correlations and partial correlations were examined again comparing relationships between daily hassles and life events (impact, scaled score) among linkers and non-linkers. Among linkers: moderate, positive correlations were found between daily hassles and scaled score life events ($r = +0.546$, $n=21$, $p=0.005$, 1 tailed) and between daily hassles and impact of life events ($r = +0.681$, $n=21$, $p<0.001$, 1 tailed). Among non-linkers: weak, positive correlations were found between daily hassles and scaled score life events ($r=+0.358$, $n=49$, $p=0.006$, 1 tailed) and between daily hassles and impact of life events ($r=+0.341$, $n=49$, $p=0.009$, 1 tailed). Thus correlations between daily hassles and impact / size of life events were stronger among linkers than non-linkers. The finding is consistent with a stronger relationship between major life events and daily hassles in linkers as compared with non-linkers.

Partial correlations for the above relationships were performed, controlling for rumination. Among linkers: the relationships between daily hassles and scaled score life events ($r=+0.515$, $n=21$, $p=0.010$, 1 tailed) and between daily hassles and impact of life events ($r=+0.605$, $n=21$, $p=0.003$, 1 tailed) remained moderate and significant. Among non-linkers however, relationships between daily hassles and scaled score life events ($r=+0.193$, $n=49$, $p=0.095$, 1 tailed) and between daily hassles and impact of life events ($r=+0.127$, $n=49$, $p=0.195$, 1 tailed) were reduced to non significance. Thus a large part of the relationship between hassles and life events in non-linkers is due to rumination, but this is not the case for linkers.

3.3.4 Summary of Secondary Analysis

Further to the results from the primary analysis, secondary analysis suggests:-

1.) ANCOVA analysis demonstrated that rumination is more strongly related to major depression group differences than goal linking. The findings are more consistent with the

suggestion that linking is a consequence of rumination rather than a cause and that rumination is a response to depressed mood. The results support the idea that people with clinical depression respond to daily hassles with rumination, but not as a function of their tendency to goal link.

2.) In answer to question 4, correlational analysis suggests that daily hassles and impact of life events are both more strongly associated with rumination than goal linking. Hassles show a stronger association with rumination than major life events. Hassles are also more strongly associated with goal linking than major life events; however within these relationships a lot of the variance is due to rumination.

3.) ANOVA analysis comparing linkers with non linkers, suggests that linkers showed significantly higher rumination, daily hassles, low mood and anxiety than non-linkers. ANCOVA comparisons suggest the extent to which rumination, hassles or CES-D relate to linking is less clear or structured than the differences previously detected in the extent to which rumination and linking relate to major depression. Correlations between daily hassles and impact of life events are stronger among linkers than non linkers. Compared with linkers, a larger part of the association between daily hassles and impact of life events, in non-linkers, is due to rumination.

Chapter 4. Discussion

An overview and discussion of the main findings will be followed by consideration of the study's implications, limitations and strengths. Conclusions and recommendations for future research will then be addressed.

4.1 Group Differences in Rumination, Goal Linking, Daily Hassles & Life Events

The main aim of this study was to explore whether people with clinical depression respond to daily hassles with rumination as a function of their tendency to goal link. In order to begin to answer this question, hypotheses 1-3 were explored to assess the extent to which people with major depression, other psychological difficulties and those with no history of clinical depression differed with respect to rumination, goal linking, daily hassles and life events as well as mood and anxiety.

Large and significant differences were found between all three groups on both CES-D and HADS measures of mood. The mean CES-D score for people with major depression reflected severe symptoms of depression, the mean score for those with other psychological difficulties reflected mild, non-clinical symptoms and the mean score of those with no history of depression fell within the lowest, not depressed, category. Thus the groups were found to be distinct, with respect to mood, suggesting successful manipulation of the independent variable, major depression.

The three groups also showed large significant differences on anxiety (HADS-A). Those with major depression reported highest anxiety, the group mean falling within the severe anxiety category. The other difficulties group fell between groups 1 and 3, group mean anxiety score falling just within the mild, non-clinical, category. The never depressed group reported lowest anxiety levels, group mean score falling within the normal range. The finding suggests those with major depression were also experiencing high levels of co-morbid anxiety. Co-morbid

anxiety is a common feature among clinical samples of people experiencing major depression and will be discussed further when considering study limitations.

4.1.1 Rumination & Goal Linking

As predicted, large and significant group differences were found between all three groups on rumination (effect sizes $d=0.75-2.68$). Thus those with major depression showed highest rumination, the never depressed control participants least rumination and those with other difficulties falling in the middle – ruminating significantly less than the depressed group and significantly more than the never depressed controls. The finding of greater rumination among those with major depression is consistent with goal progress theory (Martin & Tesser, 1989, 1996; Martin, Tesser & McIntosh, 1993) and with research linking rumination to deleterious outcomes such as a more severe depression (Nolen-Hoeksema, 2000). That those with other psychological difficulties evidenced significantly greater rumination than never depressed controls supports suggestions within the S-REF model and wider literature that rumination is not exclusive to depression. However, greater rumination among those with major depression, than found in either group 2 or 3, would indicate that rumination is a particularly salient feature within depression, relative to other difficulties.

People with major depression showed significantly greater goal linking than those with other psychological difficulties and never depressed participants. The difference between those with major depression and never depressed participants was large (effect size $d=0.97$); the difference between those with major depression and participants with other difficulties was medium to large (effect size $d=0.71$). While the mean score for linking was lowest among the control group, the difference between goal linking scores for participants with other difficulties and the control group was not significant. Evidence of significantly higher goal linking among the major depression group is consistent with the goal progress view of associations between goal linking, negative affect and depression. Interestingly, the finding that significant differences were only found between the major depression group and other

groups suggests a particular association between goal linking and depression, as compared with other psychological difficulties.

The study therefore found support for hypothesis 2, that people with clinical depression demonstrated a greater tendency to ruminate and goal link than people with psychological difficulties other than depression. Partial support was found for hypothesis 3b: a non-clinical comparison group of people with no history of clinical depression reported experiencing significantly less rumination than the clinical groups and a lower tendency to goal link than those with major depression. No evidence of a significant difference on goal linking however was found between the non-clinical group and people with other psychological difficulties. Thus highest rumination and goal linking within a clinical population of people experiencing major depression is consistent with goal progress theory and supportive of a role for goal linking in depressive rumination.

4.1.2 Daily Hassles and Life Events

Participants with major depression reported a significantly greater experience of daily hassles in the preceding month than both participants with other difficulties and those with no history of depression. Differences between groups were large (effect sizes $d=1.09$ & 1.54 respectively). Groups 2 and 3 did not differ significantly on daily hassles. Again the finding of a high level of daily hassles, combined with higher goal linking and rumination, among those with clinical depression is consistent with goal progress theory. McIntosh, Harlow and Martin's (1995) found that undergraduate students who goal link and experience a high level of daily hassles, subsequently reported greater depression than non-linkers and linkers experiencing few hassles. Thus a high level of hassles and goal linking, as also found in this study, might be expected among those experiencing major depression. These factors combined with rumination are likely to increase people's vulnerability to continued negative affect.

Frequent daily hassles have previously been associated with depression (Jung & Khalsa, 1989) and wider difficulties including anxiety (Kohn & Gurevich, 1993), thus significant difference on hassles between the clinical groups was not initially anticipated. Participants with major depression may well have experienced more frequent daily hassles than those with other psychological difficulties. Though speculative, it is also possible that difficulties inherent to depression, biased thinking, impaired motivation and hopelessness, may cause people with major depression to experience the same objective hassles as more intensely difficult and thus to report hassles as occupying a greater part of their life than people experiencing other psychological difficulties. The relevance of this distinction may be minimal however, given the importance of the impact of people's perceptions of events on mood (McIntosh & Martin, 1992). Thus if a difference in perception does exist, this reflects the reality of people's experience.

Like Bergh et al (2005) there was no significant difference in the number of life events experienced in the preceding two years by people with major depression, other difficulties and those with no history of depression. However, those with major depression did report significantly higher life events scaled score and impact of life events than never depressed control participants. The size of these differences was large (effect size $d=0.82$ for scaled score, effect size $d=1.02$ for impact). Thus while participants in each group experienced a similar number of life events, people with major depression experienced more major life events (e.g. death, marital separation), that are thought to demand a greater degree of adjustment, than participants with no history of depression. Logically, participants with major depression also experienced significantly greater impact of the life events they experienced than those with no history of depression. No other group differences on life events reached significance.

Consistent with Brown et al's (1995) finding that negative life events associated with depression involved loss, several of the larger negative life events on the social readjustment

rating scale (short form, Holmes & Rahe, 1967) involve death, illness or separation from a close relative. These events were experienced to a greater extent by those with major depression lending further support the association between loss and depression.

McIntosh, Martin & Jones (1997) found that people who goal link were more influenced by reflecting on life events, when rating their happiness, than non-linkers. The authors suggest that people who goal link may perceive life events as a greater threat to higher order goals leading to greater rumination and depression. This study finds that those with major depression experience greatest levels of rumination and goal linking and significantly greater impact of more major life events compared with group 3. These group differences alone however do not suggest how the variables might relate. Further, it is possible that people with major depression and higher goal linking may perceive life events as greater threats to higher order goals, but differences in mood may reflect the fact that those with major depression are indeed dealing with larger life events.

Considering daily hassles and life events together, the study provides mixed support for hypothesis 1. People with clinical depression did experience similar levels of life events but significantly greater daily hassles to a comparison group of people with other psychological difficulties. Thus the hypothesis is supported with respect to life events but not daily hassles. Results provide mixed support for hypothesis 3a. It was found that a non-clinical group of people with no history of depression experienced fewer daily hassles and less impact of fewer major life events than people with clinical depression. However, people with no history of depression showed no significant difference of hassles or any aspect of life events to people experiencing other psychological difficulties. While not all the predicted group differences were detected, the findings of highest rumination, goal linking and daily hassles among those with major depression is consistent with goal progress theory and supportive of a role for goal linking in depressive rumination. That people with clinical depression experienced significantly more major life events, which had a greater impact on their life, than people with

no history of clinical depression is suggestive of some role of major life events in clinical depression.

4.2 Is Rumination a Function of Goal Linking?

Work by McIntosh, Martin et al (1992; 1995) with undergraduate students and goal progress theory suggests that goal linking can lead people to ruminate, when lower order goals are threatened, which is in turn associated with lower mood and depression. The model predicts that rumination mediates the relationship between linking and negative affect.

The main question of this study was whether a sample of people experiencing clinical depression would respond to daily hassles with rumination as a function of their tendency to goal link. The relative contribution of different variables to the group differences previously described was explored, to provide suggestions about the direction of relationships within a clinical sample. Group differences in rumination remained highly significant when the effect of goal linking was statistically controlled for. In contrast, differences between groups on goal linking no longer reached significance when the effect of rumination was partialled out. The findings suggest that rumination was more strongly related to group differences of depression than goal linking.

The relative strength of the relationship between rumination and group, compared with goal linking and group was further highlighted. Group differences in rumination remained significant after separately controlling for daily hassles; life events impact and scaled scores; HADS-D and anxiety. Only when the CES-D mood measure was partialled out did group differences on rumination reduce to non-significance. Group differences in goal linking remained significant after separately controlling for life events impact and scaled scores and anxiety. Group differences in rumination became non-significant after controlling for daily hassles and CES-D, in addition to rumination. Together the results suggest that rumination is a larger factor in group differences of major depression than goal linking.

In contrast to the suggestions of goal progress theory and findings of McIntosh, Martin et al (1992; 1995), these findings are more consistent with the suggestion that goal linking is a consequence of rumination rather than a cause. The finding that controlling for mood (CES-D) reduced group differences on rumination to non-significance is suggestive of the interpretation that rumination is a response to depressed mood. Thus, though tentative, the results are more indicative of rumination as a mediator between depression and goal linking than as the mediator between goal linking and depression. In response to the studies main question, collectively the results indicate that while people with clinical depression do respond to daily hassles with rumination, rumination does not appear to be a function of their tendency to goal link.

It is important to highlight that suggestions made about the direction of relationships between depression, rumination and goal linking are tentative. Suggestions previously made McIntosh, Martin et al (1992; 1995) that rumination mediates the relationship between goal linking and negative affect are also based on analysis from a small number of studies. Again, where studies are correlational, only tentative conclusions can be drawn about the direction of relationships. Thus interpretations require a degree of caution. Nevertheless it is plausible that a different pattern of findings emerge among participant experiencing clinical depression compared with non-clinical student populations. The study's finding of significantly higher goal linking, rumination and hassles among participants with major depression is suggestive of a role for goal linking in depressive rumination, however goal linking appears secondary to rumination in terms of variables that differentiate people with major depression, other difficulties and non-clinical control participants.

The suggestion that rumination is not a function of goal linking highlights the need to consider wider possible mechanisms between depression and rumination and additional reasons why people ruminate. As previously discussed, wider research would suggest that rumination is not only about goal linking and the pursuit of higher order goals. Rumination may reflect

other metacognitive beliefs about the value of rumination to understand and resolve depression (Papageorgiou & Wells, 2001a & b). Rumination may be pursued in an attempt to reduce the discrepancy between a person's desired and actual state and an attempt, not always to pursue a goal, but to process the unpleasant emotions associated with depression in order to withdraw from an unattainable goal (Pyszczynski & Greenberg, 1987; Teasdale & Barnard, 1993). As certain goals may be very difficult for an individual to relinquish, positive metacognitive beliefs can result in prolonged rumination and greater risk of prolonged or exacerbated depression.

Goal progress theory may be somewhat limited as a model for understanding rumination in clinical depression. In contrast to the Interacting Cognitive Subsystems Model (ICS: Teasdale & Barnard, 1993) and the Self Regulatory Model of Depression (Pyszczynski & Greenberg, 1987), Goal Progress theory does not describe in detail the maladaptive cycle of self regulation between actual and desired states, or depressive interlock, in which many people with clinical depression appear to become stuck. This cycle tends not to result in goal progress but to be more reflective of an attempt to process emotion and an inability to withdraw from a goal. Further, in contrast to the above models and the S-REF model (Wells & Matthews, 1994; 1996), goal progress theory does not detail aspects of rumination which may be automatic and uncontrollable. Perhaps goal progress theory better reflects relationships between goal linking, rumination and negative affect experienced within non-clinical populations, where shorter lived rumination, possibly including adaptive self reflection, is more likely to ultimately serve a function and lead to goal progress. In contrast, for people with clinical depression the demand for emotional processing is greater and causes of rumination may multiply, as a result the relative strength of goal linking compared with rumination may be less than among non-clinical samples.

4.3 What is the relative impact of daily hassles and life events?

Correlational analysis, from the sample as a whole, revealed moderate positive correlations between daily hassles and rumination and between impact of life events and rumination. Both daily hassles and impact of life events showed positive and weak associations with goal linking.

Partial correlations demonstrated that the relationship between hassles and rumination remained significant when the effect of impact of life events was controlled; however the relationship between impact of life events and rumination reduced to non-significance when daily hassles were controlled. Daily hassles were therefore found to be more strongly related to rumination than impact of life events. Further, a large part of the relationship between impact of life events and rumination was due to daily hassles. The same pattern of findings emerged for goal linking. Thus daily hassles were more strongly associated with goal linking than impact of life events. Again, a large part of the relationship between impact of life events and goal linking was due to daily hassles. This pattern of findings was confirmed by greater reductions in the F value for rumination and goal linking group differences when daily hassles was controlled by ANCOVA, relative to impact of life events.

The finding that daily hassles were more strongly related to rumination and goal linking, than impact of life events, is consistent with previous and somewhat surprising findings which suggest that daily hassles are perhaps more closely related to well being than life events (Kanner et al., 1981; Russell & Davey, 1993). It has previously been suggested that the impact of more major life events on well being may be mediated through daily hassles, for example due to disrupted activities and relationships following major life events. The findings that a large part of the relationships between impact of life events and both rumination and goal linking are due to hassles, would offer some support to this suggestion. Other studies, however, suggest both hassles and life events impact on well being independently (Chamberlain & Zikka, 1990). What ever the mechanism, the findings

highlight the relative significance of daily hassles on factors associated with depressed mood. The finding confirms the importance in clinical work of supporting people with depression to develop strategies, such as problem solving, that alleviate the impact of daily hassles as well as adjusting to more major life events.

In addition to the associations described above, it was found that relationships between daily hassles and rumination and between impact of life events and rumination remained significant when the effect of goal linking was controlled. When the effect of rumination was partialled out however, correlations between daily hassles and goal linking and between impact of life events and goal linking reduced to non-significance. This outcome and differences in the strength of initial correlations suggest that both daily hassles and impact of life events are more closely associated with rumination than goal linking. The finding that daily hassles and life events, previously associated with the onset of depression, are more closely associated with rumination than goal linking, emphasises the relative strength of connection between rumination and major depression, relative to goal linking. Collectively the results are consistent with the interpretation that daily hassles are associated with increased vulnerability to depression in a context of rumination and goal linking, but more so in the context of rumination.

4.4 Comparing Linkers and Non-Linkers

For interest and following McIntosh and colleagues (1992; 1995; 1997), participants were divided into linkers and non-linkers based on their scores on the linking inventory. Linkers were found to report significantly higher scores for rumination, daily hassles, low mood (CES-D & HADS-D) and anxiety. There were no significant differences between linkers and non-linkers in life events. Significantly greater rumination, hassles and low mood in linkers is consistent with the findings of McIntosh et al (1992; 1995). The results are supportive of goal progress theory that linkers are more likely than non-linkers to ruminate and experience low mood in the presence of a high level of daily hassles. The findings suggest evidence of a role

of goal linking in rumination and depression, but as before do not suggest how the variables might relate.

One way ANCOVA were performed separately on the impact of rumination, daily hassles and CES-D on group (linkers versus non linkers), when a third variable (rumination, hassles or CES-D) was partialled out. This analysis was pursued in an attempt to explore the relative impact of each variable on linking to enable consideration of suggestions about the direction of relationships. Unlike before, all the significant differences between linkers and non-linkers on rumination, daily hassles and CES-D were reduced to non-significance when each of the other variables (CES-D, hassles or rumination) was controlled. It was therefore difficult to draw conclusions about the direction of relationships beyond the suggestion that: any differences in the extent to which rumination, hassles and CES-D relate to linking are less clear or structured than the differences previously detected in the extent to which rumination and linking relate to major depression.

Linkers showed moderate, positive correlations between daily hassles and life events (scaled score and impact), while non-linkers showed weak positive correlations. The stronger relationship between daily hassles and life events in linkers is supportive of the suggestion in goal linking theory that linkers experience daily hassles as more threatening. For example two people may experience a moderate level of life events. Person one, who goal links, may experience the inevitable hassles associated with the life events as more of a threat to higher order goals and thus report their experience of greater hassles. Person two, who does not goal link, may be less sensitive to hassles associated with the life events and though a degree of hassle is reported, the extent to which it is experienced as part of life is less. The finding provides further support of the negative impact of goal linking.

To summarise the main findings of the study: a clinical population of people experiencing major depression reported greater rumination, goal linking and daily hassles than people

experiencing other psychological difficulties and a non-clinical group of people with no history of depression. People with clinical depression also experienced more major life events that have a greater impact than those with no history of depression. The pattern of results is consistent with goal progress theory and supports a role for goal linking in depressive rumination.

Rumination, however, was found to be more strongly related to group differences in major depression than goal linking. In contrast to findings of McIntosh, Martin et al (1992; 1995), these findings tentatively suggest that goal linking is a consequence of rumination rather than a cause, that rumination is a response to depressed mood and that rumination appears to mediate between depression and goal linking. Thus while people with clinical depression do respond to daily hassles with rumination, rumination does not appear to be a function of their tendency to goal link.

Daily hassles were more strongly associated with rumination and goal linking than impact of life events. Both hassles and life events were more associated with rumination than goal linking. Daily hassles are therefore significant to factors associated with clinical depression.

Greater rumination, daily hassles, low mood and anxiety in linkers, compared with non-linkers, again supports goal progress theory and a role for goal linking in depressive rumination. Any differences in the extent to which rumination, hassles and mood relate to linking are less clear or structured than differences detected in the extent to which rumination and linking relate to depression.

4.5 Theoretical & Clinical Implications

The findings of this study suggest that while elements of goal progress theory are helpful for a clinical population, for example the prediction of higher levels of goal linking associated with greater depression and rumination, the model may also be limited. Specifically, the model

appears limited in explaining the breadth of factors that may be involved in dysfunctional elements of rumination, which appear to dominate in clinical depression. A fuller understanding of depressive rumination would therefore require integration of concepts explored across a range of models.

As detailed in section 4.2, if depressive rumination is not a function of the tendency to goal link, then it is unlikely that rumination in depression predominantly involves goal linking and the pursuit of higher order goals. The wider literature would suggest that depression and rumination are also perpetuated by the wider, though largely erroneous, metacognitive beliefs people may hold about the benefit of rumination to resolve depression (Papageorgiou & Wells, 2001a & b). Other important theoretical constructs include cycles of self regulation between actual and desired states, or depressive interlock, in which people presenting with depression often seem to get stuck (Pyszczynski & Greenberg, 1987; Teasdale & Barnard, 1993). It would also seem necessary to highlight aspects of rumination which may be automatic and uncontrollable (Pyszczynski & Greenberg, 1987; Teasdale & Barnard, 1993; Wells & Matthews, 1994; 1996). Thus while goal progress theory is helpful in understanding relationships between goal linking, rumination and negative affect in non-clinical samples, for people with clinical depression it may be somewhat limited. Rumination at the level of depression ceases to be mainly about progressing with goals, but about attempts to regulate strong emotions and great difficulty in withdrawing from unattainable goals.

The significantly greater rumination detected in participants with major depression compared to those in other groups, and the relative strength of rumination, compared to goal linking, with respect to group differences, both underline the importance of treatment approaches to address rumination and relieve depression. Given that no one approach or model is dominant in terms of efficacy (Robinson et al., 1990), it may be valuable to draw on a range of treatments, perhaps more or less accessible to the client at different stages of therapy.

Thus initial approaches to break self-regulatory / depressive interlock cycles might include behavioural components of CBT (Beck et al., 1979) such as distraction, problem solving and engaging in pleasant events. The relationship of daily hassles to rumination, highlighted in this study, emphasises the need for approaches that address everyday problems. Cognitive strategies would involve identifying the dominant negative thoughts within the rumination process and considering rational alternatives. This process involves distancing from distressing cognitions and encourages people to step back from the process of rumination while they consider alternative interpretations, thus breaking cycles of ruminative thought. Following suggestions from the S-REF model, cognitive strategies targeting patients' positive metacognitive beliefs about rumination, beliefs that maintain analytic rumination as a viable coping strategy, could be addressed (Papageorgiou & Wells, 2001a & b). Further, negative metacognitive beliefs (rumination will make me lose my mind) that further exacerbate mood could be targeted.

Once the individual is less immersed in self-regulatory cycles, other approaches such as mindfulness based cognitive therapy (MBCT Segal et al., 2002), where ruminative thoughts and emotional states are observed in a non-judgemental manner may provide relief and reduce relapse (Teasdale et al., 2000). Such approaches may promote adaptive self reflection (Teasdale, 1999; Watkins & Teasdale, 2004) previously found to facilitate many of the processes undermined in analytic ruminative self focus (e.g. social problem solving).

Whatever the direction of relationship between rumination and goal linking, goal linking is clearly a feature of major depression which would seem important to address clinically, even if as a secondary aim to work targeting rumination. Approaches might include identifying goal linking as a form of metacognition which may perpetuate low mood; encouraging individuals to disconnect achievement or failure of lower order goals from achievement or failure of higher goals, exploration of the meaning the individual attaches to goal frustrations; and problem solving.

4.6 Limitations & strengths

The study could be criticised for recruiting relatively impure clinical samples. Those with major depression were found to also experience high levels of co-morbid anxiety, significantly greater than anxiety in the other difficulties or control group. Thus arguably it may be inaccurate to attribute the cause of results to depression and not to other factors, for example anxiety. The SCID-IV interview was used to confirm the presence or absence of major depressive disorder, therefore participants in group one were currently experiencing major depression and those in group two were not and those in group three had no history of depression. However wider exclusion criteria (e.g. formal diagnosis of personality disorder) were assessed using information provided in the participant's referral letter rather than being screened during interview. Although unlikely, it is possible that for participants in both clinical groups wider exclusion criteria may have on occasion been missed.

In relation to screening, attempts were made in designing the study to limit the time demands involved and to focus data collection on measures central to the study's questions. Importantly the groups were distinct on measures of mood, such that those with major depression experienced significantly greater low mood (severe low mood) than participants with other difficulties (mild low mood) and never depressed controls (not depressed / normal mood). Further all participants in the major depression group met SCID criteria which include exclusion of difficulties better explained by bereavement, substance use or a medical condition. Even if anxiety contributes to the results, it would seem unlikely that results did not reflect such large group differences in mood. Consistently group differences on rumination and goal linking remained significant when anxiety was controlled. Further in clinical populations it is commonplace for people to present with depression and co-morbid anxiety. Nolen-Hoeksema (2000) has found that rumination is particularly related and therefore relevant to a mixed anxiety and depression syndrome. Thus an advantage of studying a less pure but clinically representative sample is that generalisation to everyday clinical populations is easier.

Like many studies the samples are self selected. Though speculative, it is possible that potential clinical participants who declined to participate in the research may demonstrate different levels of goal linking relative to rumination and mood. Results may therefore not reflect the nature of relationships between goal linking and rumination in depressed adults as a whole.

The method of data collection relied entirely on participants' self report and therefore captures their subjective reported experience of rumination, linking, mood, life events and hassles. To some extent the accuracy of people's reporting is unknown. Nevertheless there is validity in the individual's account of their experience. Results should therefore be interpreted to reflect subjective self-report and considered in the context of other studies which arguably employ a more objective experimental paradigm such as reaction time tasks (for example Koole et al., 1999; McIntosh & Martin, 1992) or follow up long term outcome (e.g. Nolen-Hoeksema, 2000).

The measures of goal linking and rumination assess global tendencies to goal link and ruminate respectively. While such measures have frequently been used in studies of goal progress, items on the rumination scale do not directly reflect the extent to which rumination might concern the specific unattained goals detailed in the linking inventory. It is possible that the global nature of the measures may have masked relationships between goal linking and rumination. McIntosh and Martin 1992 overcame this limitation by assessing rumination, via a reaction time task, in response to one particular goal (being in a romantic relationship). Participants' degree of rumination about this specific goal was gauged by how quickly they identified relationship related words. However, among clinically depressed participants, as against undergraduate students, it might be somewhat challenging to detect a goal important to the majority which some have and others do not.

One of the main strengths of the study is exploration of goal linking, rumination and mood within clinical samples. Previous studies of goal linking have predominantly recruited undergraduate students. Recruitment of clinical samples enables consideration of the extent to which relationships between goal linking and rumination, discussed in goal progress theory, may translate to people's experience of clinical depression. In designing the study a power calculation was performed to estimate the required sample size. The sample size necessary to detect a large effect size, using analysis of variance, where power is 0.8 and significance level $p=0.05$, was 22 participants in each condition. 70 participants took part, ensuring sufficient statistical power and strengthening the study.

4.7 Conclusions and Suggestions for Future Research

Despite the above limitations of this study the following conclusions can be made. A clinical population of people with major depression experienced greater rumination, goal linking and daily hassles than people with other psychological difficulties and people with no history of major depression. Compared to those with no history of depression, people with major depression also experienced more major life events that had a greater impact on their lives. The pattern of findings is consistent with goal progress theory and suggests a role for goal linking in depressive rumination. Clinically, as part of treatment for depression, it would seem valuable to address metacognitive beliefs including beliefs about goals, to disconnect associations between failures or achievement of lower order goals with failure or achievement of higher order goals, which may help reduce vulnerability to low mood being maintained.

Rumination was found to be more strongly related to group differences in major depression than goal linking. In contrast to McIntosh, Martin et al (1992; 1995), findings tentatively suggest that goal linking is a consequence of rumination rather than a cause; rumination is a response to depressed mood and rumination appears to mediate between depression and goal linking rather than between goal linking and depression. Thus while people with clinical

depression do respond to daily hassles with rumination, rumination does not appear to be a function of their tendency to goal link.

Theoretically, these findings highlight some limits of goal progress theory in detailing the dysfunctional quality of depressive rumination. A fuller understanding of rumination in depression may require integration of concepts from wider models including metacognitive beliefs about the value of rumination, cycles of self-regulation between actual and desire states and an automatic, uncontrollable quality to aspects of rumination. Findings also underline the importance of targeting rumination in the treatment of depression. Associations between daily hassles, rumination and goal linking, indicate that support to manage daily problems, for example through problem solving, would be valuable, in addition to other cognitive-behavioural approaches and therapies to enhance adaptive self focus.

Greater rumination, hassles, low mood and anxiety in people who goal link, compared to people who do not, is also suggestive of a role for goal linking in depressive rumination. Any difference in the extent to which rumination, hassles and mood related to linking were less clear or structured than the differences in the extent to which rumination and linking related to depression.

Further research that may help to progress the findings of this study could include a replication study. Given that most studies of goal linking and rumination have recruited non-clinical participants, it would be valuable to determine if a similar pattern of findings emerged again with clinical populations, to confirm or refute the suggestions made above. It may be helpful to further explore the direction of relationships between depression, rumination and daily hassles among equal samples of participants who goal link relative to those who do not, while also comparing clinical with non-clinical populations.

To overcome the limitation of reliance on participant self report, relationships between goal linking and rumination in clinical samples could follow previous studies (e.g. McIntosh & Martin, 1992) that assess rumination using an experimental task such as a reaction time paradigm. It would be necessary for future work to assess the efficacy of clinical interventions targeting metacognitive beliefs, including goal linking, to evaluate therapeutic gain. Future research that integrates what is known about rumination, from the current range of models and studies would be valuable in increasing understanding of depressive rumination and finding ways to relieve the distress experienced by people with major depression.

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APPENDIX 1

Ethical Approval

Dr Ken Proctor
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Ms Emily McIntosh
Trainee Clinical Psychologist
Area Clinical Psychology Service
New Craigs
6 –16 Leachkin Road
INVERNESS
IV3 8NP

06 March 2006

Dear Ms McIntosh,

Management Approval for Non-Commercial Research

I am pleased to tell you that you now have Management Approval for the research project entitled '**Goal beliefs, daily hassles & rumination in depression**'. I acknowledge that:

- The project is sponsored and funded by the University of Edinburgh.
- Ethics approval for the project has been obtained from the Highland Research Ethics Committee (reference number 06/SO901/1).

Please direct all enquiries regarding this letter to the NHS Highland Research Manager (Dr Catherine Sinclair 01463 667317).

Yours sincerely,

DR KEN PROCTOR
ASSOCIATE MEDICAL DIRECTOR (PRIMARY CARE)

cc Dr Catherine Sinclair, Unit 18, The Green House, Beechwood Business Park, Inverness IV2 3BL

Working with you to make Highland the healthy place to be



Chairman: Garry Coutts
Chief Executive: Dr Roger Gibbins BA MBA PhD

NHS Highland, Assynt House, Beechwood Park, INVERNESS IV2 3HG
Highland NHS Board is the common name of Highland Health Board

APPENDIX 2

Participant's letter of invitation

**Area Clinical Psychology
Service**
New Craigs
6-16 Leachkin Road
Inverness IV3 8NP
Telephone 01463 704683
Fax 01463 704686



Date: 2006
Your Ref
Our Ref: EM/TP

Enquiries to: Secretary
Direct Line: 704683
Email:

CONFIDENTIAL

Dear Sir / Madam,

My name is Emily McIntosh, I am a trainee Clinical Psychologist and I am writing to you to invite you to take part in a research study. Before you make a decision about taking part it is important that you understand what will be involved and why the research is being done. I have sent you a "participant information sheet" that explains what the study is about, why you have been invited and what would be involved if you were willing to take part. Please read the information sheet carefully and feel free to contact us if there is anything you are unsure about or would like to ask any questions. All contact details are provided at the end of the information sheet.

If you decide that you are willing to take part in the study:-

1. Please telephone Emily McIntosh on 01463 704 683 to let me know that you are willing to take part. A message can also be left at this number. If you leave a message please could you leave your contact telephone number so that I can get back to you.
2. If you prefer, you can return the contact sheet attached in the stamped addressed envelope provided.
3. Please also read the consent form. Please **do not** sign the consent form until you meet with the researcher. Please bring the consent form with you to this meeting.

What will happen next is that I will telephone (or write if you prefer) to arrange a convenient time to meet with you, either at home or at the psychology department for us to carry out the study.

Working with you to make Highland the healthy place to be



Chairman: [To be appointed]
Chief Executive: Dr Roger Gibbins BA MBA PhD

NHS Highland, Assynt House, Beechwood Park, INVERNESS
IV2 3HG

*Highland NHS Board is the common name of Highland
Health Board*

If you decide that you do not wish to take part:-

1. It would be very helpful if you could indicate that you do not wish to take part on the contact sheet below and return this to me in the stamped addressed envelope. You are not obliged to take any further action.

Thank you very much for your participation, I look forward to hearing from you.

Yours Sincerely

Emily McIntosh
Trainee Clinical Psychologist
(supervisor)

Dr Sheelagh Rodgers
Consultant Clinical Psychologist

(cut here)→

Name.....

Address.....
.....
.....
.....

Contact number..... telephone
(If you would rather not be contacted by telephone, leave this space blank and you will be contacted by post instead)

(please tick)

1. I have read the information leaflet and am willing to take part in the study.
I have read the consent form (please bring to meeting for signing with researcher).

2. I do not wish to take part in the study

3. I am considering participating but would like to speak to the researcher to ask further questions (if so please provide a contact telephone number)

APPENDIX 3

Study information sheet



Participant Information Sheet

Study Title: Goal beliefs, daily hassles and rumination in depression

I would like to invite you to take part in a research study. This research has ethical approval from an NHS Research Ethics committee and also approval from Highland Research and Development Office.

Before you make a decision about taking part it is important that you understand what will be involved and why the research is being done.

Please read the following information carefully and feel free to contact us if there is anything you are unsure about. All contact details are provided at the end of this information sheet. Please take your time to decide whether you would like to take part in this project.

What is this study about? Why is it important?

Research done in the past suggests that one reason why people find it hard to break out of depressed moods is that they experience very repetitive negative thoughts and feelings. This particularly happens after stressful events or day to day hassles. This pattern of repetitive negative thoughts and feelings is known as rumination.

Further research carried out by psychologists looks at the way people think about their goals, particularly how much people believe their happiness depends on reaching certain day to day goals.

The aim of this study is to find out more about how beliefs about goals, and rumination (repetitive negative thoughts) might be linked in affecting people's mood and depression.

The hope is that better understanding of beliefs and thinking in depression will lead to better and faster psychological treatments for people with depression in the future.

Who is carrying out the study?

The study is being carried out by Emily McIntosh, Trainee Clinical Psychologist, as part of her doctoral qualification in Clinical Psychology from Edinburgh University. She will be supervised by Dr Sheelagh Rogers and Dr David Gillanders, both Chartered Clinical Psychologists. The researcher has experience of interviewing and working with people who experience depression.

Why have I been chosen?

You have been invited to attend for one of three main reasons:-

1. You have been referred to Clinical Psychology Services and your main difficulty is depression. Or:-
2. You have been referred to Clinical Psychology Services and your main difficulty is not depression. Or:-
3. You have not been referred to Clinical Psychology Services.

A large number of people in a similar situation to you will also be invited to take part in this study.

Do I have to take part?

It is completely up to you to decide whether you wish to take part. Your participation is voluntary. You are also free to change your mind at any time and do not have to give a reason for changing your mind.

Whether you decide to take part or not, any treatment you may be going to receive at the Clinical Psychology Services will not be affected in any way.

What will be involved if I agree to take part?

If you decide to take part you will be asked to read the enclosed consent form, please do not sign the form until you meet with the researcher. You will be contacted, either by telephone or post, and offered an appointment at a time and place (psychology department / home) that suits you. Please bring the consent form with you for signing. The total time for the study is expected to be between 45 minutes to one hour.

At the appointment:-

You will be asked to sign the consent form. You will be asked brief details of information such as your age, gender. You will be asked a series of questions about your mood and other features of depression that you may or may not have experienced. You will then be asked to complete a series of questionnaires with the researcher. The questionnaires ask about happiness and goals, thinking patterns, what day to day hassles you may have experienced recently from a given list, bigger life events you may have had from a given list and mood. There are no right or wrong answers.

What if something goes wrong?

Answering the questions and filling out the questionnaires will involve thinking about your current or past mood and noting from a list which, if any, hassles or life events you have experienced. This process should not be distressing and you will not be asked to talk in detail about yourself. The questions you will be asked are ones that have often been used in previous research projects and in therapy and there have been no reports of people becoming distressed. If you do find the questions/questionnaires distressing the researcher will be present to offer support. If you continued to experience distress after the meeting please do not hesitate to contact one of the people listed at the end of this information sheet. Should this happen you will be offered support by an appropriate professional should you wish it.

You are of course free to withdraw from the study at any point. If this were to happen support would still be offered to you.

If you are unhappy about how the research has been carried out you can make a complaint by following the normal NHS complaints procedure.

Will my information be kept confidential?

Yes. All the information about you and the questionnaires you fill out will be kept strictly confidential. The questionnaires will be kept within the Clinical Psychology Department in a locked, secure cabinet and destroyed after 5 years. This is in line with the requirements of the data protection act.

The only time the researcher would contact anyone about what was discussed during the appointment is if you were to tell the researcher that you were planning to harm yourself or someone else. If this occurred the researcher would contact your GP.

What will happen to the results of the research study?

The research will be written up as part of Emily McIntosh's doctorate in Clinical Psychology from Edinburgh University. A summary of the study results will also be sent to you if you would like a copy. In the future the results will be prepared for scientific publication to benefit psychologists and people with depression internationally.

Who do I contact for further information?

If you have any questions or need any further information about the study, please contact any of the individuals below:-

Ms Emily McIntosh
Trainee Clinical Psychologist
Area Clinical Psychology Service
New Craigs
6-16 Leachkin Rd
Inverness
IV3 8NP

Tel: 01463 704 683 (ext:3694)

Dr Sheelagh Rogers
Chartered Clinical Psychologist
Area Clinical Psychology Service
New Craigs
6-16 Leachkin Rd
Inverness
IV3 8NP

Tel: 01463 704 683 (ext:4682)

Dr David Gillanders
Chartered Clinical Psychologist &
Lecturer in Clinical Psychology
University of Edinburgh
School of Health in Social Science
Old Medical School
Teviot Place
Edinburgh
EH8 9AG

Tel: 0131 651 3946

If you would like any further information on this project from an independent advisor, not connected to the study, please contact Dr Loren Scott-Lodge on 01463 704683 (ext:3603)

Thank you for taking the time to read this information sheet.

APPENDIX 4

Consent forms

**Area Clinical Psychology
Service**
New Craigs
6-16 Leachkin Road
Inverness IV3 8NP
Telephone 01463 704683
Fax 01463 704686



Date: 2006
Your Ref
Our Ref: EM/TP

Enquiries to: Secretary
Direct Line: 704683
Email:

Participant Consent Form

Study: Goal beliefs, daily hassles and rumination in depression

Name of researcher: Ms Emily McIntosh, Trainee Clinical Psychologist

Name: _____

Address: _____

Telephone: _____

(If you would rather not be contacted by telephone, leave the space blank and you can be contacted by post instead)

1. I confirm that I have read and understood the Information Sheet for the above study.
2. I have had the opportunity to ask questions and have had these answered to my satisfaction.
3. I understand that my taking part in this study is voluntary, that I am free to withdraw at any time without having to give a reason and without my care being affected.
4. I agree to take part in this study.

Participant's Name (print) _____ Date _____

Participant's Signature _____

Researcher's Signature _____ Date _____

Working with you to make Highland the healthy place to be



Chairman: [To be appointed]
Chief Executive: Dr Roger Gibbins BA MBA PhD

NHS Highland, Assynt House, Beechwood Park, INVERNESS
IV2 3HG
*Highland NHS Board is the common name of Highland
Health Board*

**Department of Psychological
Services**
New Craigs
6-16 Leachkin Road
Inverness IV3 8NP
Telephone 01463 704683
Fax 01463 704686



Date: 2006
Your Ref
Our Ref: EM/TP

Enquiries to: Secretary
Direct Line: 704683
Email:

CONFIDENTIAL

Consent Form For Recording SCID Interview

I give consent for my interview with Ms Emily McIntosh to be audio-recorded for the purposes of research supervision. I understand that no one other than Emily McIntosh and her supervisor, Dr David Gillanders, will have access to the recording and that the tape will be erased after it has been listened to. I understand that the recording will only be used in supervision and for no other purpose. It has been explained that the recording being made is confidential.

Signature: _____

Date: _____

Working with you to make Highland the healthy place to be



Chairman: [To be appointed]
Chief Executive: Dr Roger Gibbins BA MBA PhD

NHS Highland, Assynt House, Beechwood Park, INVERNESS
IV2 3HG

*Highland NHS Board is the common name of Highland
Health Board*

APPENDIX 5

Mood disorders subsection of the Structured Clinical Interview for DSM-IV Clinical Version (SCID-CV for DSM-IV: First, Spitzer, Gibbon & Williams, 1996)

SCID-D INTERVIEW

Code: _____

Date: _____

A: MOOD EPISODES

Major Depressive Episode Criteria

INTRODUCTION: I am going to ask you some questions about your mood.

Following Teasdale & Cox (2001) Screening Question (group 3):

Has there ever been a time that lasted at least a week when you felt extremely depressed or sad, that you didn't care anymore or didn't enjoy anything? Yes / no

Section A (Five or more of the following symptoms have been present during the same 2 week period and represent a change from previous functioning;; at least one of the symptoms is either (1) depressed mood, or (2) loss of interest or pleasure.)

Ratings: ? = inadequate information; - = Absent (or subthreshold); + = present

Q A1	<p>In the past month... ...has there been a period of time when you were feeling depressed or down most of the day, nearly every day? (What was that like?)</p> <p>If yes: How long did it last? (as long as 2 weeks?)</p> <p>If no: Has there <u>ever</u> been a period of time...(as above) (If at least one past depressed period: have you had more than one time like that? Which one was the worst?)</p>	? - +
Q A2	<p>(In the past month)...what about losing interest or pleasure in things you usually enjoyed?</p> <p>If yes: Was it nearly every day? How long did it last? (As long as 2 weeks?)</p> <p>If no: Has there <u>ever</u> been a time when you have lost interest...(as above) (If at least one past period: have you had more than one time like that? Which one was the worst?)</p>	? - +
	<p><i>If neither A1 nor A2 has ever been + the participant does not meet criteria</i></p> <p>For the following questions, focus on the worst 2-week period:</p>	
Q A3	<p>During (2 week period) ...did you lose or gain any weight? (how much? Were you Trying to lose weight?)</p>	? - +

	<p>If no: How was your appetite? (what about compared with your usual appetite? Did you have to force yourself to eat? Eat (less/more) than usual? Was that nearly Everyday?)</p>	
Q A4	<p>....how were you sleeping? (Trouble falling asleep, waking frequently, trouble staying asleep, waking too early OR sleeping too much? How many hours a night compared with usual? Was that nearly every night?)</p>	? - +
Q A5	<p>...were you so fidgety or restless that you were unable to sit still? (Was it so bad that other people noticed it? What did they notice? Was that nearly every day?)</p> <p>If no: What about the opposite – talking or moving slowly than is normal for you? (Was it so bad that other people noticed it? What did they notice? Was that nearly every day?)</p> <p><i>(nb: also consider behaviour during interview)</i></p>	? - +
Q A6	<p>...What was your energy like? (Tired all the time? Nearly every day?)</p>	? - +
Q A7	<p>...how did you feel about yourself? (Worthless? Nearly every day?)</p> <p>If no: What about feeling guilty about things you had done or not done? (Nearly everyday?)</p>	? - +
Q A8	<p>...did you have trouble thinking or concentrating? (What kinds of things did it interfere with? Nearly every day?)</p> <p>If No: Was it hard to make decisions about everyday things?</p>	? - +

Q A9	<p>...were things so bad that you were thinking a lot about death or that you would be better off dead? What about thinking of hurting yourself?</p> <p>If yes: Did you do anything to hurt yourself?</p>	? - +
QA10 (A)	<p><i>(scoring) At least 5 of A1-A9 are "+" and at least one of these is A(1) or A(2)</i></p> <p><i>If A10 is "-" (i.e. fewer than 5 are "+") ask the following if unknown:</i> (Have there been any other times when you've been depressed and had even more Symptoms than we've just talked about?) <i>If "yes" go back to A1, and ask about that episode</i> <i>If "no" the participant does not meet the criteria.</i></p>	? - +
Q A11 (C)	<p><i>(if unclear) C. Has (the depression/own words) made it hard for you to do your work, take care of things at home, or get along with other people?</i></p> <p><i>If A11 is "-" (i.e. symptoms not clinically significant), ask the following if unknown:</i> (Have there been any <u>other</u> times when you've been depressed and it had more of an effect on your life?) <i>If "yes" go back to A1, and ask about that episode</i> <i>If "no" the participant does not meet the criteria.</i></p>	? - +
QA12 (D)	<p>Just before this began, were you physically ill? (yes= -)</p> <p>Just before this began, were you taking any medications?</p> <p>If yes: Any change in the amount you were taking?</p> <p>Just before this began, were you drinking or using any street drugs?</p> <p><i>If there is any indication that the depression may be secondary, assess, then rate – or +</i></p> <p><i>If A12 is "-" (i.e. mood is due to substance misuse or general medical condition) ask:</i> Have there been other times when you've been depressed and it was not because of (General medical condition / substance misuse)? <i>If "yes" go back to A1, and ask about that episode</i> <i>If "no" the participant does not meet the criteria.</i></p>	? - +
QA13 (E)	<p><i>(if unknown):</i> Did this begin soon after someone close to you died? (yes= -)</p> <p><i>If A13 is "-" (i.e. the depressed mood is better accounted for by bereavement) ask:</i> Have there been other times when you've been depressed and it was <u>not</u> because of the loss of a loved one? <i>If "yes" go back to A1, and ask about that episode</i> <i>If "no" the participant does not meet the criteria.</i></p>	? - +

QA14	<p>(Criteria A, C, D, and E are +) Have you had (symptoms rated + above) in the past month?</p> <p>Check here _____ if criteria have been met in the past month.</p>	<p>+</p> <p>major dep episode</p>
QA15	<p>How many separate times have you been (depressed/own words) nearly every day For at least 2 weeks and had several of the symptoms that you just described, such as (symptoms of worst episode)?</p> <p>Total number of major depressive episodes _____</p>	

APPENDIX 6

The Linking Inventory (McIntosh & Martin 1992)

LINKING QUESTIONNAIRE

Code: _____

Date: _____

INSTRUCTIONS: (*I am going to read out a list of statements. After each statement I will read out two possible responses.*) Which of the two possible reactions more closely describes how you feel about the preceding statement?

(Tick A or B)

1. You've won £10,000 in a contest.

A Now that I can afford many of the things I've always wanted, I will be much happier.

B I'm glad that I won the money, although I don't think it will influence how happy I am overall.

2. Does your weight influence your happiness?

A I am only happy when I am at my ideal weight

B It would be nice to be at my ideal weight, but I would be just as happy if I were not.

3. Do you get more happiness out of pursuing your goals or as a result of reaching them?

A I get more happiness out of striving for my goals; reaching them is just the icing on the cake.

B My happiness comes primarily from reaching my goals.

4. How critical for your happiness is it for you to be in a romantic relationship?

A It is difficult for me to be truly happy if I do not have someone in my life.

B I prefer to have someone in my life, but I can be just as happy without a *partner*.

5. Imagine that over the next 6 months the following things happen: You enter a competition and win a new car, then a project you are working on at work goes badly, then you go on a great holiday, then someone steals your car.

A My happiness will swing up and down as events in my life change.

B These are just natural events in my life, and they won't necessarily influence my happiness.

6. One day you realize you have all the things you want – the job you want, the spouse/partner you want, the free time you want.

A This will not directly influence how happy I am, because happiness is something I determine, regardless of what happens outwardly.

B If I have all the things I want then I will be completely happy.

7. How important is having money to your happiness?

A Being able to buy things I want when I want them definitely makes me happier.

B Once I have enough money for the basic necessities of life (like food, clothing and shelter), more money will not make me happier.

8. Someone at your work is one of the most annoying, unpleasant people you've ever known.

(Tick A or B)

A I'm probably going to be unhappy whenever I'm around my workmate.

B I can be happy when I'm around my workmate if I really want to be.

9. How does good and bad luck affect your happiness?

A How I respond to good and bad luck in my life is more important than the good and bad events themselves.

B The best way for me to keep from being unhappy is to keep bad things from happening to me. The best way for me to be happier is to make good things happen to me.

10. What would it take for you to be happy right now?

A There are certain things that must happen in my life for me to be truly happy.

B The only thing that is keeping me from being happy right now is myself.

11. You just lost the job which you've had for five years and enjoyed very much.

A I'll only be happy again if I find another good job

B I can be happy whether I get another good job or not

12. Does being outgoing affect your happiness?

A I would be happier if I was more outgoing.

B. I would be about as happy as I am right now if I was more outgoing

13. Think about the things in your life that you really want but just can't get. Maybe you want to be a doctor, but you realize that your qualifications are not going to be good enough. Or maybe you want to go out with a certain person, but that person won't go out with you. How does this affect your happiness?

A The more things I want but can't get, the less happy I am.

B. Wanting things I can't get does not make me less happy.

TOTAL

Score max = 13
(previous classification 0-6 non-linker; 7-13 linker)

APPENDIX 7

**The Short Response Styles Questionnaire
(Nolen-Hoeksema & Jackson, 2001)**

SHORT RESPONSE STYLES QUESTIONNAIRE

Code: _____

Date: _____

INSTRUCTIONS: People think and do many different things when they feel sad, blue or depressed. Please read / listen to each of the items below and indicate whether you never, sometimes, often, or always think or do each one when you feel sad, down or depressed. Please indicate what you **generally** do, not what you think you should do.

(Please Circle)

- | | Never
1 | Sometimes
2 | Often
3 | Always
4 |
|--|------------|----------------|------------|-------------|
| 1. I think about how alone I feel | | | | |
| 2. I think about my feelings of fatigue and achiness | | | | |
| 3. I think about how hard it is to concentrate | | | | |
| 4. I think about how passive and unmotivated I feel | | | | |
| 5. I think "why can't I get going?" | | | | |
| 6. I think about a recent situation, wishing it had gone better | | | | |
| 7. I think about how sad I feel | | | | |
| 8. I think about all my shortcomings, failings, faults and mistakes. | | | | |
| 9. I think about how I don't feel up to doing anything | | | | |
| 10. I think "Why can't I handle things better?" | | | | |

TOTAL

APPENDIX 8

**The Survey of Recent Life Experiences
(SRLE, Kohn & Macdonald, 1992)**

SURVEY OF RECENT LIFE EXPERIENCES (SRLE)

Code: _____

Date: _____

INSTRUCTIONS: Following is a list of experiences which many people have at some time or other. Please indicate for each experience how much it has been a part of your life **over the past month**. Put a "1" in the space provided next to an experience if it was **not at all** part of your life over the past month (e.g. "trouble with mother in law – 1"); put a "2" for an experience which was **only slightly** part of your life over that time; put a "3" for an experience which was **distinctly** part of your life; and put a "4" for an experience which was **very much** part of your life over the past month.

Intensity of Experience over Past Month

- 1= *not at all* part of my life
- 2= *only slightly* part of my life
- 3= *distinctly* part of my life
- 4= *very much* part of my life

1. Disliking your daily activities	
2. Disliking your work	
3. Ethnic or racial conflict	
4. Conflicts with in-laws or boyfriend's/girlfriend's family	
5. Being let down or disappointed by friends	
6. Conflict with supervisor(s) at work	
7. Social rejection	
8. Too many things to do at once	
9. Being taken for granted	
10. Financial conflicts with family members	
11. Having your trust betrayed by a friend	
12. Having your contributions overlooked	
13. Struggling to meet your own standards of performance and accomplishment	
14. Being taken advantage of	
15. Not enough leisure time	
16. Cash-flow difficulties	
17. A lot of responsibilities	
18. Dissatisfaction with work	
19. Decisions about intimate relationships	
20. Not enough time to meet your obligations	
21. Financial burdens	
22. Lower evaluation of your work than you think you deserve	
23. Experiencing high levels of noise	
24. Lower evaluation of your work than you hoped for	
25. Conflicts with family member(s)	
26. Finding your work too demanding	
27. Conflicts with friend(s)	
28. Trying to secure a loan	
29. Getting "ripped off" or cheated in the purchase of goods	
30. Unwanted interruptions of your work	
31. Social isolation	
32. Being ignored	
33. Dissatisfaction with your physical appearance	
34. Unsatisfactory housing conditions	
35. Finding work uninteresting	
36. Failing to get money you expected	
37. Gossip about someone you care about	
38. Dissatisfaction with your physical fitness	
39. Gossip about yourself	
40. Difficulty dealing with modern technology (e.g. computers)	
41. Hard work to look after and maintain house	
TOTAL (41-164)	

APPENDIX 9

The condensed version of the Social Readjustment Rating Scale (Life
Change List)
(SRRS, Holmes & Rahe, 1967)

SOCIAL READJUSTMENT RATING SCALE (SRRS – SHORT FORM)

Code: _____

Date: _____

INSTRUCTIONS: Below is a list of events - major life changes that many people sometimes experience. Please indicate (yes or no) if you have experienced each change in the last 2 years (24 months). The list refers to changes or life events rather than long term difficulties. If the event occurred, please also rate how it affected you on the following scale:-

- 1= Affected me in a very positive way (e.g. "complete happiness")
- 2= Affected me in a clearly positive way (e.g. "made me happy")
- 3= Affect on me was neutral, neither negative or positive (e.g. "felt indifferent")
- 4= Affected me in a clearly negative way (e.g. "made me unhappy")
- 5= Affected me in a very negative way (e.g. "disaster / very unhappy")

Life Event	Scaled score	Yes / no	Impact on life
Conflict with spouse / (partner) <i>(e.g. lot more arguments)</i>	35		1 2 3 4 5
Conflict with close relative or friend	29		1 2 3 4 5
Illness / accident in spouse / (partner)	44		1 2 3 4 5
Death of spouse (partner)	100		1 2 3 4 5
Death of a close relative or friend (circle)	63 or 37		1 2 3 4 5
Deteriorated financial situation	38		1 2 3 4 5
Conflict at work	23		1 2 3 4 5
Marital Separation	65		1 2 3 4 5
Started marital relationship	50		1 2 3 4 5
Residential move	20		1 2 3 4 5
New child (adoption or birth)	39		1 2 3 4 5
Change of Job	36		1 2 3 4 5
Reduced responsibility at work	29		1 2 3 4 5
Increased responsibility at work	29		1 2 3 4 5
TOTAL			

APPENDIX 10

Center for Epidemiological Studies-Depression
(CES-D, Radloff, 1977)

CES-D

Code: _____

Date: _____

INSTRUCTIONS: I am going to read a list of ways you may have felt. Please tell me how often you have felt this way during the past week: rarely or none of the time; some or a little of the time; occasionally or a moderate amount of time; or most or all of the time.

During the past week, that would be from _____ through today: _____(date)	Rarely or none of the time (less than 1 a day)	Some or a little of the time (1-2 days)	Occasionally or a Moderate amount of the time (2-4 days)	Most or all of the time (5-7 days)
1. You were bothered by things that usually don't bother you.	0	1	2	3
2. You did not feel like eating; your appetite was poor.	0	1	2	3
3. You felt that you could not shake off the blues even with help from your family or friends.	0	1	2	3
4. You felt that you were just as good as other people.	3	2	1	0
5. You had trouble keeping your mind on what you were doing.	0	1	2	3
6. You felt depressed.	0	1	2	3
7. You felt that everything you did was an effort.	0	1	2	3
8. You felt hopeful about the future.	3	2	1	0
9. You thought your life had been a failure.	0	1	2	3
10. You felt fearful.	0	1	2	3
11. Your sleep was restless.	0	1	2	3
12. You were happy.	3	2	1	0
13. You talked less than usual.	0	1	2	3
14. You felt lonely.	0	1	2	3
15. People were unfriendly.	0	1	2	3
16. You enjoyed life.	3	2	1	0
17. You had crying spells.	0	1	2	3
18. You felt sad.	0	1	2	3
19. You felt that people disliked you.	0	1	2	3
20. You could not get "going".	0	1	2	3
To total: Add all circled numbers in each column				

TOTAL:

APPENDIX 11

**Hospital Anxiety and Depression Scale
(HADS, Zigmond & Snaith, 1983)**

HADS

Code: _____

Date: _____

INSTRUCTIONS: Read each item and underline the reply which comes closest to how you have been feeling in the past week. Don't take too long over your replies, your immediate reaction to each item will probably be more accurate than a long, thought out response.

A D			AD
3 2 1 0	I feel tense or wound up Most of the time A lot of the time From time to time, occasionally Not at all	I feel as if I am slowed down Nearly all the time Very often Sometimes Not at all	3 2 1 0
0 1 2 3	I still enjoy the things I used to enjoy Definitely as much Not quite so much Only a little Hardly at all	I get a sort of frightened feeling like "butterflies" in the stomach Not at all Occasionally Quite often Very often	0 1 2 3
3 2 1 0	I get a sort of frightened feeling as if something awful is about to happen Very definitely and quite badly Yes, but not too badly A little, but it doesn't worry me Not at all	I have lost interest in my appearance Definitely I don't take as much care as I should I may not take quite as much care I take just as much care as ever	3 2 1 0
0 1 2 3	I can laugh and see the funny side of things As much as I always could Not quite so much now Definitely not so much now Not at all	I feel restless as if I have to be on the move Very much indeed Quite a lot Not very much Not at all	3 2 1 0
3 2 1 0	Worrying thoughts go through my mind A great deal of the time A lot of the time Not too often Very little	I look forward with enjoyment to things As much as I ever did Rather less than I used to Definitely less than I used to Hardly at all	0 1 2 3
3 2 1 0	I feel cheerful Never Not often Sometimes Most of the time	I get sudden feelings of panic Very often indeed Quite often Not very often Not at all	3 2 1 0
0 1 2 3	I can sit at ease and feel relaxed Definitely Usually Not often Not at all	I can enjoy a good book or radio or television program Often Sometimes Not often Very Seldom	0 1 2 3

Now check that you have answered all the questions

TOTAL

A

D

APPENDIX 12

Demographic information sheet

Demographics Sheet

Code: _____

Date: _____

Age: _____

D.O.B. _____

Gender: _____

Results Summary

Measure	Outcome / Scores
Screening question / SCID-D	
Linking questionnaire	Total : /13 (0-6 non-linkers; 7-13 linkers)
Short Response Style Questionnaire (rumination)	Total: (10-40)
Survey of Recent Life Experiences SRLE (hassles)	Total: (41-164)
Social Readjustment Rating Scale SRRS (life events)	Total: /14 Scaled score ____ (max 600) Impact ____ (0-70) Mean + ____ Neutral ____ Mean - ____
CES-D	Total: (0-60) cut off 16
HADS	Total A: Description: Total D: Description:

Would you like a summary of the findings of this study to be sent to you?

If yes please provide your name & postal address. This information will be stored confidentially and separately from your questionnaires and interview information.

Name: _____

Address: _____

post code: _____
