

THE UNIVERSITY OF HULL

Should Depressed People Focus on their Low Mood? Adaptive and  
Maladaptive Processing Modes in Unipolar Depression

being a dissertation submitted in partial fulfillment of the requirements for the  
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by

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## Overview

The portfolio has three parts. Part one is a systematic literature review, in which the empirical literature relating to different forms of self-focus processing mode and unipolar depression is reviewed. Self-focus processing modes are also referred to as different forms of rumination in the literature. Rumination, commonly defined as “repetitively 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, p.569), has been demonstrated by numerous studies to have a detrimental effect on mental health with regard to depression (for reviews, see Lyubomirsky & Tkach, 2004 and Thomsen, 2006). However different forms of rumination, or processing mode, have been identified in the literature that suggest focussing on the self when low in mood can assist with emotional processing. This systematic literature review identifies the literature comparing different forms of processing mode, categorises the numerous different processing modes into three conceptually distinct categories, and evaluates the evidence provided by the included studies in order to ascertain whether the identified modes are adaptive or maladaptive with regard to depression.

Part two is an empirical paper, which examines the effect of mindful and ruminative processing modes on mood and social problem solving ability in people vulnerable to developing depression. Teasdale (1999) proposed that ruminative and mindful processing have dissimilar properties, the former perpetuating depression and the later reducing the risk of depression. Mindful processing has since been explicitly taught as part of a therapy programme named Mindfulness-Based Cognitive Therapy (MBCT; Segal, et al, 2002). MBCT has been shown to approximately halve the risk of depressive relapse in formerly depressed patients who have experienced more than two depressive episodes (Ma & Teasdale, 2004; Teasdale et al., 2000). This empirical paper provides useful information regarding the

mechanisms by which MBCT is effective by comparing the effects of induced and habitual ruminative and mindful processing in dysphoric formerly depressed participants.

Part three comprises the appendices which include a personal evaluation of the research process.

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PART ONE:  
Systematic Literature Review

Adaptive and Maladaptive Self-focus Processing Modes in Major Depression  
Disorder: A Systematic Review of the Literature

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This paper is written in the format ready for submission to Clinical Psychology Review.

Please see Appendix B for the Guideline for Authors.

## **Abstract**

Rumination is well established as being a maladaptive response to low mood that increases the risk of the development of depression. However recent research has identified a number of other self-focused processing modes that have different properties to rumination and different psychological outcomes. The aim of this systematic review was to examine research that compared different forms of self-focus processing modes, establish what these modes are and assess whether they have adaptive or maladaptive qualities with regards to major depression disorder. The thirty-two studies identified as suitable for inclusion used numerous different terms to largely describe three conceptually distinct self-focus processing modes: rumination, reflection and mindfulness. Rumination (a repetitive, judgemental, passive thinking about one's experience) was universally found to be maladaptive. Reflection (a non-critical, controlled, thinking about one's experience) was found to be adaptive but only when non-judgemental measures of reflection were used. Mindfulness (a non-judgemental, intentional, attendance to one's experience) was largely found to be adaptive. Methodological issues that influence the confidence that can be placed on these findings are discussed. Finally, the clinical implications of these findings are outlined and areas of research are identified that warrant further investigation.

## 1. Introduction

Depression is one of the biggest mental health problems our society faces (Paykel, Brugha, & Fryers, 2005; Wittchen & Jacobi, 2005). Indeed, as has become increasingly apparent to the UK government following The Layard Report (Layard et al., 2006), it is one of the biggest health problems in the country and is therefore a costly problem. Comparing depression with the physical health problems of angina, asthma, diabetes and arthritis, the World Health Organization (WHO) concluded that depression impacts on a person's functioning 50% more than these physical health problems (Mousavi et al., 2007). This coupled with the finding that 2 ½ % of the UK population suffer from depression and a further 5 ½ % suffer from mixed depression and anxiety (Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2001) has led to the UK government investing millions into evidence based psychological therapies, largely CBT (Department of Health, 2008).

One of the most widely cited theories of how psychological mechanisms can maintain and intensify depression is that of Nolen-Hoeksema's Response Styles Theory of Depression (1987). Nolen-Hoeksema (1991) proposed that individuals who ruminate in response to low mood, i.e. "repetitively focusing on the fact that one is depressed; on one's symptoms of depression; and on the causes, meanings, and consequences of depressive symptoms" (p.569) are more prone to depression. A plethora of research using clinical and non-clinical samples has supported this theory and provided evidence to demonstrate that ruminative responses can cause various detrimental effects associated with depression, e.g. lower mood, reduce social problem solving ability and increase overgeneral autobiographical memory, which serve to increase the risk and intensity of depressive episodes (for reviews, see Lyubomirsky & Tkach, 2004 and Thomsen, 2006). Those that do ruminate, appear to do so because they believe it to be beneficial (Watkins & Teasdale, 2001).

The research on Response Style Theory of Depression appears to demonstrate that focussing on the self when depressed is maladaptive. However, various lines of research have begun to suggest that there are different forms of rumination, or what will be referred to in this review of the literature as “self-focussed processing modes”, some of which appear to have adaptive qualities too (e.g. McFarland & Buehler, 1998; Teasdale, 1999; Trapnell & Campbell, 1999; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The literature on potentially adaptive forms of self-focussed processing modes is rapidly growing, perhaps, in part driven by the current popularity of Mindfulness based therapeutic approaches, e.g. Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1990) and Mindfulness Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002) and a desire to understand how being mindful, i.e. “paying attention in a particular way: on purpose, in the present moment and non-judgementally” (Kabat-Zinn, 1994, p.4), can help alleviate or prevent psychological distress when mindfulness, like rumination, typically involves focussing on the self.

With the growth of literature on different self-focused processing modes, so too has there been a substantial increase in the number of different terms used to describe these processing modes. This review of the literature aimed to clarify the meanings of these different terms in order to differentiate between different forms of self-focused processing modes, before reviewing the empirical evidence of the effects of these processing modes on psychological outcomes related to depression.

Specifically, the aims of the systematic review were:

- i) to establish the different terms used for self-focussed attention and define their meanings.
- ii) to evaluate the research evidence that compares at least two different forms of self-focussed attention and measures affect or other psychological outcome.

iii) to assess whether self-focussed attention can be adaptive and if so (a) what forms of self focused attention, (b) in what ways and (c) for whom.

## **2. Method**

A systematic review of the published literature was performed in order to create a comprehensive, transparent and unbiased review of the area of depression and information processing styles.

### *2.1. Search strategy*

Given the variety of definitions used for various forms of self-focus in the literature, a broad search strategy was used in order to increase the probability of obtaining an inclusive sample of relevant studies. MEDLINE and PsycINFO, two online electronic databases in the social and health sciences, were searched in April 2008. Publications from 1950 onwards were included. A number of searches were conducted using various combinations of the following search terms (\* indicates truncation): analytic\*, abstract, conceptual-evaluative, evaluative, brooding, experiential, concrete, mindful\*, reflecti\*, pondering, ruminat\*, self focus\*, self-focus\*, atten\*, information processing, emotional processing, depress\*. Further studies were obtained through bibliographic review of acquired publications.

## *2.2. Study selection and inclusion criteria*

Studies were included in the review if they satisfied the following inclusion criteria: (1) use of a measure of mood, depressive symptoms or self-esteem or use of a sample of depressed, recovered depressed, or dysphoric participants (where standard instruments such as the SCID are used to assess participants' clinical status in studies which involved clinical participants), (2) compared at least two forms of self-focus/information processing either by use of experimental manipulation or self-report measures, (3) do not use an anger eliciting induction, (4) use an adult population, (5) published in a peer-reviewed journal, (6) published in English, (7) a minimum research quality threshold was met.

The inclusion criteria were chosen to ensure that the studies were relevant to the area of adult depression (criteria 1, 3 and 4), were of a minimum quality standard (criteria 5 and 7), and did not only investigate one form of self-focus (criteria 2).

A minimum research quality threshold was considered to be met if a study set out clear aims and/or hypotheses in the introduction section with explicit reasoning for the purpose of the study, used appropriate and replicable methodology to test the hypotheses, used appropriate statistical analyses to examine results, and used the results to reflect upon the initial hypotheses with reference to psychological theory.

Rumination alone has been extensively researched (see Thomsen, 2006 for a review). This review aimed to focus on publications examining how other forms of self-focus compare to it. Publications evaluating psychological therapies, e.g. mindfulness based approaches, were excluded (see Baer, 2003 and Toneatto & Nguyen, 2007 for reviews) as this review does not focus on clinical interventions.



Initial decisions regarding the suitability of papers for inclusion were made after reading the titles and abstracts of the articles identified using the searches described above. Articles which could possibly meet all of the inclusion criteria were included at this stage. The full text articles of those which were accepted at this stage were then read in order to ensure all inclusion criteria were met and a final decision regarding inclusion was made.

### **3. Results**

A total of 32 articles were identified as suitable for inclusion in the review. These comprised of 13 cross-sectional questionnaire studies (Crane, Barnhofer, & Williams, 2007; Fresco et al., 2007; Gurnáková, 2004; Harris, Pepper, & Maack, 2008; Joireman, 2004; Joireman, Parrott, & Hammersla, 2002; Kwon & Olson, 2007; Lo, Ho, & Hollon, 2008; Luyckx et al., 2007; Rude, Maestas, & Neff, 2007; Saffrey & Ehrenberg, 2007; Trapnell & Campbell, 1999; Verplanken, Friborg, Wang, Trafimow, & Woolf, 2007), 4 cross-sectional questionnaire longitudinal studies (Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008; Spasojevic & Alloy, 2001; Treynor et al., 2003), 12 experimental studies that compared two processing mode manipulations (Broderick, 2005; Buehler, McFarland, Spyropoulos, & Lam, 2007; Crane, Barnhofer, Visser, Nightingale, & Williams, 2007; McFarland & Buehler, 1998; Moberly & Watkins, 2006; Rimes & Watkins, 2005; Watkins, 2004; Watkins & Baracaia, 2002; Watkins & Moulds, 2005; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004; Williams & Moulds, 2007) and 3 experimental studies that compared two processing modes using measures not experimental manipulations (Gortner, Rude, & Pennebaker, 2006; Joormann, Dkane, & Gotlib, 2006; Sloan, Marx, Epstein, & Dobbs, 2008). The methodological characteristics and main findings of these 32 publications are presented in Table 1. See Appendix G for excluded studies.

Table 1

Summary of reviewed articles comparing different forms of self-focused processing modes.

Study	Design	Sample	Experimental manipulation	Assessment	Main findings
Broderick (2005)	Experimental repeated measures	N = 177 undergraduates	Random assignment to guided mindfulness meditation, rumination or distraction tasks (the later two from Morrow and Nolen-Hoeksema, 1990) following a low mood induction	RRS, PANAS	Dysphoric mood improved significantly more following the mindfulness meditation condition compared with the distraction and rumination conditions.
Buehler et al. (2007)	Experimental	N = 38 undergraduates (study 1) N = 78 undergraduates (study 2) N = 82 undergraduates (study 3)	Random assignment to negative or neutral mood induction, and reflective or ruminative mood orientation	AP, ERTAP (both study created measures)	In a low mood condition, reflection resulted in mood incongruent future prediction which resulted in participants experiencing more positive emotional reactions.  Rumination resulted in mood congruent future predictions (study 2 only).
Crane, Barnhofer, Visser et al. (2007)	Experimental repeated measures	N = 34 Recovered Depressed Participants	Random assignment to Abstract/Analytical or Concrete/Experiential mode of information processing adapted from Nolen-Hoeksema and Morrow's (1993) rumination task.	AMT, RRS, Mood VAS	High trait ruminators exhibited a significant increase in the proportion of categoric memories (overgeneral memory) following the abstract/analytic information processing condition only.

Crane, Barnhofer & Williams. (2007)	Cross-sectional Questionnaires	<p>N = 11 Never been suicidal remitted depressed</p> <p>N = 11 Suicidal ideators remitted depressed</p> <p>N = 10 Suicide attempters remitted depressed</p>	None	RRS	<p>Suicide attempters scored significantly higher on the brooding RRS items compared to the reflection RRS items, whereas the never suicidal group showed the opposite trend to near significance (p=0.06).</p> <p>The never suicidal group scored significantly higher on the reflection items compared to the suicide attempters. However there was no significant difference between groups for level of brooding.</p>
Fresco et al. (2007)	Factor analytic study / Cross sectional questionnaires	<p>N = 61 undergraduates (Study 2)</p> <p>N = 220 Recovered Depressed Participants</p> <p>N = 50 Healthy controls (Study 3)</p>	None	EQ, AAQ, RRS, ERQ, BDI-II, MASQ, SCID, HRSD	<p>Decentering in undergraduates was positively related to cognitive reappraisal and negatively with rumination, experiential avoidance, emotion suppression and depressive symptoms.</p> <p>Those with no history of psychopathology had higher levels of decentering than those with major depression.</p> <p>Recovered depressed participants had lower levels of decentering than healthy controls.</p> <p>Decentering was negatively related to depressive symptoms.</p>
Gortner et al. (2006)	Experimental Repeated measures with follow-up.	N = 90 undergraduates (non depressed but had elevated depressive symptoms in the past)	Random assignment to an emotionally expressive writing condition or a control writing condition, 20 minutes on 3 days.	RRS, ERQ, BDI	<p>Participants who suppress emotional expression showed less depressive symptoms 6 months following expressive writing.</p> <p>Treatment benefits were mediated by changes in Brooding but not Reflection.</p>

Gurnáková (2004)	Cross sectional questionnaires	N = 74 undergraduates	None	RRQ, SCCS(b), MFS, SCCS, BBI, IPA	A high reflection group scored higher than a high rumination group on measures of self-esteem, optimism and positive beliefs about the world and lower on measures of non-clarity of self-concept, helplessness and negative expectations.
Harris et al. (2008)	Cross-sectional Questionnaires	N = 96 undergraduates	None	RRS (adapted), MPS, BDI-II (adapted)	Brooding fully mediated the relationship between maladaptive perfectionism and depressive symptoms.  Reflection partially mediated the relationship between maladaptive perfectionism and depressive symptoms.
Joireman (2004)	Cross sectional questionnaires	N = 177 undergraduates	None	RRQ, TOSCA, IRI, RSES	Rumination was negatively related to self-esteem and positively related to shame and personal distress.  Reflection was negatively related to shame and personal distress, and positively related to guilt and perspective taking, partially mediating the relationship between these two.
Joireman et al. (2002)	Cross sectional questionnaires	N = 184 undergraduates	None	RRQ, RSES, IRI	Rumination was negatively related with perspective taking and positively related to personal distress.  Reflection was positively related to perspective taking and empathic concern.

Joormann et al. (2006)	Experimental Repeated measures	N = 64 Depressed participants N = 36 Recovered Depressed participants N = 20 Socially anxious participants N = 91 Never disordered participants	Dot probe task using 20 pairs of angry and neutral facial expressions, 20 pairs of sad and neutral expressions, and 20 pairs of happy and neutral expressions.	RRS, BDI-II, DPT	Depressed group had significantly higher brooding scores than other groups. Socially anxious and recovered depressed had higher brooding scores than controls.  Only the Depressed participants and controls had significantly different reflection scores.  Controlling for depressive symptoms, there was a significant correlation between brooding and attentional bias for sad faces only.
Kwon & Olson (2007)	Cross-sectional Questionnaires	N = 314 undergraduates	None	RRS, DSQ, BDI-II	Both brooding and reflection were related to depressive symptoms and moderated by defence style.
Lo et al. (2008)	Cross-sectional Questionnaires	N = 38 Depressed or dysthymic participants N = 115 undergraduates	None	RRS, ASQ, BDI-II	Brooding partially mediated the relationship between negative cognitive styles and depression in the undergraduate sample, whereas reflection was not a mediator.  In the depressed sample, negative cognitive styles predicted higher levels of brooding and higher levels of brooding predicted higher levels of depression, but reflection was not related to either.
Luyckx et al. (2007)	Cross sectional questionnaires	N = 263 undergraduates	None	ISI-3, GCOS, RRQ, MSEI, RSES, CES-D, U-GIDS, PEAQ	Reflection and the use of an information-orientated identity style was positively related to the formation of identity commitments.  Rumination and the use an information-oriented style was positively related with depressive symptoms.

McFarland & Buehler (1998)	Experimental	N = 81 undergraduates (study 3)  N = 71 Undergraduates (study 4)  N = 53 undergraduates (study 5)	Random assignment to negative or neutral mood induction and reflective or ruminative orientation to their mood (Studies 3-5).	HSEQ (study created measure; studies 3 &4) LERM (adapted; study 5)	Those that adopted a reflective orientation to their mood engaged in mood incongruent recall.  The opposite effect was found for ruminative orientation.
Miranda & Nolen-Hoeksema (2007)	Longitudinal questionnaires	N = 1134 Community sample	Passage of time. Questionnaires and interview repeated 1 year later.	RRS, BDI, SI (study created)	Brooding and reflection correlated with suicidal ideation at baseline, although brooding significantly more so.  Brooding and reflection predicted suicidal ideation at 1 year follow-up.
Moberly & Watkins (2006)	Experimental repeated measures	N = 54 female undergraduates	Random assignment to an abstract, evaluative or concrete, process-focused condition before an induced failure experience.	PANAS, ACS	Positive affect decreased with increasing trait rumination following the abstract, evaluative condition and failure experience but not following the concrete, process-focused condition and failure experience.
O'Connor & Noyce (2008)	Longitudinal questionnaires	N = 153 Non-clinical adults	Passage of time. All questionnaires completed at T1. SI (SPS) completed at T2, 3 months later.	SI (SPS), CES-D, MGRDEQ, RRS	Brooding was a significant predictor of suicidal ideation at time 2.  Reflection did not independently predicted suicidal ideation at time 2.  Self criticism is positively related to brooding.
Rimes & Watkins (2005)	Experimental repeated measures	N = 30 Depressed participants  N = 30 Never depressed participants	Random assignment to Analytic or Experiential self-focus manipulations adapted from Nolen-Hoeksema and Morrow's (1993) rumination task.	Mood VAS, DSC (4 items),	Depressed participants had increased ratings of worthlessness, incompetency and depressed mood following analytic self-focus, but no change following experiential self-focus.

*Continued on next page*

Rude et al. (2007)	Cross-sectional Questionnaires / Factor analytic study	N = 232 undergraduates (study 1) N = 463 Undergraduates (study 2)	None	RRS, RRS-loss, RRS-nonjudging, BDI, STAI, COPE, RSES, WBSI, EACS	Two factor (reflection and brooding) model found after depression items removed from RRS, RRS-loss, and RRS-nonjudging.  Brooding and reflection (to a lesser extent) were positively related with depression, anxiety, mental disengagement, and thought suppression and negatively related to self-esteem.  However reflection was also correlated positively with Emotional Processing, whereas brooding was not.  Reflection from RRS-nonjudging was not significantly correlated with depression or thought suppression.
Saffrey & Ehrenberg (2007)	Cross-sectional Questionnaires	N = 231 heterosexual undergraduates who had recently come out of a romantic relationship.	None	GRS (RRS adapted), RQ, ECR, MASQ (adapted), GRS(b)	Brooding was positively related to general negative adjustment (negative affect and distress), global regret and attachment anxiety.  Reflection was negatively related to general negative adjustment, global regret and attachment anxiety.
Sloan et al. (2008)	Experimental repeated measures with follow-up	N = 68 undergraduates	Random assignment to an expressive writing or control writing condition, 20 minutes on 3 days. Participants returned 2, 4 and 6 months later for follow-up assessments.	RRS, DASS <sub>21</sub>	Higher brooding was related to significantly lower depressive symptoms at all follow-up assessments for those in the expressive writing condition.  Reflection did not moderate effects of expressive writing on depressive symptoms.
Spasojevic & Alloy (2001)	Longitudinal questionnaires	N = 137 Non-depressed participants	Passage of time. Follow-up approximately every 6 weeks for 2.5 years.	CSQ, DAS, RRS, SCS, PrSC (SCS), DEQ, Mods-SADS-C, BDI, SADS-L	Rumination mediated the relationship between negative cognitive styles, self-criticism, neediness, history of depressive episodes, and number of prospective depressive episodes.  Private self-consciousness did not.

Trapnell & Campbell (1999)	Factor analytic study / Cross sectional questionnaires	N = 3527 undergraduates (study 3)	None.	RRQ, SCS, NOTB (battery of tests)	<p>Rumination was associated with Neuroticism factor, whereas Reflection was associated with the Openness to Experience factor of the Five Factor model of personality.</p> <p>Reflection was also associated with Self-Reflectiveness and Internal State Awareness from the Private-Self-Consciousness subscale of the Self Consciousness Scales.</p> <p>Rumination also associated with Self Reflectiveness but not Internal State Awareness.</p>
Treynor et al. (2003)	Factor analytic study / Longitudinal questionnaires	N = 1130 Community sample	Passage of time. 12 items similar to BDI removed from RRS before factor analysis. Interviews repeated 1 year later.	RRS, BDI (13 item)	<p>Brooding was associated with greater depression both concurrently and longitudinally.</p> <p>Reflection was associated with more concurrent depression but predicted a decrease in depression over time.</p>
Verplanken et al. (2007)	Cross sectional questionnaires	N = 155 undergraduates (Study 4)	None	HINT, RRQ, MAAS, SLCS	<p>Negative self thinking habit was distinct from rumination and mindfulness, and like rumination was negatively related to self-esteem.</p> <p>Mindfulness was positively related to self esteem.</p>
Watkins (2004)	Experimental repeated measures with follow-up.	N = 69 Non-depressed participants	Random assignment to write about an induced failure experience in either a conceptual-evaluative condition (e.g. "Write about why you feel the way you do after the test") or an experiential condition (e.g. "Write about how you feel – describe your feelings moment-by-moment during the test right now) on three separate occasions.	MAACL, IES, ACS-90 (PS),	<p>Following the 2<sup>nd</sup> essay (approximately 12 hours after 1<sup>st</sup> essay) participants assigned to the experiential condition had less intrusions and avoidance than those assigned the conceptual-evaluative condition.</p> <p>At this time point a high trait rumination level indicated more negative mood but only for those in the conceptual-evaluative condition.</p> <p>No significant effects were found straight after or 23hrs and 21 mins after the failure condition.</p>



Watkins & Baracaia (2002)	Experimental repeated measures	<p>N = 32 Depressed participants</p> <p>N = 26 Recovered Depressed participants</p> <p>N = 26 Never depressed participants</p>	<p>Random assignment to state-oriented questions focussing on the causes of problems (e.g. “What am I doing wrong?”), process-focused questions (e.g. “How am I deciding on a way to solve this problem”), or no questions, which participants were asked to bear in mind as they completed the MEPS.</p>	<p>Mood VAS, MEPS</p>	<p>Process focused questions improved problem solving ability relative to state-oriented questions in depressed and recovered depressed groups.</p> <p>Depressed participants were poorer at problem solving in the no questions condition compared to the other 2 groups.</p> <p>In the state-oriented condition both the depressed and recovered depressed participants were poorer problem solving than the never depressed participants.</p>
Watkins & Moulds (2005)	Experimental repeated measures	<p>N = 40 Depressed participants</p> <p>N = 40 Never-depressed participants</p>	<p>Random assignment to Concrete or Abstract ruminative self-focus manipulation adapted from Nolen-Hoeksema and Morrow’s (1993) rumination task.</p>	<p>DSC (NAS), MEPS</p>	<p>Despondency significantly increased following both self-focus manipulations in the depressed group only.</p> <p>Social Problem Solving effectiveness significantly increased in depressed group following concrete ruminative self-focus only.</p>
Watkins & Teasdale (2001)	Experimental repeated measures	<p>N = 36 Depressed participants</p>	<p>Random assignment to high analysis high self focus, high analysis low self focus, low analysis high self focus, low analysis low self focus conditions adapted from Nolen-Hoeksema and Morrow’s (1993) distraction and rumination tasks</p>	<p>Mood VAS, AMT</p>	<p>Low analysis resulted in significantly fewer categoric memories.</p> <p>High self focus resulted in significantly greater despondent mood and reduced happiness. The opposite was true for low self focus.</p>

Watkins & Teasdale (2004)	Experimental repeated measures	N = 28 Depressed participants	Random assignment to Analytical or Experiential self-focus manipulations adapted from Nolen-Hoeksema and Morrow's (1993) rumination task.	Mood VAS, AMT	Significant decrease in the proportion of categoric memories (overgeneral memory) following the experiential self-focus condition only.
Williams & Moulds (2007)	Experimental repeated measures	N = 57 low (BDI-II <= 7) dysphoric undergraduates  N = 59 high (BDI-II >= 12) dysphoric undergraduates	Random assignment to Analytical mode of processing, Experiential mode of processing or distraction manipulations adapted from Nolen-Hoeksema and Morrow's (1993) rumination and distraction tasks following low mood induction.	IFDMS, VSR, RRS	No difference in effect of manipulations on intrusion frequency or distress for either group, and no interaction found between trait rumination and manipulations.

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AAQ = Acceptance and Action Questionnaire; ACS-90 (PS) = The Action Control Scale – Preoccupation Subscale; AMT = Autobiographical Memory Test; AOWT VAS = At-one with things VAS; AP = Affective predictions; ASQ = Attributional Style Questionnaire; BBI = Basic Beliefs Inventory; BDI = Beck Depression Inventory; CES-D = Centre for Epidemiological Studies Depression Scale; COPE = COPE Scales; CSQ = cognitive style questionnaire; DAS = Dysfunctional Attitudes Scale; DASS21 = Depression and Anxiety Stress Scale – 21 Item; DEQ = Depressive Experiences Questionnaire; DPT = Dot probe task; DSC (NAS) = Depressed States Checklist (Negative Affect Scale); DSQ = Defence Style Questionnaire; EACS = Emotional Approach Coping Scales; ECR = The Experiences in Close Relationships Questionnaire; EQ = The Experiences Questionnaire; ERQ = Emotion Regulation Questionnaire; ERTAP = Emotional reactions to affective predictions; GCOS = General Causality Orientations Scale; GRS = General Rumination Scale; GRS(b) = Global Regret Scale; HINT = Habit Index of Negative Thinking; HRSD = Hamilton Rating Scale for Depression; HSEQ = High school experiences questionnaire; IES = The Impact of Events Scale; IFDMS = Intrusion frequency and duration monitoring sheet; IPA = Scale of Irrational Beliefs; IRI = Interpersonal Reactivity Index; ISI-3 = Revised Identity Style Inventory; LERM = Life Events Recall Measure; LIF = Linguistics Information Form; MAACL = Multiple affect adjective checklist; MAAS = Mindful Attention Awareness Scale; MASQ = Mood and Anxiety Symptom Questionnaire; MFS = Masculinity-Femininity Scale; MGRDEQ = McGill Revised Depressive Experiences Questionnaire; MINI = Mini International Neuropsychiatric Interview; Mod-SADS-C = Modified Schedule for Affective Disorders and Schizophrenia-Change interview; Mood VAS = Mood visual analogue scales; MPS = Multidimensional Perfectionism Scale; MSEI = Multidimensional Self-Esteem Inventory; NOTB = Neuroticism and Openness Tests Battery; PANAS = Positive and negative affect schedule; PEAQ = Personally Expressive Activities Questionnaire; PrSC (SCS) = Private self-consciousness subscale of The Self Consciousness Scale; RQ = The Relationship Questionnaire; RRQ = Rumination-Reflection Questionnaire; RRS = Ruminative Responses Scale; RRS-loss = Ruminative Responses Scale - Loss version; RRS-nonjudging = The Response to Depressed Feelings Scale-Nonjudging; RSES = Rosenberg Self-Esteem Scale; SADS-L = Schedule for Affective Disorders and Schizophrenia-Lifetime interview; SCCS = Self-Concept Clarity Scale; SCCS(b) = Self-Concept Complexity Scale; SCID = Structured Clinical Interview for DSM-IV-TR, Research Version; SCS = Self Consciousness Scales; SI = Suicide ideation (combination of BDI and SCID items); SI (SPS) = suicidal ideation subscale of the Suicide Probability Scale; SLCS = Self-Liking and Competence Scale; STAI = Spielberger State-Trait Anxiety Inventory; TOSCA = Test of Self-Conscious Affect; U-GIDS = Utrecht-Groningen Identity Development Scale; VAS = Visual Analogue Scale; VSR = video suppression ratings; WBSI = White Bear Suppression Inventory; WRM = Word recognition measure; ZDS = Zung Depression Scale.

### *3.1. Identified types of self-focussed processing modes, their meaning and their relationship with other psychological variables.*

Five distinct categories of self-focussed processing modes were identified: ruminative, reflective, mindful, private self-consciousness and habitual negative self thinking. The meaning of these categories, the different terms used to describe them and in what ways they were found to be adaptive or maladaptive are described. Where significant effects can only be reported as a comparison between two processing modes, these are reported in only one of the categories to avoid repetition.

#### *3.1.1. Ruminative processing mode*

All identified research articles compared a ruminative processing mode with another form of self-focused processing mode. Rumination has been defined slightly differently by Nolen-Hoeksema (1991), Trapnell & Campbell (1999) and Buehler et al. (2007). All three definitions are largely similar and describe rumination as a repetitive thinking about one's depressed state. However Nolen-Hoeksema (1991), described rumination as, "repetitively focusing on the fact that one is depressed; on one's symptoms of depression; and on the causes, meanings, and consequences of depressive symptoms" (p.569), whereas Trapnell & Campbell (1999) described rumination as a "...neurotic category of self-attentiveness defined as recurrent thinking or ruminations about the self prompted by threats, losses, or injustices to the self..." (p.292). Furthermore Buehler et al. (2007) defined a ruminative orientation as being "...characterized by a sense that one's feelings are confusing, a sense of feeling compelled or driven to focus on feelings, an inclination to focus repetitively on the causes and consequences of one's distress, and a perceived inability to repair moods." (p.1267).

These authors created different measures of rumination, i.e. the Ruminative Responses Scale (RRS; Nolen-Hoeksema and Morrow, 1991) and the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999), and different techniques to induce a ruminative state (McFarland & Buehler, 1998; Nolen-Hoeksema and Morrow, 1993).

Various other labels are used in the reviewed papers reviewed to describe rumination, namely brooding (Burwell & Shirk, 2007; Crane, Barnhofer, & Williams, 2007; Gortner, Rude, & Pennebaker, 2006; Harris, Pepper, & Maack, 2008; Joormann, Dkane, & Gotlib, 2006; Kwon & Olson, 2007; Lo, Ho, & Hollon, 2008; Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008; Rude et al., 2007; Saffrey & Ehrenberg, 2007; Sloan, Marx, Epstein, & Dobbs, 2008; Treynor, Gonzalez, & Nolen-Hoeksema, 2003), analytical self-focus (Rimes & Watkins, 2005; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004), abstract self-focus (Watkins & Moulds, 2005), abstract/analytical mode of processing (Crane, Barnhofer, Visser, Nightingale, & Williams, 2007; Williams & Moulds, 2007), conceptual-evaluative mode of self-focused attention (Watkins, 2004), abstract, evaluative mode of processing (Moberly & Watkins, 2006) and state-oriented rumination (Watkins & Baracaia, 2002).

The term “brooding” first started being used in the this field following Treynor, Gonzalez, & Nolen-Hoeksema’s (2003) factor analysis of the RRS which they conducted after they had removed the items similar to those on the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) to ensure rumination and depression were not related simply because their scales had similar item content. Two factors emerged: brooding and reflection (see section 3.2.3. Reflective processing modes). Brooding most closely resembles the original concept of rumination being defined as “...a passive comparison of one’s current situation with some unachieved standard” (Treynor, et al., 2003, p.256).

The terms analytical self-focus (Rimes & Watkins, 2005; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004), abstract self-focus (Watkins & Moulds, 2005) and abstract/analytical mode of processing (Crane, Barnhofer, Visser, et al., 2007; Williams & Moulds, 2007) all refer to an induced ruminative processing mode based on the rumination induction designed by Nolen-Hoeksema and Morrow (1993). However unlike the original rumination induction which consists of items that are symptom-focused, self-evaluative, and questioning the meanings and implications of feelings, all the items used in this modified induction are only symptom focused (except in Watkins & Teasdale, 2001) and resemble the depression related items in the RRS.

Conceptual-evaluative mode of self-focused attention (Watkins, 2004), abstract, evaluative mode of processing (Moberly & Watkins, 2006) and state-oriented rumination (Watkins & Baracaia, 2002), also all resemble rumination but were induced in different ways, i.e. Watkins (2004) asked participants to write about the causes, reasons and meanings for their feelings and their performance on task they had been asked to complete, Moberly & Watkins (2006) asked participants to focus on scenarios and think about the causes, meanings, and implications of each situation and answer questions about the abstract implications of the situations, and Watkins & Baracaia (2002) asked participants to bear in mind questions such as “What am I doing wrong?”, “What caused this problem?” and “Why can’t I do better?” (p.1183).

### *3.1.1.1. The effect of a ruminative self-focussed processing mode*

#### *3.1.1.1.1. Experimental studies*

Rumination increased low mood in depressed samples (Watkins & Moulds, 2005; Watkins & Teasdale, 2001), non-depressed participants with high trait rumination (Watkins, 2004) and

female undergraduates with high trait rumination following a failure experience (Moberly & Watkins, 2006). Rumination also increased depressed participants' ratings of worthlessness and incompetency (Rimes & Watkins, 2005) and was more detrimental to social problem solving ability in both depressed and recovered depressed participants than never depressed participants (Watkins & Baracaia, 2002). Joormann et al. (2006) found there was a significant correlation between rumination and attentional bias for sad faces for depressed participants even after controlling for depressive symptoms.

Studies investigating rumination and memory found that high trait ruminators from a recovered depressed sample showed increased proportion of categoric (overgeneral) memories following rumination (Crane, Barnhofer, Visser et al., 2007), and dysphoric participants who adopted a ruminative-orientation to their mood recalled more negative memories (McFarland & Buehler, 1998) and forecast more negative affect for future predictions (Buehler et al., 2007) than those in a neutral mood.

Two studies measured degree of rumination (and reflection) for undergraduate students undertaking expressing writing conditions (Gortner et al., 2006; Sloan et al., 2008). Those with high levels of rumination were found to have significantly lower depressive symptoms at 2, 4 and 6 months when assigned to an expressive writing condition (Sloan et al., 2008). Furthermore reduced depressive symptoms at 6 months were also found using an expressive writing condition in undergraduate students who were vulnerable to depression (i.e. were currently not depressed but had elevated depressive symptoms in the past and at baseline suppressed emotional expression), and these changes were found to be mediated by changes in rumination (Gortner et al., 2006).

### *3.1.1.1.2. Questionnaire studies*

Joormann et al. (2006) found depressed participants to have significantly higher rumination scores than recovered depressed, never depressed and socially anxious participants.

Furthermore recovered depressed and the socially anxious participants had higher rumination scores than never-depressed controls, suggesting both a vulnerability to ruminate in formerly depressed people and rumination to be associated with mental health problems other than just depression. Similarly, Lo et al. (2008) found rumination to be positively related to depressive symptoms and negative cognitive styles in a depressed sample.

Many more questionnaire based studies used non-clinical, community, or undergraduate student samples. They overwhelmingly found rumination to be associated with greater concurrent depressive symptoms (Fresco et al., 2007; Gortner et al., 2006; Joormann et al., 2006; Kwon & Olson, 2007; Lo et al., 2008; Luyckx et al., 2007; Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008; Rude et al., 2007; Treynor et al., 2003).

Furthermore, rumination was found to partially mediate the relationship between negative cognitive styles and depression and fully mediated the relationship between maladaptive perfectionism and depressive symptoms (Lo et al., 2008). Kwon & Olson (2007) found the relationship between rumination and depressive symptoms to be moderated by defence style immaturity.

Longitudinal community sample studies also found rumination to be associated with future depressive symptoms (Miranda & Nolen-Hoeksema, 2007; Treynor et al., 2003).

Furthermore in a longitudinal study of originally non-depressed participants, Spasojevic & Alloy (2001) found that rumination mediated the relationship between negative cognitive styles, self-criticism, neediness, and history of depressive episodes, with number of prospective depressive episodes.

Studies investigating rumination and suicide found that people who had attempted suicide had higher rumination than reflection scores (Crane, Barnhofer, & Williams, 2007) and rumination was related to concurrent suicidal ideation in non-clinical/community samples (Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008). Rumination was also found to mediate the relationship between self-criticism and future suicidal ideation (O'Connor & Noyce, 2008). Rumination was a significant predictor of suicidal ideation at 3 months (O'Connor & Noyce, 2008) and 1 year (Miranda & Nolen-Hoeksema, 2007) follow-up.

A large number of studies using undergraduate student and non-depressed samples also tested for associations between rumination and other psychological factors. In these studies, rumination was found to be positively related to Neuroticism and Self-Reflectiveness (Trapnell & Campbell, 1999), personal distress (Joireman, 2004; Joireman et al., 2002; Saffrey & Ehrenberg, 2007), shame (Joireman, 2004), global regret and attachment anxiety (Saffrey & Ehrenberg, 2007), perfectionism (Gurnáková, 2004; Lo et al., 2008), anxiety, mental disengagement and thought suppression (Rude et al., 2007), emotion suppression and experiential avoidance (Fresco et al., 2007), negative cognitive style (Lo et al., 2008; Spasojevic & Alloy, 2001), self-criticism, neediness and history of depressive episodes (Spasojevic & Alloy, 2001) and future self-criticism (O'Connor & Noyce, 2008).

Furthermore, rumination was found to be negatively related to self-esteem (Gurnáková, 2004; Joireman, 2004; Luyckx et al., 2007; Rude et al., 2007; Verplanken et al., 2007), optimism (Gurnáková, 2004), and perspective taking (Joireman et al., 2002). Unexpectedly there was also a positive correlation between rumination and emotional processing in one study (Rude et al., 2007).



### *3.1.2. Mindful processing mode*

Only one reviewed paper included a measure of mindfulness (Verplanken et al., 2007) and only one used an experimental manipulation that had the term “mindfulness” in its name, i.e. “mindfulness meditation” (Broderick, 2005). Broderick (2005) describe mindfulness as “...intentional, nonjudgmental awareness of the present moment as opposed to a mode of thinking and feeling on ‘automatic pilot,’ as is the case in rumination”. (Broderick, 2005, p.502). Similarly Verplanken et al. (2007) write, “Mindfulness refers to the state of being attentive to and aware of what is taking place in the present”. (p. 528)

Although only two of the included papers (Broderick, 2005; Verplanken et al., 2007) directly refer to their measure or induction as “mindfulness”, eight included papers use processing mode inductions resembling a mindful processing mode (Crane, Barnhofer, Visser, et al., 2007; Moberly & Watkins, 2006; Rimes & Watkins, 2005; Watkins, 2004; Watkins & Baracaia, 2002; Watkins & Moulds, 2005; Watkins & Teasdale, 2004; Williams & Moulds, 2007) and one measured a construct closely resembling mindfulness (Fresco et al., 2007) . The processing modes resembling a mindful processing mode are termed, experiential self-focus (Rimes & Watkins, 2005; Watkins & Teasdale, 2004) concrete self-focus (Watkins & Moulds, 2005); concrete/experiential mode of processing (Crane, Barnhofer, Visser, et al., 2007; Williams & Moulds, 2007), experiential mode of self-focused attention (Watkins, 2004), concrete, process-focused mode of processing (Moberly & Watkins, 2006) and process-focused thinking (Watkins & Baracaia, 2002).

The terms experiential self-focus (Rimes & Watkins, 2005; Watkins & Teasdale, 2004) concrete self-focus (Watkins & Moulds, 2005) and concrete/experiential mode of processing (Crane, Barnhofer, Visser, et al., 2007; Williams & Moulds, 2007) all refer to an induced processing mode identical in item content to the ruminative processing mode induction used

by the same authors, but with different instructions for how to process the items. The instructions for this processing mode require participants to focus, visualise and label their experience, whereas the ruminative processing mode instructions ask participants to think about the causes, meanings and consequences of their experience and try to make sense of it.

Experiential mode of self-focused attention (Watkins, 2004), concrete, process-focused mode of processing (Moberly & Watkins, 2006), process-focused thinking (Watkins & Baracaia, 2002), and decentering (Fresco et al., 2007) also all resemble a mindful processing mode. Watkins (2004) induced this processing mode by asking participants to write about their direct experience of their feelings and performance, Moberly & Watkins (2006) did so by asking participants to focus on scenarios and corresponding photographs and were then asked to answer questions with a focus on concrete, sensory details of the situations, and Watkins & Baracaia (2002) asked participants to bear in mind questions such as “How am I deciding on a way to solve this problem?”, “How am I deciding what to do next?” and “How do I know this is a good thing to do?” (p.1183).

Decentering, a term closely resembling mindfulness, was measured by Fresco et al. (2007) using the Experiences Questionnaire (EQ). Referring to Safran and Segal’s (1990) definition, they describe this construct as “...the ability to observe one’s thoughts and feelings as temporary, objective events in the mind, as opposed to reflections of the self that are necessarily true” (p.234).

There are various degrees of dissimilarity both between these constructs and between the constructs and the concept of mindfulness. The experiential self-focus (Rimes & Watkins, 2005; Watkins & Teasdale, 2004) concrete self-focus (Watkins & Moulds, 2005) and concrete/experiential mode of processing (Crane, Barnhofer, Visser, et al., 2007; Williams &

Moulds, 2007) modes do not explicitly ask participants to be non-judgemental, the experiential mode of self-focused attention (Watkins, 2004) includes elements of focussing on the past as well as present, the process-focused mode of processing (Moberly & Watkins, 2006) asks participants to use their imagination, and process-focused thinking (Watkins & Baracaia, 2002) involves some analysis. It is also noteworthy that the term “self-focus” is not used in any of the above definitions of mindfulness, although is used to describe some of the induced processing modes. Mindfulness is a way of relating to experience, both internal and external, and has not necessarily been considered self focused. However the means by which these processing mode inductions instruct participants to direct their attention to their experience and in effect ask participants to take a decentred perspective to their thoughts, emotions and physical sensations, would appear to resemble mindfulness as defined by Verplanken et al. (2007) and Broderick (2005), and the most popularly Kabat-Zinn (1994): “Paying attention in a particular way: on purpose, in the present moment and non-judgementally” (p.4).

### *3.1.2.1. The effect of a mindful self-focussed processing mode*

#### *3.1.2.1.1. Experimental studies*

A mindful condition increased despondency in depressed samples (Watkins & Moulds, 2005; Watkins & Teasdale, 2001). However mindfulness meditation was significantly more effective at improving dysphoric mood compared to distraction and rumination in undergraduate students (Broderick, 2005) and mindful writing following a failure experience resulted in fewer intrusions and avoidance 12 hours later compared with ruminative writing in non-depressed participants (Watkins, 2004).

Mindful awareness increased social problem solving relative to ruminative thinking in both depressed and recovered depressed samples (Watkins & Baracaia, 2002). Similarly, mindful conditions increased baseline social problem solving ability (Watkins & Moulds, 2005) and decreased the proportion of categoric (overgeneral) memories (Watkins & Teasdale, 2001; Watkins & Teasdale, 2004) in depressed samples.

#### *3.1.2.1.2. Questionnaire studies*

In both an undergraduate sample and a remitted depressed group mindfulness was negatively related to depressive symptoms (Fresco et al., 2007). Furthermore, healthy control participants were found to have higher levels of mindfulness than depressed and remitted depressed participants (Fresco et al., 2007). In an undergraduate sample, mindfulness was found to be positively related to self esteem (Verplanken et al., 2007) and cognitive reappraisal (Fresco et al., 2007) and negatively related with rumination, experiential avoidance and emotion suppression (Fresco et al., 2007).

#### *3.1.3. Reflective processing mode*

Like rumination, reflection has also been defined slightly differently by Treynor, et al. (2003), Trapnell & Campbell (1999) and Buehler et al. (2007). All three describe reflection as thinking about oneself. However Trapnell & Campbell (1999) describe reflection as motivated by interest in the self not by experienced distress, whereas Treynor, et al. (2003) describe reflection as purposeful problem solving with an aim to reduce depressive symptoms. Furthermore Buehler et al.'s (2007) reflective orientation induction includes elements of distracting oneself from one's feelings. Nonetheless all definitions of reflection appear to embody active, controlled, non-critical, self-directed thinking.

Four questionnaires measuring reflection were used by the papers reviewed, i.e. The Ruminative Responses Scale (RRS; Nolen-Hoeksema and Morrow, 1991), The RRS-nonjudging (Rude et al., 2007), The General Rumination Scale (GRS; Saffrey & Ehrenberg, 2007) and The Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999). A reflective orientation to mood was induced in McFarland & Buehler (1998) and Buehler et al. (2007).

### *3.1.3.1. The effect of a reflective self-focussed processing mode*

#### *3.1.3.1.1. Experimental studies*

Dysphoric participants who adopted a reflective-orientation to their mood recalled more positive memories (McFarland & Buehler, 1998) and forecast more positive affect for future events (Buehler et al., 2007) compared with those in a neutral mood. Furthermore, dysphoric participants who adopted a reflective-orientation experienced more positive emotional responses to their affect predictions compared with those who adopted a ruminative orientation to their mood (Buehler et al., 2007).

#### *3.1.3.1.2. Questionnaire studies*

Depressed participants were found to have significantly higher reflection scores than never depressed participants (Joormann et al., 2006). Studies using non-clinical, community, or undergraduate student samples found reflection to be associated with greater concurrent depressive symptoms (Harris et al., 2008; Kwon & Olson, 2007; Lo et al., 2008; Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008; Rude et al., 2007; Treynor et al., 2003), but significantly less so than rumination (Miranda & Nolen-Hoeksema, 2007; Rude et al., 2007) and not when using RRS-nonjudging (Rude et al., 2007). Reflection partially mediated the relationship between maladaptive perfectionism and depressive symptoms (Harris et al.,

2008). The relationship between reflection and depressive symptoms was found to be moderated by defence style immaturity (Kwon & Olson, 2007).

Longitudinal studies found reflection to predict a decrease in depression over time (Treyner et al., 2003) but still significantly related to future depression albeit significantly less so than rumination (Miranda & Nolen-Hoeksema, 2007; Treyner et al., 2003).

Studies investigating reflection and suicide found that people who had never been suicidal had higher reflection than rumination scores to near significance ( $p=0.06$ ) (Crane, Barnhofer, & Williams, 2007). Also, those that had never attempted suicide scored higher on reflection items compared to the suicide attempters (Crane, Barnhofer, & Williams, 2007). However reflection was related to suicidal ideation (Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008), although significantly less so than rumination (Miranda & Nolen-Hoeksema, 2007). Furthermore reflection independently predicted suicidal ideation at 1 year follow-up (Miranda & Nolen-Hoeksema, 2007).

A number of studies also investigated the relationship between reflection and other psychological variables in non-clinical and undergraduate samples. These studies found reflection to be positively related with mental disengagement (Rude et al., 2007), anxiety, although significantly less so than rumination (Rude et al., 2007), future self-criticism, but again significantly less so than rumination (O'Connor & Noyce, 2008), and thought suppression, although significantly less so than rumination and not at all when the RRS-nonjudging measure was used (Rude et al., 2007). Furthermore reflection was found to be negatively related to self-esteem, although again significantly less so than rumination (Rude et al., 2007).

However reflection was also found to be positively related with a number of potentially beneficial psychological factors, namely Openness to Experience, Self-Reflectiveness and Internal State Awareness (Trapnell & Campbell, 1999), emotional processing, particularly when the RRS-nonjudging measure was used (Rude et al., 2007), empathic concern (Joireman et al., 2002), perspective taking (Joireman, 2004; Joireman et al., 2002), and guilt (Joireman, 2004), reflection partially mediating the relationship between these later two (Joireman, 2004). Reflection was also found to be negatively correlated with negative cognitive style (Lo et al., 2008), general negative adjustment, global regret and attachment anxiety (Saffrey & Ehrenberg, 2007), shame and personal distress (Joireman, 2004). Furthermore reflection and the use of an information-orientated identity style was positively related to the formation of identity commitments in young adults (Luyckx et al., 2007).

Finally, comparing reflective response styles to ruminative response styles, high reflection participants scored higher than high rumination participants on measures of self-esteem, optimism and positive beliefs about the world, and lower on measures of non-clarity of self-concept, helplessness and negative expectations (Gurnáková, 2004).

#### *3.1.4. Other processing modes: Private Self-Consciousness and Negative self thinking habit*

Only two other processing modes were identified that could not be included in the categories of rumination, reflection or mindfulness. These were Private Self-Consciousness (Spasojevic & Alloy, 2001; Trapnell & Campbell, 1999) and Negative self thinking habit (Verplanken et al., 2007).

Private self-consciousness has elements of both reflection and rumination (Trapnell & Campbell, 1999) and is defined as awareness of one's inner feelings, thoughts, and physical

sensations (Fenigstein, Scheier, & Buss, 1975). It is measured by the Private-self-consciousness subscale of the Self-Consciousness Scales (SCS; Fenigstein, Scheier, & Buss, 1975).

Verplanken et al. (2007) write, "...negative self-thinking is habitual to the degree to which such thinking occurs frequently, is initiated without awareness, and is mentally efficient, difficult to control, unintended, and self-descriptive" (p.527). They measured Negative self-thinking habit using the Habit Index of Negative Thinking (HINT). This construct is clearly closely related to rumination. However the authors explain that the difference between the two constructs lies within the content of the thoughts. Verplanken and colleagues argue that rumination can be defined as thinking merely about the symptoms of depression and that ruminative thoughts do not necessarily have to be negative. Habitual negative self thinking habit however is always negative in content and covers a wider scope of topics than rumination (Verplanken et al., 2007).

#### *3.1.4.1. The effects of private self-consciousness and negative self thinking habit.*

Private self-consciousness was found to be significantly correlated with rumination, dysfunctional attitudes and self-criticism. However it was not found to mediate the relationship between these risk factors for depression and subsequent major depressive episodes. (Spasojevic & Alloy, 2001). Using a student sample, Verplanken et al. (2007) found negative self thinking habit to be distinct from rumination and mindfulness and like rumination was negatively related to self-esteem.



#### **4. Discussion**

The aims of this review were to identify empirical research articles that compare different forms of self-focused processing modes, identify the meanings of the identified processing modes and establish whether these modes are adaptive and if so for whom and in what ways. A systematic procedure was used in order to identify as fully as possible the research literature in this area.

The results demonstrate that a large number of different terms are being used to describe three self-focused processing modes, namely rumination, mindfulness and reflection. Two other processing modes, private self-consciousness and negative self thinking habit were also identified, however the qualities of these forms of processing were only investigated in two included studies (Spasojevic & Alloy, 2001; Verplanken et al., 2007) and are therefore not commented on further here.

Rumination is a repetitive, passive thinking about one's depressed state (Buehler et al., 2007; Nolen-Hoeksema, 1991; Trapnell & Campbell, 1999) and is well established as a detrimental form of self-focussed processing (Lyubomirsky & Tkach, 2004; Thomsen, 2006). Both experimental and questionnaire based studies provided substantial evidence to confirm the maladaptive properties of rumination. Experimental studies demonstrated how those who are depressed or vulnerable to depression experience various negative psychological outcomes, such as increased low mood, increased overgeneral and negative autobiographical memories, and poorer social problem solving ability when asked to ruminate. The questionnaire based studies demonstrated a strong relationship between rumination and depressive symptoms and longitudinal studies provided evidence for a relationship between rumination and future depression. Rumination was also found to be linked with both current and future suicidal

ideation, as well as a host of other negative psychological variables such as low self-esteem, neuroticism and anxiety.

Although investigated by fewer studies, mindfulness in contrast to rumination, was found to be associated with largely positive psychological outcomes. Mindfulness differs from rumination by being a processing mode whereby one does not attempt to think about one's depressed state, instead the aim is to focus on an experiential modality, e.g. bodily sensations, thoughts, or feelings, and to use one's concentration to keep attention on the experience of choice. Thus, mindfulness is an intentional, effortful practice that unlike rumination does not involve thinking about experiences and trying to problem solve, but instead requires practitioners to watch experiences in a non-judgemental manner (Kabat-Zinn, 1994; Segal, et al, 2002; Teasdale, 1999; Teasdale, Segal, & Williams, 1995).

Very few of the studies examined actually used the term mindfulness when referring to the processing mode they experimentally induced or measured. However six experimental studies both induced a processing mode resembling mindfulness and reported significant effects providing some evidence to suggest that a mindful mode of processing can be beneficial by reducing overgeneral memory, increasing problem solving ability, improving dysphoric mood and reducing intrusions and avoidance following an upsetting experience in a mixture of depressed, recovered depressed and non-depressed participants. However, not all results were positive as two studies found a mindful processing mode increased dependency in depressed samples. Hence the evidence is mixed.

There were even fewer questionnaire based studies measuring mindfulness, but the two that did found mindfulness to be only related negatively to depressive symptoms in healthy and recovered depressed participants and positively to constructs such as self-esteem in

undergraduate student samples. Therefore on the basis of the reviewed papers, mindfulness appears to largely be an adaptive self-focus processing mode, but the evidence is not as strong as evidence for the detrimental effect of rumination.

Reflection, like rumination involves thinking about one's experience. However, unlike rumination and similar to mindfulness it involves an active, intentional and non-critical self-focus (Buehler et al., 2007; Trapnell & Campbell, 1999; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The key difference between reflection and mindfulness being that reflection involves thinking and active problem solving in order to reduce depressive symptoms, whereas mindfulness involves actively focussing on whatever feelings, thoughts or physical sensations are present and accepting them as they are (Kabat-Zinn, 1994; Segal, et al, 2002).

There were more studies that compared reflection and rumination than mindfulness and rumination. However of those that did, only two were experimental in design. These found reflection to be adaptive in dysphoric participants, i.e. a reflective orientation resulted in mood incongruent memory recall and mood incongruent future affect predictions. There were many more naturalistic cross-sectional questionnaire based studies, although virtually all were also non-clinical samples. Overall they provided evidence to suggest that reflection could be both adaptive and maladaptive. In general when reflection was found to be related to negative outcomes, it was often found to be significantly less related to such outcomes than rumination. Nonetheless reflection was found to be related to concurrent depressive symptoms in a number of studies and future depressive symptoms in longitudinal studies. Furthermore reflection was related to concurrent and future suicidal ideation and a number of other maladaptive constructs. However reflection was also found to be related to a number of positive constructs such as emotional processing and empathic concern. Therefore it is not

possible to conclusively identify whether reflective processing is adaptive or maladaptive from the papers reviewed.

The mixed results with regard to reflective processing may be explained by the differences in the tools used to induce or measure reflection. More positive associations were made with a reflective processing mode when the RRQ, RRS-nonjudging and GRS measures of trait rumination were used, whereas more negative associations were found when the RRS was used. It could be that reflective processing as measured by the RRS is more similar to a ruminative processing mode than a reflective mode measured by the other instruments.

Indeed the RRS-nonjudging scale, was created in order to create a scale with less self-critical items than those in the RRS (Rude et al., 2007). For example, “Why do I always react this way”, and “Isolate yourself and think about the reasons why you feel sad” from the RRS were argued to imply some self-criticism and were therefore changed to “Feel curious about your tendency to become upset like this” and “Find time for yourself to think about the reasons for your sadness” for the RRS-nonjudging version (Rude et al., 2007). Furthermore the reflection items of the RRQ and GRS, and the items used by McFarland & Buehler (1998) in their reflective orientation induction all imply little self judgement. Therefore critical judgements of ones experience may be the key difference that differentiates adaptive reflection from maladaptive rumination.

Intentional, active self-focus is another component of reflection that, like being non-judgemental, is common to both reflection and mindfulness, but not rumination. Having a sense of control about how one attends to ones experience may therefore also be crucial in differentiating adaptive from maladaptive self-focus (Rude et al., 2007). Furthermore defence style immaturity has been shown to moderate how much rumination is related to depressive symptoms (Kwon & Olson, 2007) providing further evidence to suggest that focusing on

one's experience in a more mature manner in order to tackle internal conflicts effects whether such a response is maladaptive or not.

This review provides some evidence to suggest that when inductions or measures of mindful and reflective self-focussed processing modes adequately capture a non-judgemental, non-passive self-focus element, either a mindful or reflective response to low mood appears to be largely adaptive. In answering our initial question of for whom would such processing modes would be beneficial, given the current evidence available there is some evidence to suggest that mindful self-focus processing may be beneficial for both depressed and non-depressed people. Given the lack of studies investigating reflection in depressed samples, it is not possible to conclude that reflection is beneficial for those suffering with depression. However there is some evidence to suggest that non-judgemental reflection is beneficial for non-depressed samples (Buehler et al., 2007; Crane, Barnhofer, & Williams, 2007; Gurnáková, 2004; Joireman, 2004; Joireman et al., 2002; Lo et al., 2008; Luyckx et al., 2007; McFarland & Buehler, 1998; Rude et al., 2007; Saffrey & Ehrenberg, 2007; Trapnell & Campbell, 1999).

The evidence to suggest that self-focused attention can be beneficial is not entirely surprising. Self-awareness is important in many schools of psychotherapy (Fenigstein et al., 1975).

Without an awareness of ones own thoughts and feelings, it is impossible to “work through” upsetting emotions or challenge one's dysfunctional thought processes. Furthermore, psychotherapeutic interventions that actively train participants to focus on their experience moment by moment have documented beneficial effects, e.g. MBCT has been found to approximately halve depressive relapse in those who have experienced more than 2 episodes of depression (Ma & Teasdale, 2004; Teasdale et al., 2000). Further evidence to support the benefits of allowing oneself to experience upsetting emotions and emotionally process them

has also been documented by studies of expressive writing (see Smyth, 1998, for a meta-analysis).

Although distraction from low mood has in the short term been shown to have beneficial effect, e.g. by reducing low mood (Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993), as highlighted by Watkins & Teasdale (2004), repeated distraction to persistent low mood may lead to thought suppression (Wenzlaff & Bates, 1998) and experiential avoidance (Hayes et al., 1996) which are related to continued negative affect. Furthermore for those who habitually ruminate, distraction may be more effortful than focussing on the self. Supporting this theory, Donaldson & Lam (2004) found that distraction did not improve social problem solving in depressed participants with high levels of habitual rumination but did with those who had lower levels of trait rumination. Furthermore Donaldson, Mathews & Lam (2007) found that those who habitually ruminate have an attentional bias for negative information. These studies provide further evidence to suggest that those who ruminate want to focus on their negative experience, and as has been demonstrated by Lyubomirsky & Nolen-Hoeksema (1993) and Watkins & Baracaia (2001), they do so because they believe rumination to be beneficial. Therefore responses to low mood that allow people who are susceptible to rumination to remain focussed on the self but to do so in a manner that precipitates emotional processing rather than rumination would be most advantageous. The literature reviewed here and by others (Lyubomirsky & Tkach, 2004; Thomsen, 2006), provide substantial evidence to demonstrate that a ruminative response can be very detrimental to mental health. Therefore the method by which one focuses on negative affect is critical in reducing rather than maintaining and increasing depressive symptoms.

#### *4.1. Methodological considerations*

There are a number of methodological considerations to consider. Firstly, out of thirty-two papers included in this review, only seven of the reviewed papers used a clinically depressed sample (Joormann et al., 2006; Lo et al., 2008; Rimes & Watkins, 2005; Watkins & Baracaia, 2002; Watkins & Moulds, 2005; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004) and only five used a recovered depressed sample (Crane, Barnhofer, Visser et al., 2007; Crane, Barnhofer, & Williams, 2007; Fresco et al., 2007; Joormann et al., 2006; Watkins & Baracaia, 2002). The generalisability of the findings of this review to those who may benefit most from an alternative form of self-focus processing should be viewed with caution. Secondly, there is a lack of longitudinal studies (Miranda & Nolen-Hoeksema, 2007; O'Connor & Noyce, 2008; Spasojevic & Alloy, 2001; Treynor et al., 2003) or experimental studies with a follow-up measurements (Gortner et al., 2006; Sloan et al., 2008; Watkins, 2004) comparing self-focus processing modes in the literature. Such studies are vital in deciphering whether adaptive qualities associated with processing modes such as reflection and mindfulness are not merely temporary. Similarly, long term studies could identify whether the undesirable factors associated with these processing modes such as increased dysphoria in depressed samples following a mindful processing induction (Watkins & Moulds, 2005; Watkins & Teasdale, 2001) are only temporary effects of a novel and unpractised way of experiencing one's unpleasant thoughts and feelings. Thirdly, there were a lack of questionnaire based studies measuring trait mindfulness (Fresco et al., 2007; Verplanken et al., 2007) and a lack of experimental papers investigating reflection (Buehler et al., 2007; McFarland & Buehler, 1998) found for inclusion in this review. These four studies all found evidence to suggest mindfulness and reflection were adaptive modes of self-focussed processing. However further studies are required to validate these findings.

Fourthly, studies were largely grouped into the categories of rumination, reflection and mindfulness according to the characteristics of the experimental manipulations or measurements they used. However a large variety of manipulations and measures were used to represent these processing modes and therefore there is some variability between papers as to how well these constructs are represented. For example, as already discussed the reflection items of the RRS have been argued to contain elements of self-criticism (Rude et al., 2007), whereas we have defined reflection as being non-critical. Furthermore it is debatable to what extent some of the items from some of the measures and inductions are self-focussed. For example two of the four reflection items of the GRS are “Try to accept what happened in the past and move on” and “Try to find benefit from negative experiences” (Saffrey & Ehrenberg, 2007). “Move on” could be interpreted as don’t think about it anymore and “Try to find benefit” does not necessarily mean try to find benefit by reflecting on the experience. Furthermore four of the twelve items used in McFarland & Buehler’s (1998) reflective orientation task include items representing a desire to distract oneself. Although perhaps creating a processing mode induction that is more likely to have a beneficial effect, such items serve to dilute a reflective construct by mixing in items from an entirely different construct. Another example of it not being clear how self-focussed inductions were comes from Moberley & Watkins (2006) who asked participants to imagine the details of various scenarios and included questions such as, “What was the seating arrangement for your friends at dinner?” in the concrete, process mode condition. They used a manipulation check in order to affirm that the two induced processing modes were equal in terms of being self-focused. However their method for inducing a self-focussed concrete, process mode lacks some face validity.



#### *4.2. Clinical Implications*

This review provides some evidence to demonstrate that mindfulness can be beneficial in the field of major depressive disorder. Whilst this has to some extent been established in randomized control trials of MBCT (Ma & Teasdale, 2004; Teasdale et al., 2000), these trials did not use a placebo control group to control for the effects of psychological education, therapeutic attention or participating in a group. Therefore these trials cannot conclusively attribute the benefits of MBCT to mindfulness practice (Coelho, Canter, & Ernst, 2007; Teasdale et al., 2000; Williams, Russell, & Russell, 2008). Hence the evidence gathered from experimental and cross-sectional studies examining mindful self-focus processing provide support for the notion that the benefits derived from MBCT may in part come from the mindfulness practice itself.

The question of whether mindfulness really is the critical component of MBCT will be tested further in a forthcoming trial of MBCT according to Williams et al (2008). This new trial will not use a treatment as usual control group, instead the control group will be involved in the same group format as MBCT and will receive psychological education. The main difference between the two groups will be the control group will not be given any meditation training (Williams et al., 2008). If the MBCT group are found to have more favourable outcomes than the psycho-education group, the study will provide further evidence of mindfulness being a valuable psychotherapeutic skill to teach those vulnerable to depression.

The papers reviewed also give some insight into the possible mechanisms by which mindfulness may help reduce the risk of depressive relapse. Notably, mindful processing conditions were found to increase social problem solving ability (Watkins & Baracaia, 2002; Watkins & Moulds, 2005) and decrease overgeneral autobiographical memory (Watkins &

Teasdale, 2001; Watkins & Teasdale, 2004). Both social problem solving ability (Billings, Cronkite & Moos, 1983; Marx, Claridge & Williams, 1992) and overgeneral autobiographical memory (Williams, 1996) are associated with depression. However such studies do not differentiate between the improvement in social problem solving ability and decrease in overgeneral memory being active change agents in reducing depressive relapse or merely being the result of another more crucial effect of mindfulness. Segal, et al. (2002) do not list increased social problem solving or reduced overgeneral autobiographical memory as the mechanisms by which MBCT is effective. They propose that the benefits of adopting a mindful processing mode include using up limited information processing resources such that rumination cannot take place, the development of a decentred perspective to thoughts, feelings and physiology, and an increased ability to recognise deterioration in mood and take early action (Segal, et al., 2002). Given current research it is not possible to identify whether these potential benefits of mindfulness, the benefits identified here, or a combination of both are the components of mindfulness that make MBCT successful in reducing the risk of depressive relapse.

This review identifies some evidence to suggest that mindfulness practice may not only have benefits for those at risk of depressive relapse but may also be beneficial for those who are currently depressed by papers evidencing beneficial effects of a mindful processing mode for depressed participants (Watkins & Baracaia, 2002; Watkins & Moulds, 2005; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004). Whilst this is a tentative hypothesis, there is also some intervention based evidence now appearing to suggest that MBCT may be of benefit to treatment resistant depressed patients (Kenny & Williams, 2007) and patients with residual depressive symptoms (Kingston, Dooley, Bates, Lawlor, & Malone, 2007).

Some caution should however be applied in interpreting the results from the reviewed experimental mindfulness studies in terms of possible therapeutic outcome. The mindful inductions used in these studies were all very short, typically less than ten minutes long and practiced alone. Furthermore, they were completed only once with the exception of only one study (Watkins, 2004). A therapeutic mindfulness based intervention such as MBCT, however typically require participants to attend eight weekly two hour sessions where mindfulness practices are taught and practiced in a group context. In addition participants are typically required to complete a variety of daily mindfulness exercises at home. Furthermore, as well as the greater exposure to mindfulness practices in therapeutic interventions, the exercises taught, such as breathing meditation and body scan (Segal, et al., 2002) are, with the exception of one study (Broderick, 2005), different to the mindful inductions used in the experimental papers.

The elements of a non-judgmental reflective processing mode, i.e. active, controlled and non-critical self-focus (Buehler et al., 2007; Trapnell & Campbell, 1999; Treynor, Gonzalez, & Nolen-Hoeksema, 2003), are identical to that taught by Cognitive Behaviour Therapy (Beck, Rush, Shaw, & Emery, 1979), a therapeutic approach with a considerable evidence-base for the effective treatment of depression (NICE, 2004). It is hypothesised that these skills taught by CBT therapists using techniques such as thought diaries and thought challenging, are already implicitly used by those with high levels of habitual non-judging reflection. The benefits of non-judgemental reflection are evidenced by the studies reviewed here using non-clinical samples. However, studies measuring non-judgemental reflection are few in number and none of those reviewed here have found a significant negative correlation between non-judgemental reflection and depressive symptoms. It is therefore not possible to conclude that non-judgemental reflection helps reduce the risk of depression.

### *4.3. Recommendations for future research*

Future research investigating reflection is required in order to establish whether a non-judgemental reflective self-focus processing mode can reduce depressive symptoms. The evidence provided by these papers shows a strong positive link between reflection and depression, suggesting that reflection is maladaptive. However the papers providing this evidence used a measure of reflection that may be more akin to rumination than non-judgemental reflection. It is recommended that scales such as the RRS-nonjudging and the RRQ are more beneficial in this line of research than the RRS as the reflection items appear to be less self-critical. Furthermore there was a poverty of studies investigating reflection in clinical samples and employing both experimental and longitudinal designs. More studies using clinical samples and measuring both the short and long term effects of reflective processing would help increase knowledge of this processing mode.

Experimental studies of mindful-processing modes are finding some support for adopting mindful self-focus. However whether such adaptive qualities can have any lasting benefit has been largely unexplored by the studies suitable for inclusion in this review. Studies comparing repetitive mindful processing inductions with other self-focussed processing modes including the use of follow-up measures would be extremely beneficial in this respect. Such studies may help increase knowledge regarding how MBCT has its beneficial effect and may ultimately provide valuable information that will assist in the development of more effective psychotherapeutic therapies for the treatment and prevention of depression. It is also worthy of note that there is an extreme lack of studies measuring trait levels of mindfulness. None of those that did in this review employed a longitudinal design. Greater understanding of how habitual mindful processing is related to other psychological variables such as depression would also be of great benefit to this research field.

#### *4.4. Conclusion*

Those who ruminate are drawn to focus on the self when low in mood, motivated by a belief that such a response may be beneficial in relieving their mood (Lyubomirsky & Nolen-Hoeksema, 1993; Watkins & Baracaia, 2001). Whilst rumination has been well established here and elsewhere (Lyubomirsky & Tkach, 2004; Thomsen, 2006) as being maladaptive, this review has compiled evidence to suggest that self-focus itself is not. Various different names have been used by the studies reviewed here to describe the self-focus processing modes they have investigated. This has created confusion regarding whether different studies are referring to similar or different processing modes. This review has found three conceptually distinct self-focus processing modes that reflect the vast majority of the processing modes measured and induced by the reviewed studies: rumination, reflection and mindfulness.

The literature reviewed here provides further evidence to demonstrate the maladaptive properties of rumination. Although drawing conclusions from fewer studies, most of the findings reviewed suggest that mindfulness is an adaptive form of self-focus processing that may have potential benefits for both depressed and non-depressed populations. The findings for reflection were more mixed. Drawing evidence largely from cross sectional questionnaire studies using non-clinical samples, reflection appears to reflect both adaptive and maladaptive qualities. However, studies using scales that measured reflection as a non-judgmental construct universally found reflection to be adaptive. Therefore there is evidence for non-judgmental reflection being an adaptive self-processing mode for non-depressed samples.

Based on the findings of the reviewed papers, we tentatively conclude that non-judgmental, non-passive forms of self-focus processing such as mindfulness and non-judgmental reflection are adaptive forms of self-focused processing. The clinical utility of these

processing modes requires further investigation in order to inform the advancement of psychotherapeutic treatment of depression.

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PART TWO:  
Empirical Study

Ruminative and mindful self-focused processing modes and their impact on  
problem solving in dysphoric individuals with a history of major depression

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This paper is written in the format ready for submission to Behaviour Research and Therapy.

Please see Appendix C for the Guideline for Authors.

## **Abstract**

Mindfulness-Based Cognitive Therapy (MBCT) is hypothesised to reduce the risk of depressive relapse by teaching participants to adopt a mindful rather than a ruminative mode of information processing. This study aimed to examine the effects of state and trait ruminative and mindful modes of processing on Social Problem Solving (SPS) and affect in participants vulnerable to depressive relapse. Dysphoric participants with and without a history of depression were assessed for SPS and affect before and after manipulations designed to induce mindful (experiential) or ruminative (analytic) processing modes. Results indicated that increased trait rumination was associated with increased SPS ability following mindful processing only. Increased SPS ability was found following mindful processing for recovered depressed participants with less than three episodes of depression, but not for those with more than two. Trait mindfulness was found to influence SPS ability dependent upon processing condition and depression history. Processing conditions had equivalent effect on mood. These findings suggest that mindful processing may help reduce the risk of depressive relapse by increasing SPS in those with low mood and high levels of trait rumination. The influence of trait mindfulness and number of depressive episodes on the effectiveness of mindful processing inductions warrants further investigation.

## 1. Introduction

Current research suggests that rumination, commonly defined as “repetitively 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, p.569), maintains and increases low mood in non-clinical samples (e.g. Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow & Fredrickson, 1993), increases low mood and decreases social problem solving (SPS) ability in depressed participants (Donaldson & Lam, 2004), forecasts the onset and level of depression in formerly non-depressed individuals (Just & Alloy, 1997), predicts the degree of depression in depressed participants (Lam, Schuck, Smith, Farmer, & Checkley, 2003), and maintains or increases overgeneral memory in depressed participants (Watkins & Teasdale, 2001; Watkins & Teasdale, 2004).

However recent experimental research provides evidence to suggest that it is not the self-focussed nature of rumination per se that causes its detrimental effects. Instead the mode of processing adopted whilst attention is focussed on the self determines whether this self-focussed attention is maladaptive in depressed populations (Crane, Barnhofer, Visser, Nightingale, & Williams, 2007; Moberly & Watkins, 2006; Rimes & Watkins, 2005; Watkins, 2004; Watkins & Baracaia, 2002; Watkins & Moulds, 2005; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004)

Various forms of self-focused information processing have been proposed (e.g. Teasdale, 1999; Trapnell & Campbell, 1999; Treynor, Gonzalez, & Nolen-Hoeksema, 2003; Verplanken, Friborg, Wang, Trafimow, & Woolf, 2007). These are sometimes referred to as different forms of rumination. However given that rumination is well established as

being maladaptive and some forms of self focus appear adaptive, the term “self-focused information processing” is used here to refer to the different cognitive modes.

With reference to the multi-level model of cognition and emotion, Interacting Cognitive Subsystems (ICS) theory (Teasdale & Barnard, 1993), Teasdale (1999) proposed that emotional processing is hindered by rumination, a conceptualising/doing mode, but facilitated by a mindful experiencing/being mode. A mindful mode is described as being a non-evaluative focus on the subjective thoughts, feelings and physical sensations in the here and now. Whilst rumination is characterised by an attempt to reduce depression, being mindful involves an acceptance of whatever feelings are currently present from a “decentred viewpoint” (Segal, Williams, & Teasdale, 2002). Safran & Segal (1990) define decentring as the observation of one’s feelings and thoughts as merely events in the mind rather than accurate and unchangeable perceptions of reality. From a decentred perspective, such as that which the therapist typically has of the client’s thoughts and feelings, such feelings and thoughts can be viewed as being impermanent and therefore separate to the self. Mindfulness is not therefore essentially “self-focussed”, but is critically an acceptance based method of relating to one’s experience. By adopting a mindful being mode, and therefore adopting a non-judgmental decentred perspective instead of ruminating, Teasdale (1999) argues that alternative, more adaptive, non-depressogenic schematic models can be created in memory which may be triggered instead of depressogenic maladaptive schemas at times when rumination would typically take over. Teasdale (1999) also suggests that a mindful being mode may also have a more immediate effect of terminating a rumination process simply by adopting this *being* mode rather than a conceptualising *doing* mode, which would generate further depressogenic schematic models and maintain the rumination process (Teasdale, 1999; Teasdale, Segal, & Williams 1995).

By adapting the symptom focused items on the Nolen-Hoeksema and Morrow's (1993) rumination task, Watkins & Teasdale (2004) devised two self-focused processing modes which approximate the mindful being mode and conceptual doing modes described by Teasdale (1999). These are named, "analytic self-focus" in which participants are instructed to think about the causes, meanings and consequences of the thoughts and feelings they are experiencing, and "experiential self-focus" in which participants are asked to focus and label the thoughts, feelings and physical sensations they are experiencing in the moment (Watkins & Teasdale, 2004).

Randomly assigning participants to these two conditions, it has been shown that overgeneral autobiographical memory reduces in depressed participants after experiential self-focus only (Watkins & Teasdale, 2004), SPS ability increases in depressed participants after experiential self-focus only (Watkins & Moulds, 2005), ratings of worthlessness and incompetency increase in depressed participants after analytic self-focus only (Rimes & Watkins, 2005), and recovered depressed participants with high levels of habitual rumination exhibit an increase in overgeneral memory following analytic self-focus only (Crane, Barnhofer, Visser, Nightingale, & Williams, 2007).

These findings have significant clinical implications. Not only do they improve understanding concerning which components of rumination are damaging, but also provide valuable information that help to decipher which components of therapies such as Mindfulness-Based Cognitive Therapy (MBCT) have their beneficial effect (Segal, et al, 2002). MBCT has been found to reduce the probability of relapse in remitted depressed participants who have had at least 3 episodes of depression in the past (Ma & Teasdale, 2004; Teasdale, Segal, Williams, Ridgeway, Soulsby, & Lau, 2000). One of the core components of MBCT is purposeful, non-judgemental experiential awareness of ones thoughts, feelings and

physical sensations in the here and now (Segal et al., 2002; Teasdale, et al. 1995). The experiential mode of self-focused attention designed by Watkins & Teasdale (2004) has these qualities. Despite participants being given no training in this mode of processing and the manipulation only lasting 8 minutes, like MBCT (Williams, Teasdale, Segal, & Soulsby, 2000) this mode of processing has been found to reduce overgeneral autobiographical memory (Watkins & Teasdale, 2001; Watkins & Teasdale, 2004), a predictor of poor outcome in depression (see Williams, 1996 for a review).

Poor SPS also appears to be typical in depression (Billings, Cronkite & Moos, 1983; Marx, Claridge & Williams, 1992). Induced sad mood has also been shown to reduce social problem solving relative to induced happy mood (Mitchell & Madigan, 1984). Watkins & Baracaia (2001) found that people who ruminate believe rumination improves problem solving ability, when actually the opposite has been found by experimental research using dysphoric or depressed participants (Donaldson & Lam, 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell, & Berg, 1999). With decreased SPS ability it is possible that external factors influencing the depression are less likely to be approached effectively by the individual and rumination will continue, thereby maintaining depression. Therefore a processing mode that increases problem solving ability in dysphoric individuals could be of great benefit.

Watkins & Moulds (2005) found that an experiential mode of processing increased SPS ability in depressed participants, whereas an analytic mode of processing had no significant effect on SPS ability. This study aimed to replicate the Watkins & Moulds (2005) study but with some significant key differences:

- (1) A recovered depressed population, i.e. the population MBCT is designed for, was used instead of a depressed group. It was predicted that recovered depressed participants compared to never-depressed participants would be more vulnerable to the effects of an analytic self-focused condition as found by Watkins & Baracaia (2002).
  
- (2) A sad mood was induced before recovered depressed and never depressed participants undertook their initial randomly assigned SPS tasks and analytic (ruminative), or experiential self-focused processing condition. By inducing mild negative affect, the study attempted to induce a condition whereby recovered depressed participants would potentially ruminate and, it was predicted, in the analytic self-focused condition, maintain low mood and poor SPS ability. Conversely it was predicted that recovered depressed participants randomly allocated to the experiential self-focused processing condition would show increase in SPS ability. It was however predicted that the experiential self-focused processing condition would have an equivalent effect on mood as demonstrated by Watkins & Teasdale (2004) and Watkins & Moulds (2005).
  
- (3) Trait rumination and mindfulness were measured. It is predicted that recovered depressed participants with high levels of trait rumination would benefit more from an experiential self-focused condition than those with low trait rumination. High levels of trait rumination have been found to be maladaptive for participants in analytic self-focused conditions (Crane et al., 2007; Moberly & Watkins, 2006). To our knowledge the potential effects of trait mindfulness have not been investigated in self-focused experimental studies. However it was predicted that recovered depressed participants with lower levels of trait mindfulness would show a greater decrease in problem solving ability in the analytic self-focused condition compared to those with higher levels of mindfulness.



(4) Number of past depressive episodes was assessed. MBCT has been found to be effective only for those with greater than two episodes of depression in the past (Ma & Teasdale, 2004; Teasdale et al., 2000). It was therefore predicted that those with three or more episodes of depression in the past would show a greater increase in SPS ability following the experiential self focus condition compared to those who had previously had less than three episodes of depression.

## **2. Method**

### *2.1. Participants*

Recovered depressed participants were recruited from the following sources: a local press advertisement inviting former sufferers of depression, therapists from North Yorkshire and York PCT inviting their discharged primary care patients formerly seeking help for depression, GPs inviting patients known to them to have been depressed in the past, and a number of mental health groups and charities in the area inviting formerly depressed members. The inclusion criteria were:

- i) Aged between 18 and 65 years of age
- ii) Have had at least one past major depressive episode according to the Structured Clinical Interview for DSM-IV (SCID; Spitzer, Williams, Gibbon, & First, 1996)
- iii) Not currently suffering with major depressive disorder according to the SCID and have a Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) score of 14 or less.
- iv) The most recent depressive episode ended at least two months prior to data collection.

Participants were also excluded if they met DSM-IV-TR (American Psychiatric Association, 2000) criteria for any Psychotic disorder past or present or current substance related disorder.

Never depressed participants were recruited from an advertisement distributed to mental health staff working in a local NHS trust, and from associates of the primary researcher. To participate as a never depressed participant, volunteers had to be aged between 18 and 65 years of age, meeting criteria of no diagnosis of major depressive disorder in the present or past according to the SCID, a BDI score of 14 or less, and have no reported current or past mental health difficulties of any form.

## *2.2. Materials*

### *2.2.1. Beck Depression Inventory (BDI; Beck et al., 1961)*

The BDI is a 21-item self-report scale of depression. High internal consistency ( $\alpha = 0.86$ ), moderate to high test-retest reliability (0.48-0.86) and concurrent validities greater than 0.70 with self and clinician rated measures of depression have been reported (Beck, Steer & Garbin, 1988). A cut off of  $\leq 14$  was chosen to exclude participants with more than mild depressive symptoms (as defined by Beck & Steer, 1987).

### *2.2.2. Mood measure*

Participants rated their mood on a 0-100 visual analogue scale (VAS) ranging from 0 (*I do not feel at all sad*) to 100 (*I feel extremely sad*). (See Appendix H for the mood measure)

### 2.2.3. *Self-focus measure (Watkins & Moulds, 2005)*

Participants rated their level of self-focus on a 0-100 VAS ranging from 0 (*I am not at all focused on myself*) to 100 (*I am extremely focused on myself*). (See Appendix H for the self-focus measure)

### 2.2.4. *Ruminative Response Scale (RRS) of the Response Style Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991)*

The RRS assess dispositional ruminative response to low or depressed mood. It consists of a 22-item self-report measure that is part of the larger Response Style Questionnaire (RSQ). Each item is scored on a four point scale ranging from 1 *almost never* to 4 *almost always*. High internal consistency ( $\alpha = 0.90$ ) and moderate test-retest reliability ( $r = 0.67$ ) has been reported (Treyner et al., 2003). A factor analysis of the RRS by Treyner et al. (2003) revealed two separate subscales: brooding and reflection (coefficient  $\alpha = 0.77$  and  $0.72$ ; test-retest  $r = 0.62$  and  $0.60$  respectively). Scores for brooding and reflection were also calculated. (See Appendix I for the RRS)

### 2.2.5. *Five Factor Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006)*

The FFMQ is a 39 item self-report measure of trait mindfulness. It consists of five subscales measuring five facets of mindfulness: observing, describing, acting with awareness, nonjudging and nonreactivity. Items are scored on a four point scale ranging from 1 *never or very rarely true* to 5 *very often or always true*. Adequate to good internal consistency has been reported for each subscale, i.e. nonreactivity  $\alpha = .75$ , observing  $\alpha = .83$ , acting with awareness  $\alpha = .87$ , describing  $\alpha = .91$ , and nonjudging  $\alpha = .87$  (Baer et al., 2006). Scores from the five subscales were summed to provide a total score of trait mindfulness. (See Appendix J for the FFMQ)

### *2.2.6. Mood induction*

An autobiographical memory recall induction was used (Brewer, Doughtie, & Lubin, 1980; Martin, 1990). The instructions used for the recall induction were: “Imagine three depressing memories, spending three minutes on each. Imagine each item in more detail, concentrate on your thoughts and feelings, to make the memory as vivid as possible”. This induction procedure was used in Watkins, Teasdale & Williams (2003). Participants that were asked to complete more than one mood induction were given the option of only imagining one depressing memory for just three minutes for subsequent mood inductions.

### *2.2.7. Means Ends Problem Solving Task (MEPS; Platt & Spivack, 1975)*

The MEPS assesses the ability to conceptualise the step-by-step means of achieving solutions to social problems. Participants are given the beginning and end of the problem and are asked to describe ideal strategies for overcoming the problem (Butler & Meichenbaum, 1981). The shortened version of the MEPS which has been used in other research investigating rumination and social problem solving (Donaldson & Lam, 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1999; Watkins & Baracaia, 2002; Watkins & Moulds, 2005) was used. This version consists of four scenarios: (1) you realise a friend is avoiding you; (2) your partner leaves you after an argument; (3) you are having trouble getting along with your boss at work; and (4) you have moved to a new area and do not know anyone. (See Appendix K for the MEPS)

### *2.3. Procedure*

RRS and FFMQ questionnaires were sent to participants by post for completion before participating in the rest of the study. Participants were told that the study is designed to

investigate how different ways of thinking can effect depression. After giving written informed consent these completed measures were taken from participants and they were screened using the SCID (see 2.3.1. SCID procedure) and BDI. Participants then completed the mood measure (Time 1) followed by the mood induction and another mood measure (Time 2). Participants with less than a 20 point change on the 0-100 mood scale were asked repeat the mood induction and complete another mood measure. Participants who failed to exhibit a 20 point change were excluded from the study (consistent with Watkins, Teasdale & Williams, 2003).

The first MEPS problem scenario (see 2.3.2. MEPS procedure) followed by a mood measure (Time 3) were then completed. The second MEPS problem scenario and another mood measure followed (Time 4). Participants with less than a 20 point change on the 0-100 mood scale compared to that completed at Time 1 were asked to do the mood induction again and complete another mood measure. Again, participants who failed to exhibit at least a 20 point change on the mood measure were asked to repeat the mood induction and mood measure. Those who failed to demonstrate a minimum of a 20 point change after a second mood induction relative to Time 1 were excluded. Participants then undertook their assigned self-focused processing manipulation (see 2.3.3. Self-focused processing manipulations).

A mood and self-focus measure were then completed (Time 5). The third MEPS problem scenario, mood measure (Time 6), fourth MEPS problem scenario and mood measure (Time 7) then followed in that order. Finally participants were debriefed, given the opportunity to ask any questions about the project and given a final mood measure to complete to ensure that mood had returned to baseline levels.

### *2.3.1. SCID procedure*

The SCID was conducted by a Trainee Clinical Psychologist who had undergone training in its use. The interviews were digitally recorded and six chosen at random were co-reviewed by another Trainee Clinical Psychologist with SCID training. The co-rater agreed with the diagnoses given.

### *2.3.2. MEPS procedure*

Randomization procedures conducted before the study began determined the order of MEPS scenarios. Responses were digitally recorded and ratings made of the overall effectiveness on a 7-point Likert scale ranging from 1 *not at all effective* to 7 *extremely effective* (e.g. Donaldson & Lam 2004, Watkins & Moulds, 2005). Scores for the two scenarios before and after self-focus manipulations were averaged to give pre- and post-induction scores. All ratings were made by W.S following the collection of all the data without reference to which condition (experiential vs. analytic self-focused) participants were assigned. A randomly selected sample of 10 scenarios were independently scored by D.L. who was blind to participant group or condition. There was very good inter-rater reliability with an intra class correlation of .97.

### *2.3.3. Self-focused processing manipulations*

Randomization procedures conducted before the study began determined whether participants were assigned to an analytic or experiential self-focused processing condition as used by Watkins & Teasdale (2004) and Watkins & Moulds (2005). In both conditions participants work through a list of 28 symptom-focused items originally adapted from Nolen-Hoeksema and Morrow's (1993) rumination task. The instructions used were identical to that used by Watkins & Teasdale (2004) and Watkins & Moulds (2005). In the experiential self-focused condition, the instructions are, "As you read the items, use your imagination and

concentration to focus your mind on each experience. Spend a few moments visualising and concentrating on your experience, attempting to find a phrase, image or set of words that best describes the quality of what you sense”. The instruction, “Focus your attention on your experience of” is presented before each specific item, e.g. “*Focus your attention on your experience of: the physical sensations in your body*”. In the analytic self-focused condition, the instructions are, “As you read the items, use your imagination and concentration to think about the causes, meanings and consequences of the items. Spend a few moments visualising and concentrating on each item, attempting to make sense of and understand the issues raised by each item”. The instruction, “Think about” is presented before each specific item, e.g. “*Think about: the physical sensations in your body*”. Unlike Watkins & Teasdale (2004) and Watkins & Moulds (2005) this task was presented to participants in the form of a timed powerpoint presentation such that an equal amount of time (17 seconds) was spent on each item. The task lasted 7mins 56 seconds after participants had indicated they understood the initial instructions and were ready for the first item. (See Appendix L for the self-focused processing manipulation instructions and items)

### **3. Results**

#### *3.1. Participants*

##### *3.1.1. Participant recruitment*

Forty three participants for the recovered depressed group volunteered. Thirteen were excluded or failed to complete the study (three refused to undertake the mood induction, the mood induction failed for one, seven had either current MDD or BDI > 14 or had been depressed within two months of participation, one did not meet DSM-IV-TR diagnosis for past MDD, one left part way through the study). The remaining thirty comprised the

recovered depressed sample. Fifteen were randomly assigned the experiential processing condition and fifteen were randomly assigned the analytic processing condition.

Thirty-six never depressed participants were assessed. Six of the participants were excluded or failed to complete the study (BDI > 14 for one and the mood induction failed for five). The remaining thirty comprised the never depressed sample. Fifteen were randomly assigned the experiential processing condition and fifteen were randomly assigned the analytic processing condition.

### *3.1.2. Clinical characteristics of the recovered depressed group*

33.33% of the clinical group was currently prescribed antidepressant medication and 36.7% had undertaken CBT in the past. The mean age of first depressive episode onset was 26.33 years (SD = 12.28), the mean number of previous depressive episodes was 3.27 (SD = 2.27), and the mean number of times hospitalised due to depression was 0.5 (SD = 1.2). Current diagnoses were simple phobia (16.67%), social phobia (10.00%), generalized anxiety disorder (10.00%), obsessive compulsive disorder (3.33%), panic disorder (3.33%) and post traumatic stress disorder (3.33%).

### *3.1.3. Participant characteristics*

Table 1 presents the proportion of never depressed and recovered depressed participants in demographic sets categorised by gender, marital status, higher education, employment status and experience of practices related to mindfulness (e.g. past meditation or yoga class attendance).  $\chi^2$  tests were performed to compare the two groups on each category. There were no significant differences in gender or employment status ( $p > .05$ ). Significant differences between the groups were found for marital status, higher education and experience of practices related to mindfulness. Fewer recovered depressed participants had undertaken



higher education courses or had past experience of mindfulness, meditation or yoga compared to the never depressed sample.

Table 1

Percentages for demographic characteristics according to group and  $\chi^2$  test results

	Never depressed				Recovered depressed				$\chi^2$
	Male		Female		Male		Female		
Gender	20.0		80.0		20.0		80.0		0.00
Marital status	S	D	Co	M	S	D	Co	M	8.40*
	53.3	3.3	20.0	23.3	20.0	6.7	20.0	53.3	
Higher education	Yes		No		Yes		No		7.68**
	96.7		3.3		70.0		30		
Employment status	Un	PT	FT	Ret	Un	PT	FT	Ret	6.86
	0.0	16.7	80.0	3.3	20.0	16.7	60.0	3.3	
Mindfulness experience	Yes		No		Yes		No		4.34*
	70.0		30.0		43.3		56.7		

\* =  $p < .05$  \*\*  $p < .01$  \*\*\* $p < .001$

S = single; D = divorced; Co = cohabiting; M = married; Un = unemployed; PT = part-time; FT = full-time; Ret = retired

Table 2 presents the mean scores and standard deviations for age, BDI, RRS, RRS brooding, RRS reflection, FFMQ, Sadness (pre-self-focus manipulation), and SPS effectiveness (pre-self-focus manipulation) for the two groups. Independent t-tests were performed to compare the two groups on each measure. Levene's test for equality of variances revealed the equal population variances assumption met for all t-tests ( $p > .05$ ) except for age ( $p = .043$ ) and RRS brooding ( $p = .039$ ) where adjusted t-tests were used. Significant differences between the groups were found for age, BDI, RSS, RSS brooding, and FFMQ. Participants in the recovered depressed group had a higher level of depressive symptoms, engaged in more rumination and brooding, and were less mindful than the never depressed group. The

recovered depressed group were also older than the never depressed sample. There were no differences in the level of RRS reflection, pre-self-focus manipulation levels of sadness or baseline problem solving effectiveness between the two groups ( $p > .05$ ).

Table 2

Means and standard deviations (in parentheses) for baseline and demographic measures according to group and independent t-Test results

	Never depressed	Recovered depressed	t-Test
Age	30.3 (10.0)	42.7 (12.7)	-4.21***
BDI	3.3 (2.8)	6.2 (3.2)	-3.80***
RRS	39.1 (9.8)	51.8 (10.2)	-4.90***
RRS brooding	8.3 (2.5)	11.8 (3.6)	-4.37***
RRS reflection	10.1 (3.5)	11.3 (3.4)	-1.35
FFMQ	137.5 (20.2)	125.0 (17.3)	2.58*
Sadness (Time 4 <sup>^</sup> )	4.2 (1.7)	4.5 (1.9)	-0.54
SPS effectiveness (baseline <sup>□</sup> )	3.4 (1.0)	2.9 (1.3)	1.75

\* =  $p < .05$  \*\*  $p < .01$  \*\*\* $p < .001$

<sup>^</sup> = time point before self-focus manipulation

<sup>□</sup> = mean SPS effectiveness of the first two MEPS scenarios

BDI = Beck Depression Inventory; RRS = Ruminative Response Scale; FFMQ = Five Factor Mindfulness Questionnaire; SPS = Social Problem Solving

Higher scores indicate a greater degree of variable being rated.

The above and additional baseline measure and demographic comparison tests were repeated to compare two subgroups created from the recovered depressed group: 1-2 past episodes of depression ( $N = 14$ ) and more than 2 past episodes of depression ( $N = 16$ ). (See Appendix M for results). Only two significant differences were found between these two groups: marital status,  $\chi^2(3, N = 30) = 9.576, p < .05$  and antidepressant medication,  $\chi^2(1, N = 30) = 4.286 p$

< .05. Significantly more participants in the 2 or more episodes of depression group were currently taking antidepressant medication compared with the less than 3 episodes of depression group. The largest difference in marital status was number of participants cohabiting with partners. 42.9% of participants in the less than 3 episodes of depression group were cohabiting with partners compared with 0.0% of those with more than 2 episodes of depression.

### *3.2. Correlation analysis*

Degree of correlation between age, BDI, RRS, RRS brooding, RRS reflection, FFMQ, Sadness (pre-self-focus manipulation), and SPS effectiveness (pre-self-focus manipulation) were calculated for the total sample (N = 60). BDI was positively associated with RRS ( $r = .378, p < 0.01$ ) and RRS brooding ( $r = .304, p < 0.05$ ) and negatively associated with FFMQ ( $r = -.339, p < 0.01$ ). FFMQ was negatively associated with both RRS ( $r = -.405, p < 0.01$ ) and RRS brooding ( $r = -.331, p < 0.01$ ). No other significant correlations were found ( $p > .05$ ).

### *3.3. Manipulation check*

An independent samples t-test of mean self-focus ratings following the analytic,  $M = 7.31, SD = 1.69$ , and experiential,  $M = 7.17, SD = 1.60$ , self-focused processing conditions found no significant difference between the two ratings,  $t(58) = -0.34, p > 0.73$ . The conditions therefore appear to be equivalent in degree of self-focus.

### *3.4. Self-focused information processing*

Initial analyses were performed with gender as a between-subjects variable. There were no gender differences on the main measures of interest; therefore gender was not adjusted for in all further analyses reported. Because age was significantly different between groups, age was also initially included as a covariate in the main analyses. No main or interactive effects were found using age, therefore age was not included as a factor in the reported analyses. Analysis of SPS effectiveness were repeated using only the first MEPS scenario of the pairs completed before and after the self-focus manipulation procedure, rather than the average scores of the pairs, in accordance with a number of other studies examining SPS (e.g. Lyubomirsky & Nolen-Hoeksema, 1995; Watkins & Moulds, 2005). No additional significant results were found using this alternative method and are therefore not reported here.

A general linear model treating group (recovered depressed, never depressed) and condition (analytic and experiential) as factors was used to test the hypotheses related to change in SPS effectiveness and mood.

Table 3 reports the mean SPS effectiveness scores and sadness ratings for these groups and assigned conditions.

Further analyses adding trait rumination and trait mindfulness as continuous covariates to the model were then completed to test for the hypotheses related to their effect on SPS effectiveness and mood.

These analyses were then all repeated but replacing the group factor such that it had three levels rather than two, i.e. never depressed (N = 30), 1-2 past episodes of depression (N = 14) and 3 or more past episodes of depression (N = 16). The distribution of the recovered depressed subgroups groups to assigned processing condition was 1-2 episodes of depression: experiential N = 6, analytic N = 8; 3 or more episodes of depression: experiential N = 9, analytic N = 7.

Table 3

Means and standard deviations (in parentheses) for SPS effectiveness and sadness according to group and experimental condition, pre and post self-focused processing manipulation

	Recovered Depressed		Never depressed	
	Analytic	Experiential	Analytic	Experiential
SPS effectiveness				
Pre-self-focus condition	2.6 (1.3)	3.2 (1.3)	3.5 (1.0)	3.4 (1.1)
Post-self-focus condition	2.5 (1.1)	3.1 (0.9)	3.3 (1.0)	3.2 (1.2)
Sadness				
Pre-self-focus condition	47.3 (22.9)	42.5 (15.8)	41.1 (16.8)	43.5 (18.7)
Post-self-focus condition	20.1 (15.5)	19.2 (23.2)	24.2 (19.9)	23.0 (20.3)

#### *3.4.1. Self-focused information processing and social problem solving*

There was not a significant main effect of condition and there was not a significant two-way interaction of group x condition for change in SPS effectiveness.

There was not a significant Trait Rumination x Condition x Group interaction for change in SPS effectiveness, however there was a significant main effect of Trait Rumination,  $F(1, 54)$

= 7.5,  $p < .01$ , which was secondary to a significant Trait Rumination x Condition interaction,  $F(1,54) = 6.0$ ,  $p < .05$ . Scatter plots of change in SPS effectiveness for the two self-focused processing conditions and degree of Trait Rumination are represented in Fig. 1. Visual inspection of the scatter plots reveals that higher levels of trait rumination are associated with increased SPS effectiveness following the experiential self-focused processing condition. However, as expected, higher levels of trait rumination are associated with none or very little change in SPS effectiveness following the analytic self-focused processing condition.

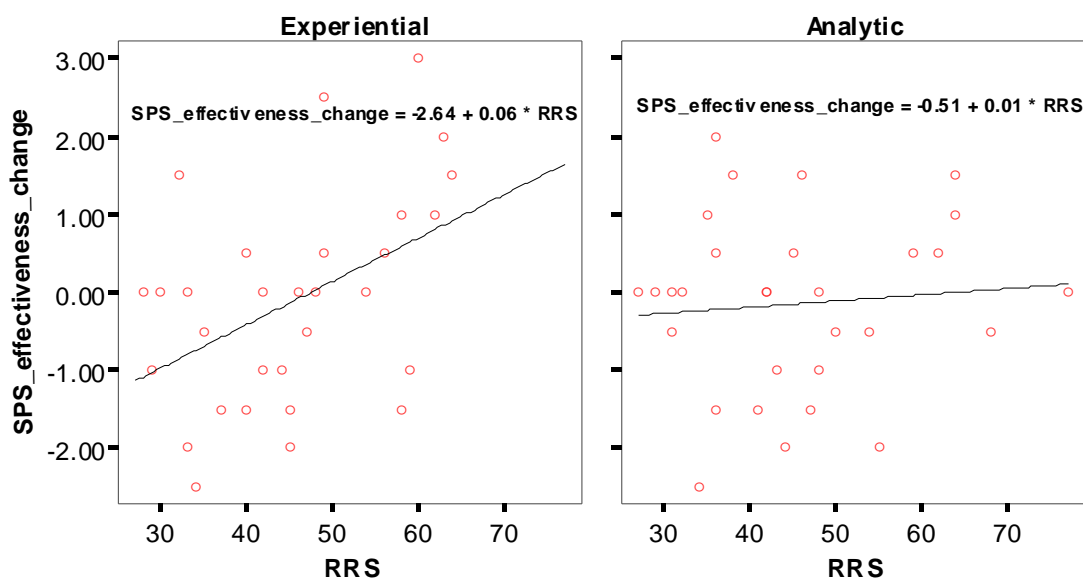


Fig 1. Scatter plots of change in SPS effectiveness for experiential and analytic self-focused processing conditions and Trait Rumination (RRS). A positive SPS effectiveness change score indicates an improvement in SPS effectiveness following the self-focused processing condition.

There was no significant Trait Mindfulness x Condition x Group interaction or Trait Mindfulness x Condition interaction.

When group was adjusted to three levels (never depressed, 1-2 past episodes of depression, and 3 or more past episodes of depression), there was a significant Condition x Group

interaction,  $F(2, 54) = 3.4, p < .05$ . Box plots of change in SPS effectiveness for the two self-focused processing conditions and three groups are represented in Fig. 2. Visual inspection of the box plots reveal that SPS effectiveness changed following the experiential self-focused processing condition according to which group the participants were in. For those who had never been depressed there was very little change in SPS effectiveness, those who had 1 to 2 episodes of depression in the past increased SPS effectiveness following the experiential self-focused processing condition, and for those who had 3 or more episodes of depression showed a reduction in SPS effectiveness following the experiential self-focused processing condition. Visual inspection of the analytic self-focused processing condition box plot reveals that there are no clear differences between the three groups following this condition regardless of which group participants were in.

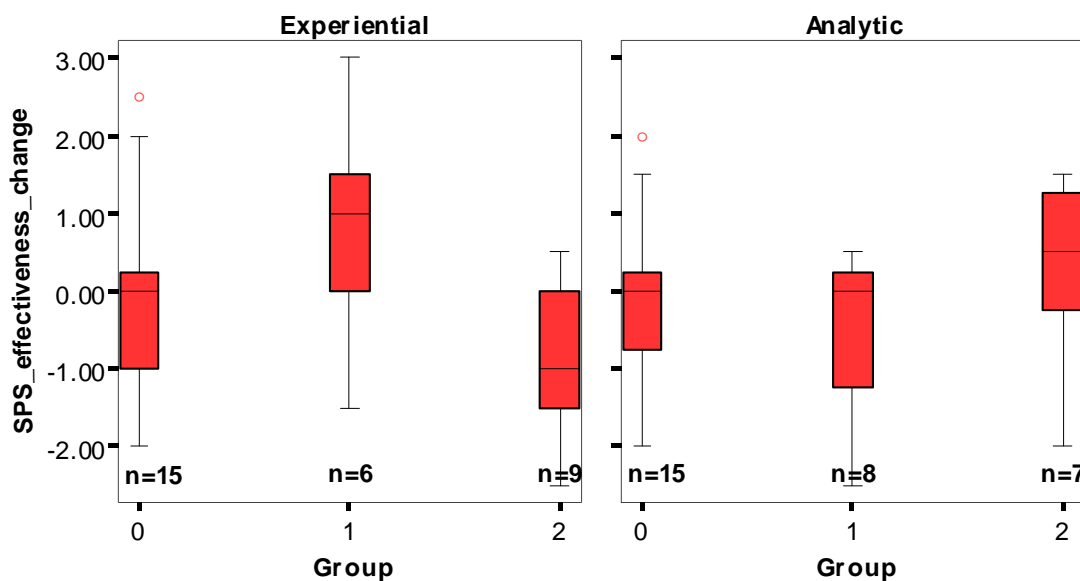


Fig. 2. Box plots of change in SPS effectiveness for experiential and analytic self-focused processing conditions and never depressed (Group 0), 1-2 episodes of depression (Group 1), 3 or more episodes of depression groups (Group 2). A positive SPS effectiveness change score indicates an improvement in SPS effectiveness following the self-focused processing condition.

Again, there was no significant Trait Rumination x Condition x Group interaction with group adjusted to these three levels. However there was a Trait Mindfulness x Group x Condition interaction,  $F(4,48) = 4.4, p < .005$ . Scatter plots of change in SPS effectiveness for the two self-focus processing conditions and three groups are represented in Fig. 3. Visual inspection of the scatter plots reveals a complex relationship between group, condition, trait mindfulness and SPS effectiveness. Following the experiential self-focused processing condition, those who had never been depressed and had higher scores of trait mindfulness had slightly improved SPS effectiveness, whereas those who had 3 or more episodes of depression and particularly those who had experienced 1 or 2 episodes of depression and had higher scores of trait mindfulness demonstrated a reduction in SPS effectiveness. Comparing the analytic self-focused processing condition with the experiential self-focused processing condition, a similar relationship was found for those that had never been depressed and those that had experienced three or more episodes of depression. SPS effectiveness slightly increased with increasing trait mindfulness for those with who had never been depressed and reduced for those that had 3 or more past episodes of depression. However, comparing the analytic self-focused processing condition with the experiential self-focused processing condition, the opposite pattern was found for those with 1 to 2 episodes of depression, i.e. SPS effectiveness increased with increasing levels of trait mindfulness following the analytic self-focused processing condition.



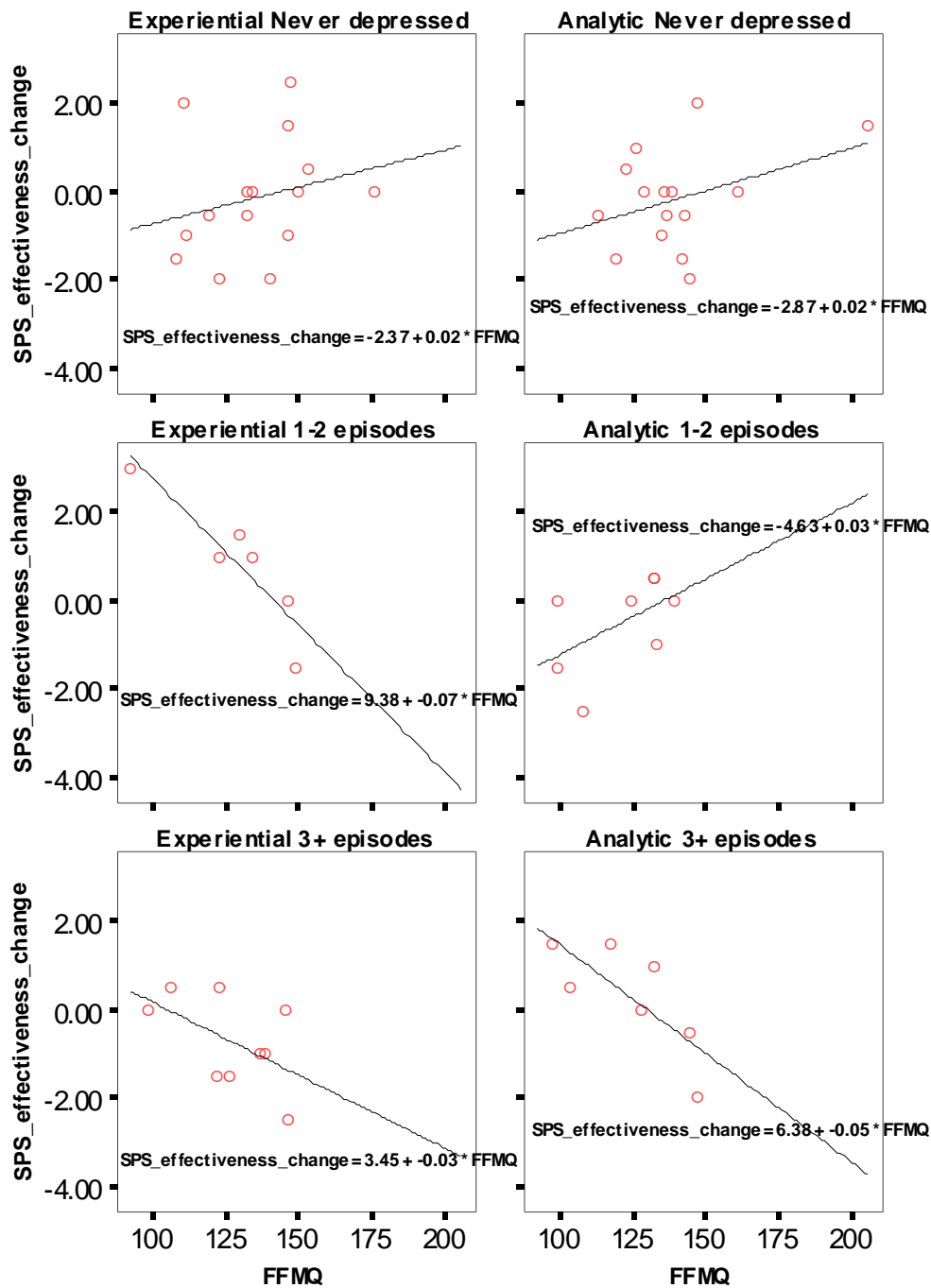


Fig. 3. Scatter plots of change in SPS effectiveness for experiential and analytic self-focus processing conditions, never depressed, 1 -2 episodes of depression groups, and Trait Mindfulness (FFMQ). A positive SPS effectiveness change score indicates an improvement in SPS effectiveness following the self-focus processing condition.

### *3.4.2. Self-focused information processing and affect*

The difference between VAS mood measurements immediately before (Time 4) and immediately after (Time 5) the self-focus processing condition were used. There was not a significant main effect of condition and there was not a significant two-way interaction of Group x Condition for change in sadness ratings. Furthermore separate analyses adding trait rumination and trait mindfulness as covariates to the model resulted in no significant main effects of these covariates or 2 way Condition x covariate interactions or 3 way Condition x Group x Covariate interactions for change in sadness ratings.

Furthermore, no significant effects were found when these analyses were repeated after replacing the group factor such that it has three levels (never depressed, 1-2 past episodes of depression, and 3 or more past episodes of depression).

A paired samples t-test revealed that the participants mean sadness ratings had significantly reduced pre,  $M = 4.36$ ,  $SD = 1.84$ , to post,  $M = 2.16$ ,  $SD = 1.95$ , self-focused processing conditions,  $t(59) = 9.89$ ,  $p < .001$ .

## **4. Discussion**

### *4.1. Self-focused information processing condition and group*

No significant difference in change in SPS ability following the two processing conditions was found for dysphoric recovered depressed participants or dysphoric never depressed participants. However a significant group and processing condition interaction was found when comparing never depressed participants with those that had experienced less than three episodes of depression in the past and those that had experienced more than two. Those that

had less than three episodes of depression in the past had increased social problem solving ability following the experiential processing condition, whereas those with more than two episodes did not. This was an unexpected finding as it was hypothesised that those with three or more episodes of depression would benefit more from the experiential mode of processing due to the similar characteristics of an experiential mode of processing and a mindful being mode practiced in MBCT, and the current evidence suggesting that MBCT is only effective for those that have experienced at least 3 depressive episodes (Ma & Teasdale, 2004; Teasdale et al., 2000).

This may be explained in a number of ways. Firstly, it may be wrong to assume that the experiential mode of processing is equivalent to a mindful mode of processing practised in MBCT. The experiential processing condition does not ask participants to be judgemental about what they experience, but also does not ask participants to be non-judgemental about what they sense, as would be explicitly taught in mindfulness practice (Kabat-Zinn, 1990; Segal et al., 2002). Furthermore MBCT practices do not typically switch rapidly between mindful focus of cognitions, affect and physical sensations as is done in the experiential processing condition. Instead one domain is focused on at one time, e.g. breathing meditation, or body scan (Segal et al., 2002). Hence it may be wrong to assume that an experiential mode of processing will have equivalent effects to a mindful mode of processing.

Secondly, if it is assumed that the experiential processing condition is equivalent to the mindful being mode practiced in MBCT, it may be that the improvement in SPS ability is only a temporary effect following experiential processing in people that have had one or two episodes of depression only. Furthermore the lack of improvement in SPS in the group with more than two episodes assigned the experiential processing condition may be attributable to lack of practice of this novel mode of being. This group of participants with more depressive

episodes may have been more entrenched in a ruminative mode and need more practice than this one-off experimental manipulation. Indeed an MBCT programme would typically require participants to attend eight weekly two hour sessions where mindfulness exercises are taught and practiced. Participants are then usually encouraged to practice these exercises daily as homework assignments (Segal et al., 2002). It is therefore perhaps unsurprising that the brief one-off mindful induction used in this study failed to produce a significant result for those who have had multiple depressive episodes.

Thirdly, one of the mechanisms by which MBCT reduces the risk of depressive relapse may not be by increasing SPS ability. Segal et al. (2002) do not list this as one of the main benefits of MBCT training, instead they propose that the benefits of adopting this information processing mode include using up limited information processing resources such that rumination cannot take place, the development of a decentred perspective to thoughts, feelings and physiology, and an increased ability to recognise deterioration in mood and take early action. It was hypothesised that by taking up limited information processing resources and thereby not ruminating, experiential processing would increase SPS ability in dysphoric participants with more than two episodes of depression as was found by Watkins & Moulds (2005) with depressed participants. However those with more than two episodes of depression may not benefit from MBCT due to increased SPS ability per se. To our knowledge SPS ability has not been formally measured in MBCT trials.

#### *4.2. Self-focused information processing condition and trait rumination and mindfulness*

This study also explored the effects of trait rumination and trait mindfulness on change in SPS ability following analytic and experiential processing conditions. It was predicted that recovered depressed participants with high levels of trait rumination would benefit more from

an experiential self-focused condition than those with low trait rumination. It was also predicted that recovered depressed participants with lower levels of trait mindfulness would show a greater decrease in problem solving ability following the analytic condition compared to those with higher levels of trait mindfulness.

Higher levels of trait rumination were found to be associated with increased SPS effectiveness following the experiential, relative to analytic, self-focused processing condition as predicted in our hypothesis. This finding was not limited to the recovered depressed sample but to the sample as a whole. Typically control groups have not been found to benefit from experiential self focus (e.g. Rimes & Watkins, 2005; Watkins & Baracaia, 2002; Watkins & Moulds, 2005). However this study differs by using a dysphoric non-clinical group as the comparison group. In many experiments a dysphoric group has been the experimental group with whom experimental effects are hypothesised to occur (e.g. Morrow & Nolen-Hoeksema, 1990; Lyubomirsky & Nolen-Hoeksema, 1995).

The finding that experiential self-focus is more beneficial for those with higher trait rumination confirms the hypothesis that such a processing mode is advantageous for those more vulnerable to depression (Teasdale, 1999). Other recent studies comparing experiential to analytic processing modes have also measured trait rumination and found an interaction with this measure and assigned processing mode (Crane et al., 2007; Moberly & Watkins, 2006). These studies however have found high trait ruminators to experience less favourable outcomes (decreased mood (Moberly & Watkins, 2006) and increased overgeneral memory (Crane et al., 2007)) following analytic processing, rather than beneficial outcome following experiential processing.

Interestingly in a study comparing induced and trait levels of rumination and distraction and their effect on SPS in depressed participants, Donaldson & Lam (2004) found that induced distraction did not improve SPS for those with high trait rumination. Although this finding was with a depressed group rather than a dysphoric recovered depressed group, this provides some evidence to suggest that adopting an experiential processing mode may be more beneficial than distraction for those who habitually ruminate when low in mood. Experiential processing may be less effortful than distraction given findings to suggest that ruminators are less likely to distract themselves (Lyubomirsky & Nolen-Hoeksema, 1993) and believe self-focus to be beneficial (Lyubomirsky & Nolen-Hoeksema, 1993; Watkins & Baracaia, 2001).

Consistent with our hypothesis, lower levels of trait mindfulness were associated with a greater decrease in SPS following analytic condition, however this was found for the never-depressed group and those that had experienced one to two episodes of depression, but not those that had experienced three or more episodes of depression as predicted. Lower levels of trait mindfulness were expected to be more detrimental for those assigned the analytic condition as we predicted they would be more likely to engage in ruminative processing compared to those who are naturally more mindful who might find analytic processing a novel practice and not do it as effectively. Unexpectedly, high levels of trait mindfulness were associated with a decrease in SPS following analytic processing for those that experienced at least three episodes of depression. It may be that those with high levels of trait mindfulness and three or more episodes of depression are likely to ruminate more when explicitly asked to so compared with those with lower levels of mindfulness due to an increased tendency to focus on the self. Analytic processing may be more detrimental to this group in terms of decreased SPS compared to those with fewer depressive episodes due to a ruminative response being more engrained in those who have had multiple depressive episodes (Teasdale et al., 1995).

Lower levels of mindfulness were associated with a greater increase in SPS following the experiential processing condition for the recovered depressed participants. This could be due to those who are not naturally mindful gaining more benefit from the experiential processing condition than those who are habitually mindful. The never depressed group appeared to show some increase in SPS with increasing trait mindfulness. For this group increased trait mindfulness may have enabled them to more effectively engage in the experiential self-focused condition. Again vulnerability to rumination may be the differentiating factor between these groups creating these different responses to the experiential processing condition.

#### *4.3. Self-focused information processing condition and affect*

It was hypothesised that the self-focused processing conditions would have an equivalent effect on mood as found by the majority of other published studies using the same experimental manipulation of processing condition (Crane et al., 2007; Watkins & Moulds, 2005; Watkins & Teasdale, 2004; Williams & Moulds, 2007)

This was confirmed as mood improved irrespective of condition. However it was expected that the processing conditions would maintain induced low mood as has been found following a low mood and rumination induction in non-clinical participants (Morrow & Nolen-Hoeksema, 1990). Instead induced low mood reduced as one would expect due to the passage of time (Isen & Gorgolione, 1983). The self-focused processing conditions used in this study differed from that used by Watkins and colleagues by the use of a timed powerpoint presentation rather than allowing people to look through items at their own pace. It is possible that this more controlled processing manipulation, which was designed in order to

create more homogeneous conditions, may not have created as effective experiential and analytic processing conditions as the original method. It could be that allowing participants to work through items at their own pace, as opposed to spending 17 seconds on each item, allows them to spend longer on items of their choosing which enables participants to more fully experience the intended self-focused processing condition.

Both this study and Watkins & Moulds (2005) found analytic and experiential self-focused processing conditions to differentially effect SPS ability but have an equivalent effect on mood. From these combined findings we speculate that for those who are depressed or vulnerable to depression, an experiential processing mode is likely to increase SPS ability, which in time improves mood as a result of more interpersonal problems being solved.

#### *4.4. Limitations*

After splitting the recovered depressed participant group into two subgroups in order to analyse for difference between those with greater and fewer episodes of depression, the numbers remaining in the groups were small. This will have increased the risk of type 2 error, i.e. potentially significant findings not being found due to a lack of power. The results comparing these groups should therefore be treated with some caution. Furthermore a large number of analyses were conducted in order to test a number of hypotheses. This would have increased the probability of type 1 error, i.e. a significant finding being revealed due to chance.

Only one measure of mood was used in order in order to keep the completion of mood measures as quick as possible such that induced low mood was less likely to reduce whilst completing them. However the use of another VAS scale, such as one measuring “happiness”



(Crane et al., 2007; Williams & Moulds, 2007; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004) may have made the study more sensitive to changes in affect.

The mood induction was effective. However dysphoric mood spontaneously reduced to less than 20 points difference from baseline levels in a number of participants who were then given another mood induction to increase levels of dysphoria before the experimental condition. This heterogeneity in participant experience could perhaps have been reduced by using just one MEPS procedure before the experimental condition such that mood would have less time to reduce below the 20 point cut off level. Two MEPS scenarios were used such that participants were assessed for SPS on more than one hypothetical scenario in order to increase the validity of the test, as was done by Donaldson & Lam (2004). However other studies have found similar results when comparing one MEPS scenario or the average of several (Lyubomirsky & Nolen-Hoeksema, 1995; Watkins & Moulds, 2005).

Analytic processing or rumination has been shown to be detrimental to SPS only in those who are dysphoric or depressed (Donaldson & Lam, 2004; Lyubomirsky & Nolen-Hoeksema, 1995; Watkins & Moulds, 2005). It was therefore expected that the processing conditions would only have a differential effect if participants were low in mood. A twenty point decrease in mood cut-off was chosen to be consistent with other research using mood inductions (e.g. Wakens, Teasdale & Williams, 2003). However this twenty point difference may not be great enough for induced experiential and analytic processing to have a differential effect in the recovered depressed group as a whole. In a recent study also using a mood induction, non-significant differences in intrusion frequency and distress following experiential and analytic conditions were reported (Williams & Moulds, 2007). However (Crane et al., 2007) found an analytic processing condition to be detrimental (increased proportion of categoric memories) in recovered depressed participants with high trait

rumination, without the use of a mood induction. This suggests that low mood induction procedure may not be imperative in finding a significant effect.

As discussed, the analytic and experiential processing conditions may be more effective if participants are allowed to work through the items at their own pace. Furthermore the experiential processing condition may be more effective with more comprehensive instructions before the task emphasising the importance of being non-judgemental in their observations. This may have helped differentiate the two tasks further and made the experiential condition more analogous to a mindful condition.

This study only included a manipulation check to examine whether the two processing conditions were equivalent in degree of self-focus. Additional manipulation checks to ensure the participants were carrying out the manipulations as intended were not included for two reasons. Firstly, following the assigned processing condition it was important that SPS was assessed as soon as possible to maximise the chances of measuring an effect of the condition before it potentially diminished. Therefore additional measures in between these stages were unfavourable. Secondly, manipulation checks in other studies using the same manipulations have consistently found a significant difference between the two conditions in the direction expected (Rimes & Watkins, 2005; Watkins & Moulds, 2005; Watkins & Teasdale, 2001; Watkins & Teasdale, 2004; Williams & Moulds, 2007). However without a manipulation check to ensure that those in the experiential condition were less analytic than those in the analytic condition, this cannot be taken for certain.

#### *4.5. Further research*

Further research is required in order to assess the effects of experiential processing, compared with analytic processing in recovered depressed participants. Recovered depressed participants are the client group for which MBCT is designed and yet there paucity of research examining why experiential, or mindful, self-focus may be beneficial for this group (Crane et al., 2007; Watkins & Baracaia, 2002). In particular research investigating the differences between those with a number of depressive episodes and those with less than three episodes would help ascertain why MBCT is effective only for those with at least three past episodes of depression (Ma & Teasdale, 2004; Teasdale et al., 2000).

Furthermore studies in this area could be improved by measuring the effects of repeated practice of processing condition and taking measurements over a longer period of time in order to asses for effect longevity (e.g. Watkins, 2004). This would be of particular benefit in testing our hypothesis that experiential processing will result in improvements in SPS which will result in later increase in mood as interpersonal problems are solved. Measures of trait mindfulness should also be incorporated into studies in order to replicate and expand these findings that suggest trait mindfulness effects how beneficial experiential processing is depending upon the number of previous episodes of depression.

#### *4.6. Conclusions*

This study adds to the growing literature providing evidence for different forms of self-focused information processing. In particular it supports Teasdale's (1999) theory that an experiential, mindful mode has distinctly different properties to an analytic, conceptualising mode, and is more beneficial for those vulnerable to depression as demonstrated here by

increased SPS ability in dysphoric participants with high levels of trait rumination following experiential processing.

A clear distinction between recovered depressed participants and never depressed participants was not evident from the effects of the different processing conditions as has been found in previous research (Crane et al., 2007; Watkins & Baracaia, 2002). However analysis of the SPS scores after splitting the recovered depressed group into high and low number of past depressive episodes groups resulted in some evidence to suggest that both the number of depressive episodes participants have experienced and participants degree of trait mindfulness effects how beneficial experiential processing is in terms of increasing SPS ability.

These findings have clinical implications as an experiential, or mindful mode of processing is hypothesised to be a fundamental component of MBCT (Segal et al., 2002; Teasdale, et al. 1995). Specifically these results suggest that an experiential mode of processing may help to prevent depressive relapse by improving SPS ability in those low in mood and with high levels of trait rumination, and experience of former depressive episodes and habitual levels of mindfulness both influence the effectiveness of such a mode.

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PART THREE:

Appendices

## Appendix A: Reflective Statement

## **Reflective Statement**

Reflecting on the research project I have now completed provides some welcome thinking space. This in fact is something I should have provided for myself at regular intervals throughout the entire project, but did not. My supervisor frequent told me, “Winston, step back and see the wood. You’re only looking at the trees.” It is actually quite ironic that this project concerns mindfulness and yet I was in continual “doing mode”, rarely taking the time to step back and observe. Without doing this I have been immersed in my project for some time not taking the time to either reflect on the research from a wider perspective, or mindfully observe my levels of stress. Consequently I did not allow myself time for more constructive and less reaction based thinking, and did not attend very well to my own mental health, which again is somewhat ironic given my career choice! Through undertaking this project I have learnt that I am more productive when I have a clear plan of what I need to do each day/week/month. Although, of course a good deal of flexibility is also required as you never know what may happen day to day. The next time I undertake a research project I will plan in both some reflection time and some time for mindfulness meditation. Whilst the natural urge, at least for me, is just to get on with whatever tasks need to be done, I strongly believe that this urge needs to be challenged such that the woods can be seen and ones efforts are more fruitful.

In future research projects I would like to use more reflective time to consider being braver and perhaps constructing my own experimental induction procedures and/or measures rather than launching into using well used procedures. Using measures and experimental inductions that have been used by other published researchers is very important such that more informative comparisons can be made between studies. However I have learnt that although many researchers, many of whom may be very well respected in their field, may use a

particular scale or experimental manipulation, that does not necessarily mean the tool accurately represents what it is intended to represent.

Researchers need to be bold and creative in order to move research forwards, discover new meanings and expand our current knowledge base. My Systematic Literature Review (SLR) argued that a well used measure of reflection, The Ruminative Responses Scale (RRS; Treynor, Gonzalez, & Nolen-Hoeksema, 2003) may not be the best measure of this construct and in fact other measures created by lesser cited authors may be more valid instruments. It is tempting to use measures designed by respected authors and used frequently by other researchers, but time spent critically inspecting such tools needs to be applied before the decision is made to include it in one's research. It could easily be the difference between finding a significant result that could have significant clinical implications or not finding anything of any interest despite spending countless hours running a project.

Similarly, I used an experiential and analytical processing induction procedure (Watkins & Teasdale, 2004) that has been used by various other authors (e.g. Rimes & Watkins, 2005; Watkins & Moulds, 2005; Williams & Moulds, 2007; Crane, Barnhofer, Visser, Nightingale, & Williams, 2007) in my empirical study. Whilst I did at the time give this considerable thought and conferred with Professor Watkins by email about whether an induced experiential mode of processing was equivalent to the mindful mode of processing I wished to induce, I am not now and was not then convinced they are equivalent. Procedures can often be improved. As discussed in my empirical paper, this one perhaps could be explicitly asking participants to be non-judgemental about what they experience, as would be explicitly taught in mindfulness practice (Kabat-Zinn, 1994). In future research projects I would like to be bolder and make changes such as these to popularly used tools in order to more effectively expand the current knowledge base.

Problems that arose during my research project included getting R&D clearance for one of my research sites, recruitment, and the mood induction initially not being effective enough. All three situations were largely resolved simply due to tenacity and persistence. I gained R&D clearance through two sites, one of which did not have experience of research being carried out by University of Hull Trainees. A number of discussions between members of the University, the ethics team, the R&D teams and myself had to take place before I could get my study underway. This was simply an unfortunate consequence of trying something new that I do not think could have been avoided by my own efforts. A large amount of time was also spent recruiting recovered depressed participants. A large number of sources were used to recruit, and therefore I presumed finding adequate numbers of people would not be a problem. However during the first two or three months only a slow trickle of people were volunteering. This was frustrating given the amount of work I had done to make relationships with various GPs, therapists and charity groups who agreed to help me. This problem was resolved by placing an advert in a local newspaper. The response was surprisingly large. Money spent on this was well worth it and if recruiting such a group again I would definitely spend some money doing this rather than spending a large amount of time using the other largely unsuccessful methods.

I could have also saved time by conducting a more thorough pilot study. A large proportion of the first few participants did not rate that their mood had reduced sufficiently for inclusion in the experiment following the mood induction. This was rather worrying especially given the initial slow uptake in participants. Through discussing this issue with my supervisor it was decided that I would alter the VAS mood scale, changing the word “despondent” to “sad” in the hope that participants would be more likely to feel sad than despondent after the mood induction. A quick trial with some colleagues provided some evidence to suggest this new scale was more sensitive to mood change. Data collection was therefore restarted using this



modified scale. This significant delay in collecting meaningful data has taught me to always conduct a thorough pilot study before data collection and not to assume that just because a procedure has been successful for other researchers it will be successful for oneself.

The mood induction also resulted in an entirely different effect that I was not entirely prepared for. Altogether during the main data collection period, I asked sixty-seven people to “Imagine three depressing memories, spending three minutes on each. Imagine each item in more detail, concentrate on your thoughts and feelings, to make the memory as vivid as possible”. Although during my clinical work I will ask participants to think about upsetting memories, this will be for some hypothesised therapeutic gain rather than for the purposes of a research project. Inducing low mood in a research context felt in some ways very different to working with a psychotherapy client. There were perhaps a number of reasons for this. Firstly, in the research project I would sit in silence with the participants for eight minutes whilst they thought about unhappy memories. Secondly, there was no opportunity to discuss their feelings until debriefing. Thirdly, they were undertaking the mood induction for the development of research rather than for their own personal benefit. Overall this made me feel uncomfortable during the mood induction procedure, particularly when the participants were visibly upset by thinking about their memories. Asking participants to undergo this procedure and witnessing their reactions to it a large number of times and sometimes a few times in one day, also had the effect of lowering my own mood.

I noticed this effect in myself and so combated my own negative thinking that would arise during this procedure by telling myself things such as, “Thinking about unhappy memories is probably something that this person has done plenty of times before. This is nothing they would not probably do from time to time anyway”, “They can say no if they want to” and later on in the data collection stage “All participants’ moods return to near baseline levels by

the end of the experiment. This won't harm them at all". Such thoughts helped a lot, as did speaking to others about how it made me feel. However the experience always remained unpleasant.

The decision to write the SLR for Clinical Psychology Review and the empirical paper for Behaviour Research and Therapy (BRAT) was made in part due to their large readership as indicated by their consistent high impact ratings. Clinical Psychology Review was also chosen due to it publishing reviews of topics of interest to Clinical Psychologists and Psychotherapists from a wide variety of therapeutic orientations and client specialties. It is predicted that the SLR paper included here has interesting and meaningful information for all practicing Clinical Psychologists and Psychotherapists. In contrast BRAT was also chosen due to it specialising in a given field, i.e. cognitive behaviour therapy (CBT). The empirical paper would be of more interest to CBT practitioners than a more diverse readership given its focus on the role of cognitive processing modes on a specific outcome. The BRAT website ([www.elsevier.com/locate/brat](http://www.elsevier.com/locate/brat)) states that one of the major focuses of the journal is on "...experimental analyses of psychopathological processes linked to prevention and treatment". The empirical paper fits into this category precisely.

As a final note, I'd like to add that I learnt to expect the unexpected whilst undertaking research! I remember well the lady who during her debriefing session was reflecting on the rumination procedure she had undertaken. Thinking about the experience she said, "I felt all relaxed like I had had a massage".

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## Appendix B: Guideline for Authors for the Systematic Literature Review



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*Abstract.* A concise and factual abstract is required (not exceeding 200 words). This should be typed on a separate page following the title page. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separate from the article, so it must be able to stand alone. References should therefore be avoided, but if essential, they must be cited in full, without reference to the reference list.

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psychiatric outpatients, *Psychology and Aging*, 19, 444-45.

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## Appendix D: Participant Information sheet



**Department of Clinical Psychology  
Hertford Building  
University of Hull  
Cottingham Road  
Hull  
HU6 7RX**

## **Participant Information Sheet**

### **Depression and Thinking Styles**

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Talk to others about the study if you wish.

- Part 1 tells you the purpose of this study and what will happen to you if you take part.
- Part 2 gives you more detailed information about the conduct of the study.

Please ask the researcher if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

### **Part 1**

#### **What is the purpose of the study?**

The purpose of the study is to further our understanding of how different thinking styles can affect a person's mood. Greater understanding in this area will assist the development of better therapies for people who suffer from repeated episodes of depression.

This study is being conducted by a Trainee Clinical Psychologist as part of their training.

#### **Why have I been chosen?**

You have been chosen because you either have suffered with depression in the past or you have never been clinically depressed in the past. A variety of methods have been used to recruit participants so that we can get as many as possible. We are aiming to recruit a total of 80 participants.

#### **Do I have to take part?**

No. It is up to you to decide whether or not to take part. If you do, you will be given this information sheet to keep and be asked to sign a consent form. You are still free to withdraw at any time and without giving a reason. Your data will be destroyed immediately and will not be used if you chose to withdraw. A decision to withdraw at any time, or a decision not to take part, will not affect the standard of care you receive.

#### **What will happen to me if I take part?**

- The study will take approximately 1 hour and 30 minutes to complete.
- You will be asked to fill out some questionnaires and asked some questions about any previous depressive episodes. You will also be asked to complete some simple tasks, e.g. thinking about past memories, rating your mood on a scale, thinking about the way you feel and talking about how you might solve some problems that you might encounter in everyday life.

- You will be audiotaped during some of the session. You will be told when. This is so that these sections can be analysed by the chief investigator at a later time. A random selection of tapes will also be analysed by another employee of the Humber Mental Health Teaching NHS Trust. These tapes will be anonymised so that your identity will be unknown to them. These tapes will be stored in a locked cabinet on NHS premises.
- The study is a randomized trial. This means that we put people into groups and give each group a different task to do; the results are compared to see what effects each task had. To try to make sure the groups are the same to start with, each patient is put into a group by chance (randomly). The results are then compared.
- There will be no follow-up to this study. Once you have finished the tasks today you will not be asked to complete any of these tasks again at any point in the future.

### **Expenses and payments:**

Unfortunately we are not able to offer any payments or reimburse any expenses for taking part in this research.

### **What do I have to do?**

All that is asked of you is to follow the instructions you are given to the best of your ability.

### **What is the procedure that is being tested?**

Different ways of thinking when low in mood have been shown to affect how likely someone is to become depressed. This research aims to find out more about the effect of different thinking styles. If you have any questions about the tasks you are asked to complete please feel free to ask the researcher.

### **What are the other possible disadvantages and risks of taking part?**

There are no foreseen risks involved in undertaking this study. You will however be asked to think about some of your own unhappy memories which may make you feel temporarily low in mood.

### **What are the possible benefits of taking part?**

There is no intended clinical benefit to participants taking part in this study. However the information we get might help improve the treatment of people who experience recurrent episodes of depression.

### **What happens when the research study stops?**

You will be free to ask any questions you have about the study. You will not be required to take part in any further tasks as part of this study. When you have completed the tasks we will give you a leaflet on depression which includes some ideas about how to tackle it if you feel depressed in the future.

### **What if there is a problem?**

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed. The detailed information on this is given in Part 2.

In the event that you wish to make a complaint please telephone: 01482 464101

### **Will my taking part in the study be kept confidential?**

Yes. All the information about your participation in this study will be kept confidential. The details are included in Part 2.

### **This completes Part 1 of the Information Sheet.**

**If the information in Part 1 has interested you and you are considering participation, please continue to read the additional information in Part 2 before making any decision.**

## **Part 2**

### **What if there is a problem?**

If you have a concern about any aspect of this study, you should ask to speak with the researchers who will do their best to answer your questions (Telephone: 01482 464101). If you remain unhappy and wish to complain formally, you can do this through the NHS Complaints Procedure (or Private Institution). Details can be obtained from the hospital.

### **Harm:**

In the event that something does go wrong and you are harmed during the research study there are no special compensation arrangements. If you are harmed and this is due to someone's negligence then you may have grounds for a legal action for compensation against Humber Mental Health Teaching NHS Trust but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you (if appropriate).

### **Will my taking part in this study be kept confidential?**

- The procedures for handling, processing, storage and destruction of your data are compliant with the Data Protection Act 1998.
- All the data that will be collected for the purposes of the study will be collected during the study. Data from your medical records will not be used in the study.
- Your data will be stored securely and will be anonymised such that it will not be possible to identify that it belongs to you by anyone other than the chief investigator.
- Your data will be used solely for the purposes of this study only.
- Only the chief investigator will have access to view identifiable data.
- Data will be held for 5 years in a secure place before it is disposed of securely.
- All information which is collected about you during the course of the research will be kept strictly confidential. Any information about you which leaves the hospital/surgery will have your name and address removed so that you cannot be recognised from it.
- Participants have the right to check the accuracy of data held about them and correct any errors.

### **Involvement of the General Practitioner/Family doctor (GP)**

Your GP will be notified of your participation in the trial, with your consent (Participants who have been depressed in the past only).

### **What will happen to the results of the research study?**

It is intended that the results of the study be published in a peer-reviewed journal. Such journals are accessible to the general public. You will not be identified in any report/publication unless you have consented to release such information.

### **Who is organising and funding the research?**

This piece of research is not receiving any funding from any body. However the chief investigator is being paid to carry out this study as part of his employment with The Humber Mental Health Teaching NHS Trust.

### **Who has reviewed the study?**

This study was given a favourable ethical opinion for conduct in the NHS by the Hull & East Riding Primary Care Trusts REC.

**If you have any questions that are not answered in Part 1 or 2 of the Information Sheet please don't hesitate to contact me by post, telephone or email. I will endeavour to answer your questions as quickly as possible.**

**Contact Details:**

Winston Sanders  
Trainee Clinical Psychologist  
Department of Clinical Psychology  
Hertford Building  
University of Hull  
Hull  
HU6 7RX

Telephone: 01482 464101

Email: [dep.research@gmail.com](mailto:dep.research@gmail.com)

***Thank you for considering taking part in this study and the taking time to read this information sheet.***

## Appendix E: Participant Consent Form



Department of Clinical Psychology  
Hertford Building  
University of Hull  
Cottingham Road  
Hull  
HU6 7RX  
Tel: 01482 464101  
Email: *dep.research@gmail.com*

**Participant ID no:**

## **CONSENT FORM**

**Title of Project: Depression and Thinking Styles**

**Name of Researcher: Winston Sanders**

**Please initial box**

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected.

3. I understand that relevant sections of any of my medical notes and data collected during the study may be looked at by responsible individuals from Humber Mental Health Teaching NHS Trust, from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records

4. I agree to being audiotaped whilst being interviewed and during tasks that I am asked to complete.

5. I agree to my GP being informed of my participation in the study (Participants that have been depressed before only).

6. I agree to take part in the above study.

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

Winston Sanders  
Researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

## Appendix F: Systematic Literature Review Excluded Studies



Studies were excluded from the systematic literature review for the following reasons:

- i) Did not use a measure of mood, depressive symptoms or self-esteem or use a sample of depressed, recovered depressed, or dysphoric participants: McElwee & Farnum (2005); Silvia, Eichstaedt, & Phillips (2005)
- ii) Did not compare at least two forms of self-focus/information processing either by use of experimental manipulation or self-report measures: Hertel & El-Messidi (2006); Kuyken, Watkins, Holden, & Cook (2006); Lavender & Watkins (2004); Watkins, Teasdale, & Williams (2000); Zvolensky et al. (2006)
- iii) Used an anger eliciting induction: Kross, Ayduk, & Mischel (2005)
- iv) Did not use an adult population Burwell & Shirk (2007); Kuyken, et al. (2006); Luyckx et al. (2008)
- v) A minimum research quality threshold was met, i.e. did not clearly state the procedure: Teasdale & Green (2004)

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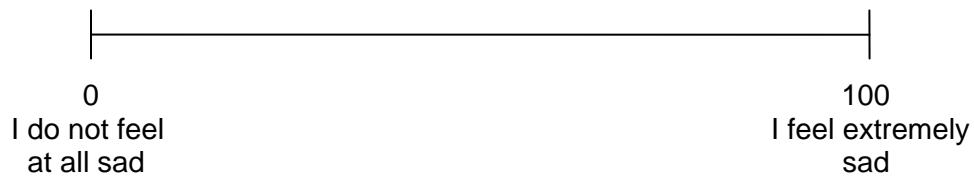
## Appendix G: Visual Analogue Scales - Mood and Self-focus

### Mood VAS

ID number:

Time point:

How sad are you feeling at this present moment? Place a vertical mark on the line below to indicate how sad you are feeling.



### Self-focus VAS

ID number:

How focused on yourself are you at this present moment? Place a vertical mark on the line below to indicate how focused on yourself you are.



Appendix H: Ruminative Response Scale  
(RRS; Nolen-Hoeksema & Morrow, 1991)

Identification No:

**Responses to Depression**

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

Almost Never	Sometimes	Often	Almost Always	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. Think about how alone you feel.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. Think "I won't be able to do my job/work because I feel so bad"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. Think about your feelings of fatigue and achiness
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. Think about how hard it is to concentrate
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5. Think about how passive and unmotivated you feel
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6. Analyse recent events to try and understand why you are depressed.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7. Think about how you don't seem to feel anything anymore
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8. Think "Why can't I get going?"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9. Think "Why do I always react this way?"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10. Go away by yourself and think about why you feel this way
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	11. Write down what you are thinking about and analyse it
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	12. Think about a recent situation, wishing it would have gone better
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	13. Think "Why do I have problems other people don't have?"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	14. Think about how sad you feel

Almost Never	Sometimes	Often	Almost Always	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	15. Think about all your shortcomings, failings, faults and mistakes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16. Think about how you don't feel up to doing anything
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	17. Analyse your personality to try and understand why you are depressed
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	18. Go someplace alone to think about your feelings
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	19. Think about how angry you are with yourself
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	20. Listen to sad music
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	21. Isolate yourself and think about the reasons why you feel sad
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	22. Try to understand yourself by focusing on your depressed mood
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	23. Think "What am I doing to deserve this?"
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	24. Think "I won't be able to concentrate if I keep feeling this way".
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	25. Think "Why can't I handle things better?"

**Thank you for filling in this questionnaire.**



Appendix I: Five Factor Mindfulness Questionnaire (FFMQ; Baer, Smith,  
Hopkins, Krietemeyer, & Toney, 2006)

Subject number \_\_\_\_\_

Date \_\_\_\_\_

### 5-FACTOR M QUESTIONNAIRE

Please rate each of the following statements using the scale provided. Write the number in the blank that best describes your own opinion of what is generally true for you.

1	2	3	4	5
never or very rarely true	rarely true	sometimes true	often true	very often or always true

- \_\_\_\_\_ 1. When I'm walking, I deliberately notice the sensations of my body moving.
- \_\_\_\_\_ 2. I'm good at finding words to describe my feelings.
- \_\_\_\_\_ 3. I criticize myself for having irrational or inappropriate emotions.
- \_\_\_\_\_ 4. I perceive my feelings and emotions without having to react to them.
- \_\_\_\_\_ 5. When I do things, my mind wanders off and I'm easily distracted.
- \_\_\_\_\_ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.
- \_\_\_\_\_ 7. I can easily put my beliefs, opinions, and expectations into words.
- \_\_\_\_\_ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.
- \_\_\_\_\_ 9. I watch my feelings without getting lost in them.
- \_\_\_\_\_ 10. I tell myself I shouldn't be feeling the way I'm feeling.
- \_\_\_\_\_ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
- \_\_\_\_\_ 12. It's hard for me to find the words to describe what I'm thinking.
- \_\_\_\_\_ 13. I am easily distracted.
- \_\_\_\_\_ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that way.
- \_\_\_\_\_ 15. I pay attention to sensations, such as the wind in my hair or sun on my face.
- \_\_\_\_\_ 16. I have trouble thinking of the right words to express how I feel about things
- \_\_\_\_\_ 17. I make judgments about whether my thoughts are good or bad.
- \_\_\_\_\_ 18. I find it difficult to stay focused on what's happening in the present.
- \_\_\_\_\_ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.
- \_\_\_\_\_ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
- \_\_\_\_\_ 21. In difficult situations, I can pause without immediately reacting.
- \_\_\_\_\_ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.

1	2	3	4	5
never or very rarely true	rarely true	sometimes true	often true	very often or always true

- \_\_\_\_\_ 23. It seems I am “running on automatic” without much awareness of what I’m doing.
- \_\_\_\_\_ 24. When I have distressing thoughts or images, I feel calm soon after.
- \_\_\_\_\_ 25. I tell myself that I shouldn’t be thinking the way I’m thinking.
- \_\_\_\_\_ 26. I notice the smells and aromas of things.
- \_\_\_\_\_ 27. Even when I’m feeling terribly upset, I can find a way to put it into words.
- \_\_\_\_\_ 28. I rush through activities without being really attentive to them.
- \_\_\_\_\_ 29. When I have distressing thoughts or images I am able just to notice them without reacting.
- \_\_\_\_\_ 30. I think some of my emotions are bad or inappropriate and I shouldn’t feel them.
- \_\_\_\_\_ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
- \_\_\_\_\_ 32. My natural tendency is to put my experiences into words.
- \_\_\_\_\_ 33. When I have distressing thoughts or images, I just notice them and let them go.
- \_\_\_\_\_ 34. I do jobs or tasks automatically without being aware of what I’m doing.
- \_\_\_\_\_ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.
- \_\_\_\_\_ 36. I pay attention to how my emotions affect my thoughts and behavior.
- \_\_\_\_\_ 37. I can usually describe how I feel at the moment in considerable detail.
- \_\_\_\_\_ 38. I find myself doing things without paying attention.
- \_\_\_\_\_ 39. I disapprove of myself when I have irrational ideas.

## Appendix J: Means Ends Problem Solving Task

(MEPS; Platt & Spivack, 1975)

In this procedure you are asked to think of ideal strategies for overcoming problem situations. For each situation you will be given the beginning of the situation and how the situation ends. Your job is to describe ideal strategies that would overcome the problem situations.

Your stories will be recorded onto audiotape.

1. You notice that one of your friends seems to be avoiding you. You really like and enjoy spending time with this person, and want him or her to like you. The situation ends when he or she likes you again. Begin with when you notice your friend avoiding you.
  
2. You love your partner very much, but you have many arguments. One day your partner leaves you. You want things to be better. The situation ends with everything fine between you and your partner. Begin with when your partner leaves you after an argument.
  
3. You have just moved into a new home and don't know anyone. You want to have friends in the neighbourhood. The situation ends with you having many good friends and feeling at home in the neighbourhood. Begin with you in your room immediately after arriving in the neighbourhood.
  
4. You are having trouble getting along with your boss at work. You are very unhappy about this. The situation ends with your boss liking you. Begin with you not getting along with your boss.

## Appendix K: Self-focused Processing Manipulations

(Watkins & Teasdale, 2004)

## **Analytic Processing Condition**

For the next few minutes, try your best to think about each of the ideas on the following pages.

Read each item slowly and silently to yourself. As you read the items, use your imagination and concentration to think about the causes, meanings and consequences of the items. Spend a few moments visualising and concentrating on each item, attempting to make sense of and understand the issues raised by each item.

*Think about:*  
the physical sensations in your body

*Think about:*  
the degree of clarity in your thinking right now

*Think about:*  
the way you feel inside

*Think about:*  
the way you react

*Think about:*  
the experience of your present feelings lasting

*Think about:*  
your feelings

*Think about:*  
how awake or tired you are

*Think about:*  
the amount of tension in your muscles

*Think about:*  
the amount of stress in your body

*Think about:*  
your present feelings of fatigue or energy

*Think about:*  
the amount of certainty you feel

*Think about:*  
how hopeful or hopeless you are feeling

*Think about:*  
your physical sensations

*Think about:*  
the level of motivation you feel right now

*Think about:*  
the degree of helplessness you feel right now

*Think about:*  
the degree of calmness or restlessness you feel

*Think about:*  
the way you feel

*Think about:*  
the experience of your feelings

*Think about:*  
how sad or happy you are feeling

*Think about:*  
the way your body feels right now

*Think about:*  
how passive or active you feel

*Think about:*  
how optimistic or pessimistic you feel about the future

*Think about:*  
how weak or strong your body feels right now

*Think about:*  
how relaxed or agitated you feel

*Think about:*  
the degree of control you feel right now

*Think about:*  
your current physical state lasting

*Think about:*  
how quick or slow your thinking is right now

*Think about:*  
the degree of decisiveness you feel



## **Experiential Processing Condition**

For the next few minutes, try your best to focus your attention on each of the ideas on the following pages.

Read each item slowly and silently to yourself. As you read the items, use your imagination and concentration to focus your mind on each experience. Spend a few moments visualizing and concentrating on your experience, attempting to find a phrase, image or set of words that best describes the quality of what you sense.

*Focus your attention on your experience of:*  
the physical sensations in your body

*Focus your attention on your experience of:*  
the degree of clarity in your thinking right now

*Focus your attention on your experience of:*  
the way you feel inside

*Focus your attention on your experience of:*  
the way you react

*Focus your attention on your experience of:*  
the experience of your present feelings lasting

*Focus your attention on your experience of:*  
your feelings

*Focus your attention on your experience of:*  
how awake or tired you are

*Focus your attention on your experience of:*  
the amount of tension in your muscles

*Focus your attention on your experience of:*  
the amount of stress in your body

*Focus your attention on your experience of:*  
your present feelings of fatigue or energy

*Focus your attention on your experience of:*  
the amount of certainty you feel

*Focus your attention on your experience of:*  
how hopeful or hopeless you are feeling

*Focus your attention on your experience of:*  
your physical sensations

*Focus your attention on your experience of:*  
the level of motivation you feel right now

*Focus your attention on your experience of:*  
the degree of helplessness you feel right now

*Focus your attention on your experience of:*  
the degree of calmness or restlessness you feel

*Focus your attention on your experience of:*  
the way you feel

*Focus your attention on your experience of:*  
the experience of your feelings

*Focus your attention on your experience of:*  
how sad or happy you are feeling

*Focus your attention on your experience of:*  
the way your body feels right now

*Focus your attention on your experience of:*  
how passive or active you feel

*Focus your attention on your experience of:*  
how optimistic or pessimistic you feel about the future

*Focus your attention on your experience of:*  
how weak or strong your body feels right now

*Focus your attention on your experience of:*  
how relaxed or agitated you feel

*Focus your attention on your experience of:*  
the degree of control you feel right now

*Focus your attention on your experience of:*  
your current physical state lasting

*Focus your attention on your experience of:*  
how quick or slow your thinking is right now

*Focus your attention on your experience of:*  
the degree of decisiveness you feel

Appendix L: Demographics and Baseline Measures for Recovered Depressed  
Subgroups

Table 1

Means and standard deviations (in parentheses) for baseline measures according to group and independent t-Test results

	Recovered depressed 1-2 episodes of depression	Recovered depressed 3+ episodes of depression	t-Test
Age	40.9 (11.1)	44.4 (14.0)	-0.753
BDI	5.2 (3.6)	7.1 (2.7)	-1.642
RRS	53.3 (12.1)	50.4 (8.5)	0.756
RRS brooding	12.6 (4.4)	11.1 (2.7)	1.129
RRS reflection	12.4 (3.6)	10.4 (3.1)	1.584
FFMQ	124.3 (18.0)	125.6 (17.3)	-0.198
Sadness (Time 3 <sup>^</sup> )	3.9 (2.1)	5.0 (1.7)	-1.466
SPS effectiveness (baseline <sup>□</sup> )	2.8 (1.3)	3.0 (1.3)	-0.409
Age of first depressive episode	30.6 (13.3)	22.6 (10.3)	1.840
Number of hospitalisations due to depression	0.3 (.6)	0.7 (1.5)	-0.915

\* =  $p < .05$  \*\*  $p < .01$  \*\*\* $p < .001$

<sup>^</sup> = time point before self-focus manipulation

<sup>□</sup> = mean SPS effectiveness of the first two MEPS scenarios

BDI = Beck Depression Inventory; RRS = Ruminative Response Scale; FFMQ = Five Factor Mindfulness Questionnaire; SPS = Social Problem Solving

Higher scores indicate a greater degree of variable being rated.

Table 2

Percentages for demographic characteristics according to group and  $\chi^2$  tests

	Recovered depressed 1-2 episodes of depression				Recovered depressed 3+ episodes of depression				$\chi^2$
	Male		Female		Male		Female		
Gender	21.4		78.6		18.8		81.3		0.033
Marital status	S	D	Co	M	S	D	Co	M	9.576*
	14.3	0.0	42.9	42.9	25.0	12.5	0.0	62.5	
Higher education	Yes		No		Yes		No		0.408
	64.3		35.7		75.0		25.0		
Employment status	Un	PT	FT	Ret	Un	PT	FT	Ret	1.964
	14.3	21.4	57.1	7.1	25.0	12.5	62.5	0.0	
Antidepressant medication	Yes		No		Yes		No		4.286*
	14.3		85.7		50.0		50.0		
Mindfulness experience	Yes		No		Yes		No		2.330
	28.6		71.4		56.3		43.8		
Had CBT	Yes		No		Yes		No		0.741
	28.6		71.4		43.8		56.3		

\* =  $p < .05$  \*\*  $p < .01$  \*\*\* $p < .001$ 

S = single; D = divorced; Co = cohabiting; M = married; Un = unemployed; PT = part-time; FT = full-time; Ret = retired