Cognitive Pathways to Depression and Suicidality: The Role of Reflective Rumination and Modes of Processing



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ABSTRACT

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Ruminative thinking – repetitively fixating on symptoms of distress and the causes and consequences of these symptoms – is strongly implicated in the onset, persistence and severity of depressive symptoms (Just and Alloy, 1997; Nolen-Hoeksema and Morrow, 1991). However other, less evaluative, forms of self-focused thinking that involve active problem-solving aimed at understanding or overcoming one's problems are generally considered less maladaptive. Consistent with this, research has indicated that the *reflective pondering* subscale of the Response Style Scale is associated with adaptive forms of coping, is unrelated to cognitive biases, and is less consistently associated with concurrent and longitudinal depressive symptoms when compared with other forms of rumination (Burwell and Shirk, 2007; Joorman et al., 2006; Treynor et al., 2003). Recent studies however have indicated an association between reflection and suicidal ideation, calling into question the suggestion that reflection is a constructive response style, at least in the case of suicidality (Miranda and Nolen-Hoeksema, 2007; Surrence et al., 2009). Indeed little attention has been directed to the question of the psychological conditions under which reflection may be an adaptive or maladaptive process, although the literature suggests there is need for such an examination. The first aim of this thesis was to investigate the associations between suicidal thoughts and subtypes of rumination among individuals with a history of recurrent suicidal depression. The results of this investigation identify a concurrent relationship between higher levels of reflection and increased suicidal cognitions and highlight the distinct quality of this relationship which, unlike brooding, is independent of depressive symptoms. Motivated by the contradictory or discrepant findings related to reflection in the literature, the second aim of this thesis was to investigate the implications of more recent theories of self-focused attention and modes of processing (Watkins and Teasdale, 2004; Segal et al., 2002) for the conditions in which reflection is, or is not, adaptive. Levels of mindfulness and memory specificity were investigated as potential moderators of the relationship between reflective thinking and depressive symptoms. The results indicate that, for those participants low in both mindfulness and memory specificity, higher levels of reflection are related to more depressive symptoms. This suggests perhaps that, unlike other forms of rumination which are inherently negative, reflection may represent a response to depressed mood that is susceptible to the effect of individual state or trait processing. The cognitive problem-solving aspect of reflection may be hampered under conditions of unspecific, abstract processing and a mind tending toward self-judgment and reactivity.

In conclusion, the results of this study suggest that reflection cannot be assumed to be a benign or helpful process – particularly in the context of suicidal depression and among individuals with certain cognitive profiles.

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1 INTRODUCTION

1.1 Depression

Depression is a significant human health problem: in terms of burden of disease the World Health Organization ranks it at first place in middle- and high-income countries and at third place worldwide (WHO, 2004). There has been a huge increase in Major Depression diagnoses in recent decades and at this rate of growth it is likely to be the second most disabling condition worldwide by 2020 (Murray & Lopez, 1996). A survey conducted in the United States at the beginning of this century indicated that estimated lifetime prevalence rates are as high as 19%, or one in five of the population (Kessler et al., 1995).

For many sufferers, episodes do not occur in isolation. Relapse is common, and often recurrent, and more episodes mean an increased likelihood of future relapse (Judd, 1997). This means that in some cases depression can become a long-term, even lifelong disorder. Knowing that persistence or recurrence is not the outcome in every case, the question arises as to what is driving this relapsing pattern in a subgroup of sufferers?

1.1.1 A model of relapse

Recent research into what might drive a relapse to depression has focused not only on what might cause mood to drop but what happens after this occurs. Building on Beck's (1976) cognitive model of depression, the cognitive reactivity model of depression emphasizes the role of information-processing biases that arise in the context of depressed mood (Teasdale, 1983, 1988). Mood activation studies in which a sad mood was induced revealed important consequences for the thought processes of the participants as a result of this mood change. Latent biases such as dysfunctional

attitudes about oneself and the world were reactivated in some individuals as a result of this dip in mood. This escalation in negative thinking in response to low mood predicted recurrence of depression over time (Segal et al., 1999; Segal et al., 2006), indicating a relationship between this type of reaction and a vulnerability to future relapse. This study therefore emphasized the importance of individual response in the maintenance of a negative affective state. Cognitive reactivity theory or the differential activation hypothesis concludes that people differ from one another with regards to the ease with which small changes in mood can reactivate a particular group of self-referent, negative cognitions (Teasdale, 1988; Lau et al., 2004). The processes that facilitate the activation of this stream of depressogenic thinking have been a particular focus of cognitive models of depression. Studies of the cognitions present during depression revealed that not only were they distinct in terms of their negative content but also in the form they took. A sad mood can activate not only particular negative thoughts or beliefs but also particular processes that can further exacerbate the downward spiral. This research has been crucial in beginning to unravel the relationship between small mood changes and depressive relapse, and in the development of treatments targeted at preventing recurrence. The next section will focus on one such cognitive process. It is a response to sadness that has been hypothesized to contribute to the persistence of negative cognitions, and the rapid intensification of depression that can ensue as a result.

1.2 Rumination: what is its role in depression?

Theorists have suggested that the patterns of thinking that are activated in response to low mood are as important as the negative biases or beliefs about oneself and one's circumstance that abound at this time. One such pattern of response is a ruminative style of thinking. Rumination, as conceptualized by the Response Style Theory, is a response to low mood that involves repetitive self-focused thinking about one's negative

emotions. The attention is fixated on the possible causes, meaning and consequences of these negative feelings (RST; Nolen-Hoeksema & Morrow, 1991). Although it emphasizes the role of self-focused attention in maintaining low mood, the scope of the Ruminative Response Style theory is quite specific. The focus is on repetitive thoughts that relate to one's current distress and depressive symptoms (Lyubomirksy & Nolen-Hoeksema, 1993).

This theory relates to cognitive reactivity models of relapse in that it proposes that ruminative thinking has the potential to exacerbate and extend transient negative mood states. A reaction to low mood that heightens self-focus on the depressive symptoms rather than engaging attention in other activities increases the likelihood of these symptoms becoming chronic and of moderate low mood intensifying to major depression. Similar to the differential activation hypothesis this theory emphasizes the fact that those individuals whose depressed mood is maintained, differ in how they respond to changes in their mood, or their mood in general, from those who can cope effectively with depressed mood states (Nolen-Hoeksema, 1991).

Ruminators are significantly more likely to develop Major Depression over time even when controlling for previous levels of depression (Nolen-Hoeksema, 2000; Spasojevic & Alloy, 2001) and several studies have supported Nolen-Hoeksema's (1991) prediction of longer duration and more severe depressive symptoms among people with ruminative response styles (e.g., Nolen-Hoeksema, McBride, & Larson, 1997; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Frederickson, 1993; Nolen-Hoeksema, Parker, & Larson, 1994). Studies of other key cognitive processes that perpetuate depression, such as a sense of hopelessness about the future and negative self-evaluations, have found that rumination also relates to these factors (Lyubomirksy et al., 1998; Lyubomirksy & Nolen-Hoeksema, 1995). Further, it has been shown to

enhance cognitive biases, affect problem-solving capabilities, and impair mood regulation (Lyubomirksy & Nolen-Hoeksema, 1993; 1995): all processes indicative of a vulnerability to relapse.

In short, rumination is a vulnerability factor in the onset of depression and also central to the understanding of what maintains and prolongs it (Just & Alloy, 1997; Robinson & Alloy, 2003; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). In so far as it is evidenced as a maladaptive response to depressed mood, it is a key factor in relapse and long-term vulnerability to depression.

Having indicated its significance in psychopathology it is important to clarify how this process has been measured empirically. In other words, what is meant by 'rumination' from the perspective of scientific research?

1.2.1 Rumination: the construct

As is critical in the understanding of any psychological construct, a tool to assess the prevalence of rumination was developed alongside the formulation of the original Response Style Theory. This theory has remained the most prominent conceptualization of rumination, and the Ruminative Response Scale (RRS) is the most widely-used measure since its emergence in 1991 (Roberts, Gilboa, & Gotlib, 1998; Kasch, Klein & Lara, 2001). The RRS consists of 22 items that assess responses to dysphoric mood. Respondents are asked to indicate how often they engage in each ruminative thought or behaviour when they feel sad, blue, or depressed. These items describe responses to depressed mood that are self-focused (e.g., 'I think "Why do I react this way?"'), symptom-focused (e.g., 'I think about how hard it is to concentrate'), and focused on the possible consequences and causes of one's mood (e.g., 'I think "I won't be able to do my job if I don't snap out of this"') (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008)

With regards to what this scale actually measures, there was an expression of concern that some of the items may simply assess depression symptoms (such as those measured by the BDI, Beck et al., 1987) rather than how these cognitions were processed. In an attempt to address these validity issues and develop a scale that could identify ruminative processes unconfounded with depressive content, Treynor and colleagues (2003) conducted a factor analysis of the measure. Of the 22 items in the scale they identified twelve as being depression-related. The remaining ten items were uncontaminated by depressive content, and from these two distinct ruminative subtypes emerged: *reflective pondering* and *brooding.* These subscales were distinguished as two separate components of the overall ruminative construct. Items included in the *reflective pondering* factor suggest a "purposeful turning inward to engage in cognitive problem-solving to alleviate one's depression" (e.g. 'analyze recent events to try to understand why you are depressed'; Treynor, Gonzalez & Nolen-Hoeksema, 2003, p.256). The *brooding* factor was interpreted as a passive comparison of one's current situation with some unachieved standard ('think "why can't I handle things better"', 'think about a recent situation, wishing it had gone better'; Treynor, Gonzalez & Nolen-Hoeksema, 2003, p. 256). The tone of these items suggests two distinct motives for engaging in each of these thinking styles: passive evaluation versus an active attempt at problem solving. The study conducted by Treynor and colleagues suggested that not only were the motivations different but the effect of each subtype was also distinct. The section that follows will highlight their findings as well as other such research investigating how they individually relate to the depressive disorder.

1.2.2 Subcomponents of rumination

The many investigations that followed the emergence of the RRS reported a close association between rumination and depression. Despite this, deliberation still arose as

to whether rumination was a wholly maladaptive response. Treynor and colleagues' (2003) two-factor model opened up the debate about adaptive versus maladaptive outcomes by allowing for investigations which explored both possibilities at once. The dismantling of the rumination construct presented the opportunity to distinguish more deleterious elements from more benign. The most toxic aspects of this style of thinking could be identified as well as those playing a lesser role in the depression cycle. This work was hugely significant with regards to how the concept could be related to depression in both their study and those that followed. Initially they employed this subtype distinction in a secondary investigation of the new RRS scale and their results pointed to the possibility that reflection was less implicated in terms of predicting features of depression. Reflection and brooding differentially related to depression in terms of emergence of symptomatology. Treynor and colleagues (2003) demonstrated that both the self-critical, passive brooding scale and the reflective pondering measure were associated with more depression concurrently; however the correlation between reflection and depression was significantly less than the correlation between brooding and depression. Furthermore, while brooding was associated with depression longitudinally, scores on the reflective measure predicted fewer symptoms at a follow-up. While brooding showed no adaptive qualities, they suggested that reflection may lead to effective problem-solving which is helpful in reducing negative mood longitudinally.

We will return to explore how reflection may relate to depression but the key feature of the work of Treynor and colleagues was clear; in investigations aimed at furthering our understanding of the relationship between rumination and depression, it is necessary to take account of the subcomponents of rumination.

1.2.3 Studies using the RRS reflection and brooding division.

Joorman and colleagues (2006) investigated the validity of the reflection/brooding distinction by examining whether these components differentiated between participants with Major Depressive Disorder (MDD), a history of depression, an anxiety disorder or no clinical diagnosis. Their findings suggest that currently depressed (MDD) patients are characterised by higher brooding scores. Compared with socially anxious participants and a control group they show elevated scores on this measure. Formerly depressed patients also scored higher than controls suggesting that brooding is a trait characteristic that remains stable beyond the episode of depression (Joorman, Dkane, & Gotlib, 2006). Scores on the reflection measure differentiated only the MDD group from controls. The formerly depressed patients did not differ from controls with regard to levels of reflection, consistent with Treynor and colleagues' finding that this factor is related to less depression over time.

Joorman and colleagues (2006) furthered this analysis by exploring where the seemingly maladaptive nature of brooding might originate. Results showed that, even when depressive symptoms were controlled for, brooding was positively correlated with cognitive biases, in particular the tendency to maintain attention to negative stimuli (in this case sad facial expressions). Reflection did not show the same relationship after depressive symptoms had been controlled for. They suggest that the correlation with attentional processing biases may explain the association of brooding with sustained low mood states, in that brooding facilitates a fixated focus on negative internal stimuli. The stronger association of brooding with cognitive characteristics and clinical symptoms of depression supports the original supposition that this subtype of rumination is more patently related to depression currently and over time.

Burwell and Shirk (2007) further informed the debate concerning whether reflection is adaptive relative to brooding when considering symptoms of depression. Among an

adolescent sample, brooding but not reflection mediated the prospective relationship between depression at baseline and follow-up. While brooding was associated with maladaptive coping styles, reflection was associated with more adaptive coping strategies. Another study looking at the role rumination might play in the relationship between negative cognitive styles and depression symptoms found brooding to be implicated as a mediator between these two variables, while reflection was not (Lo, Ho, & Hollon, 2008).

1.2.4 Other distinctions between rumination subtypes

The section above addresses the implications of different forms of rumination as measured by the RRS as well as how it is conceptualised in terms of the response style theory. Theoretically and empirically, the distinction has been explored and expanded outside of the context of this measure also. Other researchers have also been interested in the idea that there are different types of ruminative self-focus and have investigated how they might best be measured.

When trying to explain the paradoxical findings that private self-consciousness is associated with both psychological adjustment and distress, Trapnell and Campbell (1999) became interested in the distinction between forms of self-focused thinking. They highlighted the significance of motivational components of different types of rumination in explaining whether they contribute to psychopathology. Their hypothesis distinguished between a neurotically-motivated, threat-avoidant form of chronic self-focus (self-rumination) and a form of self-focus characterized by an exploration of novel or alternative self-perceptions and motivated by curiosity (self-reflection), (Trapnell & Campbell, 1999). They developed the Rumination-Reflection Questionnaire to assess these subtypes (Trapnell & Campbell, 1999). The negative self-rumination scale measures a persistent, evaluative form of self-focus, motivated by perceived losses

or threats to self and correspondingly associated with neuroticism and depression. Self-reflection is a comparatively positive form that is motivated by epistemic interest and associated with openness to experience (Takano & Tanno, 2009).

Before the exploratory factor analysis of the rumination subscale of Response Style Questionnaire was conducted in 2003, Fresco and colleagues (2002) examined the factor structure of this subscale. They obtained two rumination factors and identified them as active cognitive appraisal and dwelling on the negative. The *dwelling on the negative* factor correlated more strongly with measures of low mood and anxiety as compared with *active cognitive appraisal.* Following Treynor and colleagues' (2003) factor analysis of the RRS, *s*ome of the researchers of this previous study among others sought to replicate and extend the work of Treynor and colleagues (2003) while addressing some potential limitations (Armey et al., 2009). Despite the limitations they had proposed, the exploratory factor analysis and structural equation modeling carried out by Armey and colleagues (2009) supports the brooding and reflective pondering factor solution of the RRS first put forward in the original paper. Furthermore they found that brooding related more strongly to depression and anxiety than pondering did.

In line with Treynor and colleagues' (2003) original concerns, Conway and colleagues (2000) also questioned whether the RRS was confounded with depressive content. This led them to construct the Rumination on Sadness Scale (RSS). The RSS defines rumination as repetitive thinking about one's current feelings of sadness, the incidents that led these feelings to arise and the circumstances surrounding the sadness. Specific features of this definition included the proposal that ruminative thoughts are not goal-directed and do not motivate individuals to make specific plans for action and that ruminative thoughts are not shared socially at the time (Conway, Csank, Holm, & Blake, 2000). This original conceptualisation does not emphasise any adaptive aspects

of rumination, but subsequent to Treynor and colleagues' (2003) multi-component proposal, the RSS also underwent confirmatory factor analysis (Raes et al., 2008). This investigation identified three distinct processes that are possibly active when an individual ruminates on sadness. They include causal analysis, understanding oneself and one's sadness, and uncontrollability of ruminative thinking. This led to a revised and extended version of the RSS scale followed by further analysis of the amended scale (Leuven Adaptation of the Rumination on Sadness Scale; LARSS) to elucidate the relation between the three-factor model of rumination and depression. Consistent with findings for the RRS, they demonstrated that not all aspects of rumination are equally problematic. They suggest that the *causal analysis* component of the LARSS is most closely associated with Treynor and colleagues' (2003) reflective pondering, as both involve a search for possible reasons for the feelings of sadness being experienced (Raes et al., 2008). In line with the findings for reflective pondering, *causal analysis* was not related to depression when the other rumination components were held constant. They propose that "consistent with Treynor and colleagues' (2003) conclusions, this particular aspect of rumination is not really what makes rumination maladaptive".

These studies highlight the increasing number of studies that support the idea that there are different forms of self-focused thinking that vary in terms of their motivation, objective and outcome. In terms of the RRS in particular, the factor analytic studies referred to here support the idea that once the symptom-focused items within this scale, namely *depressive rumination,* are separated out there remains a valid two-factor structure. These two factors show differential associations with depression, with reflection or reflective pondering identified as less problematic than brooding in relation to depression. This raises the question: why not overlook this factor, why endeavour to

study this subtype of rumination at all? If the original conceptualization was of a 'benign' construct that may in fact be a helpful response to low mood, what importance is there in understanding its role in depression? A key motive is the fact that studies employing the Ruminative Responses Scale continue to measure this construct, therefore data are still accumulating on the reflection subscale. Another is the mixed findings for the reflection subscale in relation to depression. While generally it is considered adaptive, there is evidence for maladaptive outcomes of this thinking style in terms of depression, particularly concurrent relations with these symptoms (Joorman, Dkane, & Gotlib, 2006; Rude, Maeste, & Neff, 2007; Siegle, Moore, & Thase, 2004).

The premise of this thesis is that an enquiry that seeks to understand this construct more fully is not only of theoretical interest but also important from a clinical perspective. Repetitive self-focused thinking, even when problem-orientated, is not seen to lead to successful resolution of the identified difficulties as it depletes motivation and initiative and consequently has the potential to perpetuate more negative thinking cycles that can drive mood even lower (Lyubomirsky & Nolen-Hoeksema, 1993). This is particularly likely at a time of low mood when brooding and reflection can be highly intercorrelated and both associated with low mood (Siegle et al., 2004) suggesting attempts to problem-solve may give way to more perseverative rumination at such times (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Takano & Tanno, 2009). So despite the 'cognitive problem-solving' conceptualisation, the question very much remains as to how likely it is that the outcome of reflective processing will match the intention and whether in some cases it may just lead to more toxic forms of rumination and heighten a sense of helplessness.

There is another, pressing reason to explore this subtype and it relates to the findings of two recent studies suggesting reflection may be more deleterious than previously

considered. Examining the role of rumination in suicidality both studies have found that although reflection doesn't relate to ideation in the same way as brooding, it does predict suicidal thinking both concurrently and prospectively (Miranda & Nolen-Hoeksema, 2007; Surrence et al., 2009). Findings such as these suggest that despite the fact that reflection may be difficult to categorise in the context of clinical disorders, the pursuit of a more detailed understanding of this construct would be of use in putting disparate results in context with potentially important theoretical implications.

As the studies of the rumination-suicide relationship mentioned above have further informed the continuing debate about adaptive and maladaptive functions of this type of self-focused thinking, the section that follows will review research in this area.

The review will then return to the broader issue of *how* reflection might relate to depression, and to specific symptoms such as suicidality.

1.3 Suicide

Suicidality is an important and debilitating element of the depressive disorder that affects a significant proportion of depressive patients. It is thought that up to 75% of suicide attempts occur in the context of a depressive episode. A previous suicide attempt is the most accurate predictor of future death by suicide and considering that an estimated 1 million people die by suicide each year – with the rates having increased by sixty percent worldwide in the last forty-five years (WHO, 2011) – understanding what might lead a depressed individual to consider ending their life is a serious public health priority.

Cognitive models of depression such as the cognitive reactivity theory have recently been extended to inform our understanding of how suicidal ideation might develop and persist. Applied to depression, this theory suggests that how people respond to mood is critical in how this mood develops. This raises the question of whether the role of

individual cognitive response is equally significant in the development of suicidal crises.

Certainly there are likely to be prevailing circumstantial and relational factors that are critical in the development of ideation and the lead up to someone engaging in suicidal behaviour. However psychological models that attempt to explain suicide tend to focus on predisposing vulnerabilities. In this context the importance of how individuals respond to stressors has been highlighted (O'Connor & O'Connor, 2003; O'Connor et al., 2004; Williams, 2001), and from a cognitive perspective there are a number of reasons to suggest that a ruminative type response might be problematic.

Firstly, recent research has found that suicidality is the non-core symptom most likely to reoccur during a relapse to major depression (Williams, Crane, Barnhofer, Van Der Does & Segal, 2006). What is known about recurrence of negative self-referent thoughts in depression is that they form associations with mood, driven by thinking styles such as rumination (Teasdale, 1983, 1988). Williams and colleagues (2005) suggest that regardless of the initial trigger or circumstances within which suicidality first arises, suicidal ideation can become associated with depression over time (Williams et al., 2005). This association develops a cycle wherein relatively small shifts in mood can reactivate these extremely severe negative thought patterns. As with depressive cognitions the fact that this mood activates not only negative themes but also negative processes is critical in understanding the recurrence of suicidality. The persistent nature of suicidal thinking reflects the repetitive, unremitting style of ruminative thought. Could rumination therefore perpetuate these cycles of ideation?

1.3.1 Rumination and suicidal ideation

Despite its predominance in our understanding of depression, rumination has received far less attention in suicide research. This was highlighted by Morrison and O'Connor

(2008) in their systematic review of the relationship between suicidality and rumination. While only eleven studies were identified for inclusion, all but one found that increased rumination was associated with increased suicidality (Morrison & O'Connor, 2008). Despite the authors' acknowledgment of the dearth of comparable studies conducted thus far, this review serves as convincing, albeit preliminary, evidence of association between this processing style and suicidality.

Although there was a diverse range of methodologies employed in the studies reviewed, there was consistency in how rumination was conceptualized. The Ruminative Response Style questionnaire (RRS long and short versions: Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003) was implemented in the majority of studies and in all of these cases a relationship was found between rumination and suicidality.

One study providing evidence for a longitudinal relationship comes from a study of college students conducted by Smith, Alloy, and Abramson (2006), who over 2.5 years found that rumination predicted self-reported suicidal ideation and the duration of this ideation. Their analysis also showed rumination to mediate the relationship between cognitive risk (as determined by negative inferential style and dysfunctional attitudes) and suicide ideation.

While rumination generally is implicated in the review, there is also some evidence of divergent relationships between the two subtypes and suicidality. Three of the studies took account of the reflection and brooding subscales, but the findings are not conclusive as to whether the adaptive versus maladaptive conceptualisation of rumination is valid in the case of suicidal ideation.

The first study by O'Connor, O'Connor, and Marshall (2007) prospectively measured suicidal ideation and brooding among 211 college students over an eight week period. They omitted any measure of reflection, thus impeding any comparison, but for

brooding alone they found it predicted suicidal ideation at follow-up. Further, they found that brooding mediated the relationship between self-orientated perfectionism and suicidal ideation and partially mediated between suicide ideation and socially prescribed perfectionism, a personality trait implicated in the sense of defeat experienced during suicidal crisis (Hunter & O' Connor, 2003; O'Connor, 2007).

In the second study Miranda and Nolen-Hoeksema (2007) conducted a longitudinal investigation of rumination and suicide ideation among a community sample of over one thousand adults. They found that when baseline suicide ideation and depression symptoms were controlled for, both brooding *and* reflection were significant predictors of suicide ideation at a one-year follow-up. They were also both associated with depression and suicide ideation concurrently (Miranda & Nolen-Hoeksema, 2007). When examining brooding as a predictor of ideation at follow-up, they looked at the indirect effect of brooding on ideation through depression by investigating depression symptoms as a mediator of the brooding-ideation relationship. They found that depression symptoms partially mediated the relationship between brooding and suicide ideation, but not the relationship between reflection and ideation. In order to explore the predictive effect of brooding and reflection further, and whether their effect on suicidal ideation may be the result of their impact on later symptoms of depression, the researchers adjusted for symptoms of depression at the 1-year follow-up *and* at baseline. By also adjusting for brooding at follow-up they found that brooding was no longer a significant predictor of suicidal ideation at follow-up (Miranda & Nolen-Hoeksema, 2007), therefore the effect of brooding on suicidal ideation seems to result from the relationship of brooding with depression at follow-up. This was not found for reflection; the effect of reflecting on future depression did not mediate the relationship between reflection and suicide ideation.

The final study in the review that includes a measure of reflection and brooding sought to replicate the finding of the study by Miranda and Nolen-Hoeksema (2007) over a three month period (O'Connor & Noyce, 2008). Among a smaller sample of 232 college students, O'Connor and Noyce (2008) found that brooding, but not reflection, was a significant predictor of suicide ideation at three month follow-up. This would suggest that brooding is more maladaptive in the case of suicide ideation. Brooding was also found to fully mediate the relationship between suicidal ideation and self-criticism, which the authors discuss as critical in heightening perceptions of defeat central to the suicidal crisis (O'Connor & Noyce, 2008; Williams, 2001). Although their study does not offer support for the earlier finding that reflection was predictive of suicidality (Miranda & Nolen-Hoeksema, 2007), the researchers suggest that their smaller study may not have had the power to detect the small effect found previously.

While these three studies clearly implicate brooding in suicidality, there is some ambiguity in relation to the outcomes of reflection. A study conducted since the review explored the potentially differential outcomes further. Chan, Miranda, and Surrence, (2009) sought to examine whether brooding and reflection affect the concurrent relationship between suicidal ideation and the impact of negative life events. They found that while both subtypes partially mediated the relationship between negative life events and depression, only brooding accounted for the association between these events and suicidal ideation. This is in line with previous studies that identify brooding as a predictor of ideation (e.g. O'Connor & Noyce, 2008), but does not support the finding that this is also the case for reflection (Miranda & Nolen-Hoeksema, 2007).

These studies give an indication of the unhelpful role played by brooding in context of suicidal ideation; however the case for reflection is more ambiguous. Further ambiguity emerges when the role of rumination is considered across the full spectrum of suicidal

severity. The studies already mentioned consider how brooding and reflection relate to suicide ideation but do not consider the role of rumination in suicide attempts or acts of suicide. While the majority of individuals who experience ideation do not make a suicide attempt (Kessler et al., 2009), what about those individuals who do act on these cognitions – is there any evidence that the ruminative subtypes are important in relation to their suicidal behaviour?

1.3.2 Rumination and suicide attempt

One study included in the review by Morrison and O'Connor (2008) took account of past suicidal behaviour when considering the rumination-suicidality relationship. Crane and colleagues (2007) conducted a case-controlled study of the prevalence of rumination among previously-depressed participants. Their sample was divided into three groups based on past history of suicidality: never suicidal, previous suicide ideators, and previous suicide attempters. Like the studies referred to above, they measured the brooding and reflection components separately and again found differential relationships with ideation. The *never suicidal* group had significantly higher levels of reflection than the *suicide attempters* and a similar trend was observed between the *never suicidal* and *suicide ideators.* However the *never suicidal* group did not differ significantly from either of the previously-suicidal groups in levels of brooding. Their findings raise the possibility of a link between suicidality and deficits in the reflective form of rumination rather than a relative excess in maladaptive brooding (Crane et al., 2007). Morrison and O'Connor (2008) suggest this may indicate a protective effect of reflection in the context of suicidality.

However Surrence and colleagues (2009) conducted a study that also took attempt history into account and their findings are particularly pertinent in light of the suggestion of a potentially adaptive function performed by reflection. Investigating the

relationship between rumination and suicidal ideation, they examined whether under certain circumstances reflection might be associated with increased suicidal ideation. Similar to the previous study, participants were grouped based on a history of suicidality, in this case either a suicide attempt history or no previous suicide attempts. They examined whether suicide attempt history moderated the relationship between the ruminative subtypes and current suicidal ideation in each group. Looking at scores for the two groups separately, there was no significant difference in endorsement of reflective items between *attempters* and *non-attempters* but levels of brooding were marginally higher in those with a previous attempt history. Examining relationships between current ideation and rumination across the combined sample, both brooding and reflection were significantly and comparably associated with suicidal ideation. However when analysed separately differences emerge between the groups: reflection was comparably endorsed by both groups but only significantly and positively correlated with current suicide ideation among participants with a history of suicide attempt. Furthermore, the interaction between reflection and previous attempt history was found to be a significant predictor of current ideation, beyond the effects of other variables such as depression and hopelessness. Brooding no longer predicted current ideation after those symptoms were adjusted for. In short, for those individuals with a history of making an attempt, reflection positively predicted current suicide ideation, suggesting that in the context of suicidal behaviour this style of cognitive response might be particularly pernicious (Surrence et al., 2009).

These findings in the suicidality literature stand in contrast to the conceptualization of reflection as a primarily adaptive or benign process as depicted by earlier studies (Burwell and Shirk, 2007; Joormann et al., 2006; Siegle et al., 2004; Treynor et al., 2003), and possibly qualifies the suggestion of a protective effect as proposed by Crane

and colleagues (2007). Taken with the findings of a prospective relationship between reflection and ideation, independent of depression (Miranda & Hoeksema, 2007), it suggests two things. Firstly, that in research seeking to understand suicidal behaviour and ideation, there is a need for further exploration of the differential effects of brooding and reflection. Secondly, that accounting for the effects of depressive symptoms on brooding and reflection's relationship with suicide ideation is important considering the evidence for a mediational role in the case of brooding but not reflection. While previous research has begun to elucidate the means by which brooding relates to suicidal symptoms, findings in this literature indicate the importance of investigating how and why reflection might be perilous.

To answer that question it is necessary to review what is already known about this kind of thinking and to do this it is helpful to first consider more than just *reflection* as it is captured by the RRS. More general research into the area of self-focus has advanced an understanding of how paying attention to the self can at times exacerbate rather than relieve symptoms of depression. Applying these important developments to the RRS-reflection measure should serve to explicate a sense of the conditions under which an attempt to resolve psychological distress through reflective problem-solving may be unconstructive.

In particular, an aim of this review is to place the disparate findings related to reflection and suicide in context. This requires reviewing theories of self-focused attention while also exploring what researchers in the suicidality literature propose as possible explanations for their findings.

1.4 Self-reflection: what purpose does it serve?

The ability to reflect on one's inner and outer experiences or to consider one's thoughts and feelings is not only a core element of what it means to be human but also a central

tenet of the psychotherapeutic process. Self-reflection facilitates the development of insight which forms the basis of many psychological treatments. Cognitive therapy, for example, relies on individuals formulating alternative interpretations of situations (Beck, 1976). In order to bring dysfunctional cognitive representations to mind with the aim of construing new meanings, a certain level of self-reflection is required. Yet what this review has focused on so far, and what psychological research in this area is predominately concerned with, are the maladaptive outcomes of self-reflection. As we have seen however, even within psychopathology research there has been an acknowledgement of the potentially adaptive role of reflection – as per its original conceptualisation as a benign, potentially adaptive process (Treynor et al., 2003). It is focused on the cause of problems. *Understanding* these causes is the emphasis, corresponding with the self-knowledge or awareness which is sought in the therapeutic setting. This focus on understanding one's experience is less knotted up with the negative emotions themselves and more concerned with finding a way of resolving them. Insomuch as it may lead to effective solutions, it has been suggested that the problem-solving orientation of self-reflective pondering may account for why studies have shown it to be adaptive over time (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). However evidence such as that related to reflection's association with suicidal ideation, suggests that in some circumstances this process becomes maladaptive. So then, if reflection is viewed as a problem-solving approach, how and why might this strategy go awry?

1.4.1 Self-focused attention: a self-regulation strategy

Self-regulation theories suggest that rumination can be an adaptive coping strategy when it leads to the resolution of a problem or the abandonment of unattainable goals (Pyszczynski & Greenberg, 1987). According to self-discrepancy theory (Higgins,

1987) people hold internalized standards (self-guides) with which they compare themselves, and self-discrepancy is the gap between two of these self-representations. It has been suggested that rumination is employed as a means of resolving the discrepancy between the current state – which an individual has evaluated as unsatisfactory – and some unachieved ideal state (Pyszczynski & Greenberg, 1987).

However this problem-solving method can become maladaptive when an individual cannot resolve the discrepancy but continues to perseverate in this self-evaluation process. According to this theory self-focused rumination is not inherently problematic but the outcome is dependent on how it is engaged; in other words, it should lead to successful problem-solving or the abandonment of unattainable goals rather than a continued focus on perceived discrepancies (Higgins, 1987).

Martin and Tesser (1996) similarly conceptualise the ruminative process as an attempt at problem-solving and a regulatory strategy employed to resolve perceived self-discrepancies. Despite ascribing a similar function they argue only for the adaptive outcomes of reflective rumination, suggesting it is instrumental and generally adaptive in assisting a person toward solving a problem. In line with this reasoning, Crane and colleagues (2007) proposed that the fact that the suicide-attempters in their study scored lower on reflection might represent a deficit in problem-solving capability among this group. As they point out, poor social problem-solving skills are characteristic of suicide attempters (Pollock & Williams, 1998), and so perhaps lower reflection is representative of this deficit. However this may very much depend on the 'problem' in question. The types of problems that suicide attempters have been shown to struggle with, involve relatively straightforward social problems which require the generation of appropriate solutions. Does the fact that these individuals formulate less-effective strategies to deal with tangible social scenarios suggest they may have similar difficulties with the sort of

'active, cognitive problem-solving' captured by RRS Reflection subscale (Treynor et al., 2003)? An example from this measure, 'I analyze my personality to try to understand why I feel depressed', indicates a *motivation* to find a solution to one's current difficulties but does not take account of the effectiveness or relevance of the solution, whether any solutions are in fact identified, and if they are whether any action is taken to implement them. A study of the adaptive qualities of the RRS Reflection measure by Marroquin and colleagues (2010) highlights this limitation quite clearly. They challenged the conceptualization of this as an 'active' response to low mood and investigated how this process might interact with an individual's coping style, be it passive or active. They looked at how reflection related to active versus passive coping styles and found it was significantly positively associated with an active approach. However having investigated the interaction between coping style and reflection, they found that an active coping style moderated the relationship between reflection and depression: among individuals demonstrating a less active coping response, reflection was associated with higher levels of depression but among individuals tending to cope actively with stressors, reflection was not related to more depressive symptoms. The idea that the increased insight afforded by reflection may facilitate self-regulation is challenged by the idea that this measure alone cannot tell us whether it stimulates any goal-directed action. It also suggests that the measure itself may not be problematic but can be confounded by other factors. Just as we cannot know from scores on the scale whether this problem-solving approach leads to any action, we also do not know whether the individual gains any insight or understanding of their mood, or arrives at a solution. While reflection constitutes an active effort at problem-solving, whether or not it is actually effective may depend on the prevalence of other trait dispositions. There are vulnerability factors, pertaining to the depressive disorder generally, that may impair

the process. They are not unique to suicidal patients but may be more salient among this most severe group. The section that follows will introduce one such vulnerability factor.

1.5 Abstract versus concrete modes of processing

In reviewing types of ruminative thought thus far, the focus has been on the content (e.g. symptom versus self-focused) or style (e.g. passive versus active). There is another important aspect however and it relates to how ruminative thoughts are construed or the form they take. Watkins (2008) calls attention to the fact that cognitive research has distinguished between mental representations that are abstract and general versus those that are more concrete and specific. This distinction between different modes of processing negative self-experience has important consequences for how rumination relates to mood and psychopathology. To clarify the distinction, Watkins (2008) characterizes higher-level construals as over-general, abstract, and decontextualised – they convey the "essential gist and meaning of events and actions". In comparison, construing something at a low-level takes a more concrete and specific form – this type of thinking includes "contextual and incidental details of events and actions" (Watkins, 2008). Watkins points out that evaluating our own behaviour or experience can take the form of high or low-level construal. The form these thoughts take will affect the outcome of this evaluation process. At a high or general level of construal a particular action or behaviour may be perceived as representative of global traits rather than more transient situation-specific states (Watkins, 2008). Such over-general processing in relation to self-relevant information is a typical response among depression sufferers and has long been implicated in the pathology of the disorder (Beck, 1967, 1976). This is supported by empirical work highlighting the relationship between depressive symptoms and a tendency to over-generalize emotional reactions (Carver & Ganellen, 1983). While their research has shown that there are significant individual differences in

levels of self-criticism in response to perceived discrepancies between the current state and the ideal, it is not just the level of criticism that is important however. The tendency among some individuals to over-generalize this negative, critical reaction toward the self from one particular aspect to the self as a whole is the critical factor in terms of depression (Carver & Ganellen, 1983).

Further research has revealed that this element of interpretation or reaction to self-experience is particularly important in the event of personal failure. Kernis, Brockner, and Frankel (1989) pointed out that in such circumstances, over-general or abstract processing plays a role in making "salient other feelings of personal inadequacy". They explored whether it might be a critical mechanism underlying the severity with which failure or negative feedback pertaining to the self is appraised. Individuals with low self-esteem are more prone to suffer adverse effects of negative feedback and so they investigated the phenomenon among this group. They found that greater reactivity to negative feedback was mediated by this over-general processing style.

More recently, the direct influence of processing-mode on emotional reactivity was demonstrated in an experiment that trained individuals to process emotional scenarios in a concrete rather than abstract manner (Watkins, Moberly & Moulds, 2008). Participants were guided as to how to think about hypothetical scenarios. The instructions to focus on 'the details of what is happening' were given in order to encourage concrete processing, while the instructions to focus on the 'causes, meanings and implications' of the event were provided to induce a more abstract style. This study revealed that those who received training in the concrete mode demonstrated less emotional reactivity following a failure task (Watkins, Moberly & Moulds, 2008).

As mentioned, the significance of the effects of over-generalisation is not restricted to situations involving external negative feedback or failure but may also have a bearing

when aspects of the self or self-experience are evaluated as negative. In the context of depression, rumination is a prominent form of self-evaluation. So how does over-generalization relate to rumination, or what impact might it have on such a process? Consistent with the original characterization of depressive rumination as an abstract process (Nolen-Hoeksema, 1991), Watkins, Moberly and Moulds (2008) suggest that the abstract processing induction in their experiment captures the type of processing occurring during depressive rumination. Similarly brooding, with its comparison between a current state of being and some imagined ideal, is clearly an evaluative, non-concrete process (Treynor et al., 2003). Categorising these modes of self-focus as over-general and abstract reinforces their characterisation as an unconstructive response to low mood. If, therefore, thinking styles such as depressive rumination and brooding are considered abstract by their very nature, can reflection be classified in the same way? Despite references to its "more adaptive" qualities, current literature does not make explicit where this type of thinking fits in terms of the abstract/concrete distinction (Treynor et al., 2003; Watkins, 2004). In fact, in providing an explanation for their findings Surrence and colleagues (2009) suggest that despite being more active than other forms of rumination, reflection too can be considered an abstract mode of self-focus. Looking at the measure itself, items such as 'I write down what I am thinking and analyze it' suggest a certain attention to the detail of experience. Equally however the reference to analyzing these thoughts suggests that this strategy could involve or lead to abstract, conceptual evaluation of intangible content. It is not clear from the measure whether the process captured by the RRS Reflection measure is essentially abstract or concrete. However the distinction may still have important implications for how we conceptualize this construct. Perhaps it is that rather than being categorically abstract it is sensitive to the background mode of processing and as such the relationship between

reflective pondering and low mood is contingent on whether it is employed at a higher or lower level of construal. Studies of the effect of abstract construal on rumination more generally give an indication of the impact this type of processing may have in the case of reflection.

1.5.1 Abstract versus concrete rumination

In assessing the relationship between rumination and emotional regulation, Watkins (2004) asked participants to write about a recent failure (experimentally induced) either in an abstract, evaluative way or concrete process-focused way. Individual differences in trait rumination were assessed and higher levels of rumination were found to be associated with more negative mood twelve hours after the failure but only among those in the abstract, conceptual condition. Watkins (2004) concludes that these results "support the differentiation of rumination into distinct modes of self-focused attention with distinct functional effects". A later study examined whether these findings could be extended from emotional regulation to emotional vulnerability by measuring the effect of prior processing mode and rumination on how participants respond to subsequent failure (Moberly & Watkins, 2006). Once again the interaction of processing mode and trait rumination was explored by allocating participants either to an abstract or concrete condition wherein they were instructed to focus on positive and negative scenarios. Subsequent to this individuals underwent a failure induction. Following this intervention, higher levels of rumination were associated with less positive affect but only among those in the abstract-evaluative training condition (Moberly & Watkins, 2006). This supported the hypothesis that processing mode would interact with trait rumination to predict the level of positive affect following failure. It is worth noting that the different training conditions alone did not differ in their effects on mood, indicating

that the effect of these modes on emotional response was dependent on levels of trait rumination (Moberly & Watkins, 2006).

What is particularly interesting about the impact of abstract processing on the relationship between depression and reflection? Unlike brooding and depressive rumination, the conceptualization of reflection is not of an overly general or abstract type of self-focus, but neither is it explicitly concrete. The proposal is that an individual's processing style or the state level of construal at the time of reflective pondering is likely to influence the form it takes. There is reason to suggest that these studies might support this idea. Firstly the findings indicate that high levels of repetitive, ruminative type thinking are especially problematic under conditions of abstract, evaluative processing. Interestingly the measure of rumination employed in these studies is not the widely-used Response Style Questionnaire (Nolen-Hoeksema & Morrow, 1991). The researchers opted to use another measure of ruminative response because of the fact that some items on the RSQ measure capture not just the tendency to dwell on negative mood but also the tendency to do so in an abstract-evaluative mode (Moberly & Watkins, 2006; Treynor et al., 2003; Watkins, 2004). For this reason these studies are of particular interest to the question at hand. The methodology suggests that the findings may be relevant to measures of repetitive thinking that are not confounded with the tendency to adopt an abstract, evaluative mode, such as the Reflection subscale of the RRS measure perhaps. They suggest that the effects of this type of thinking on emotional reactivity and vulnerability may be negative in the case of less specific, more abstract modes of mind. A ruminative response that is not inherently abstract might be more or less related to depression depending on the quality of the processing mode in place. So when investigating the relationship between reflection and low mood, how can we take account of this potentially mitigating factor?

1.5.2 Memory specificity

One possibility may be to use a cognitive marker for abstract processing such as over-general memory or reduced memory specificity. Reduced memory specificity refers to a difficulty in accessing specific autobiographical memories when asked to do so, often in response to emotional cue words, with the result that remembering comprises instead generic summaries of the past. As mentioned, over-generalized thinking has been considered a critical bias in depression since early cognitive theories (Beck, 1976). In line with this, reduced specificity and the tendency to generate categoric descriptors of oneself and one's experience are predominately associated with the depressive disorder (Mc Nally, 1994, 1995; Williams et al., 2007). What makes individuals with depression particularly prone to this type of processing? Williams (1996) suggests it develops initially to serve an affect-regulation function wherein the adverse effects of focusing attention on negative self-relevant material is avoided by remaining at a categorical level of memory. As part of a process known as 'mnemonic interlock' Williams (1996) proposes that this defensive mechanism becomes reinforced by its provision of a temporary safeguard from the pain of recalling traumatic or negative events. Reinforcement results in individuals becoming caught at this categoric level of recall. Reduced memory specificity is a characteristic response on the Autobiographical Memory Task among depressed patients in particular (Brittlebank et al., 1993; Williams et al., 2007). Furthermore it has been found that as well as being a trait-like cognitive style within the depressive disorder, deficits in retrieval ability serve as a valid predictor of the course of depression over time. Patients with major depressive disorder who retrieved more over-general autobiographical memories at a baseline assessment were shown to have poorer long-term outcomes, measured at two later follow-ups (Brittlebank et al., 1993). More recently Hermans and colleagues (2008) extended the research into the importance of this marker of vulnerability by investigating whether

deficits in memory specificity were related not only to severity of depressive symptoms but also diagnostic status at follow-up. They observed that participants showing a propensity toward categoric recall were more likely to receive a diagnosis of major depressive disorder again at follow-up. The phenomenon of over-general autobiographical memory is also particularly prominent in research on suicidal patients. A number of early studies of suicide attempters demonstrated their recall of significantly fewer specific memories and more over-general memories than non-depressed controls (Williams & Broadbent, 1986; Williams & Dritschel, 1988), and a number of models of suicide include this cognitive bias as a central tenet (O'Connor & Sheehy, 2000; Williams, 2001).

This section has discussed the importance of memory specificity in the course of depression and suicidality. Accordingly, dispositional levels of specificity are a key factor to be taken into account in any study of the depressive disorder. Furthermore this process is particularly relevant when ruminative processes are under investigation. Correlational and experimental studies have shown that aside from the significant individual roles played by these processes in the disorder, they seem to mutually maintain and intensify each other, furthering their capacity to cause impairment (Watkins, Teasdale & Williams, 2000; Watkins & Teasdale, 2001; Sutherland & Bryant, 2007; Debeer et al., 2009). For example, rumination is a key element of the 'mnemonic interlock' process introduced earlier (Williams, 1996). As a marker of an inability to generate specific self-relevant information it serves as a proxy measure of an abstract thinking style. This presents a means of determining how an individual processes negative content and allows for an investigation of how this individual processing style might influence reflective thinking.

1.5.3 How might a lack of specificity shape reflective pondering?

Although the relationship between autobiographical memory specificity or abstract processing and rumination has undergone investigation, it not been explored independently in terms of the reflective subtype. How reflection might be affected by low specificity or abstract thinking is not explicit. As mentioned, reflection may not be inherently abstract but it is logical to suggest that the conditions within which it takes place, such as an abstract processing mode, may have an impact. Returning to the conceptualisation of reflection as a "cognitive problem-solving" process or a "purposeful turning inwards" reminds us that the intention of engaging in this style of thinking is to generate solutions or to gain insight into one's problems (Treynor et al., 2003). For this to be successful it should involve attending to specific difficulties in order to resolve or understand them. Therefore it seems likely that an abstract, non-specific orientation would hinder this process. The findings from a study by Pollock and Williams (2001) suggest that when attempting to resolve current problems, difficulty retrieving specific memories prevents previously suicidal patients from accessing prior occasions when they have solved similar problems. This raises the question, how useful a cognitive tool can reflective pondering be in the context of memory deficits? Williams (1996) proposes that

> "Focusing on negative self-experience in an abstract, evaluative mode of processing may provide event descriptions that are less detailed, less action-oriented, and therefore less effective for generating plans during problem-solving"
>
> (as cited in Moberly & Watkins, 2006)

The maladaptive consequences of abstract processing on problem-solving highlighted by previous research suggest that engaging in a reflective coping style in the context of an abstract mode may hamper the search for concrete solutions, the creation of goals, or the implementation of any helpful action (Evans et al., 1992; Pollock & Williams, 2001;

Williams et al., 2005). Although past literature has not made it explicit, the idea that reflective pondering might be – as depressive rumination is – susceptible to the negative effects of abstractness or over-generality seems plausible. In particular it is conceivable that the 'problem-solving' aspect of this type of thinking would be hindered. Therefore we propose that taking account of an individual's level of over-general thinking or abstract processing, by measuring memory specificity, is critical in assessing the adaptiveness of reflection. The suggestion is that if reflection operates at a conceptual or abstract level rather than within a concrete domain, clear insight or helpful solutions may not emerge and this in turn may exacerbate depressive symptoms.

1.6 Summary of the literature

This review has established that rumination has typically been associated with depression and pathology because it involves a passive focus on the meaning, significance and consequence of depressive symptoms which intensifies, maintains, and prolongs them. The maladaptive persistency that characterizes rumination resonates with theories of the maladaptive consequences of self-focused attention more generally, insofar as individuals perseverate in a process of comparison between their current state and some ideal without being able to resolve the discrepancy or let go of this unattainable goal. This evaluative and repetitive focus on one's current difficulties exacerbates low mood and increases a sense of helplessness that can contribute to the suicidal crisis.

The literature indicates that a reflective form of rumination may be more adaptive however, suggesting that unlike brooding which involves an unremitting and passive fixation on the discrepancies, reflection may be employed as a means of resolving them. The fact that reflection has been shown to relate to fewer symptoms over time (Burwell & Shirk, 2007; Treynor et al., 2003) suggests that perhaps it may facilitate the

realization of some understanding of one's current difficulties and as such reveal a means of overcoming them. However the research considered in this review indicated that there is reason to suppose that this problem-solving technique is not always successful (e.g. Surrence et al., 2009). Earlier studies revealed that, like brooding, reflection is associated with more symptoms concurrently and recent research suggests that, as with other forms of rumination, it may relate to suicidal thinking. Conflicting findings suggest that seeking to understand one's experience and adopting a reflective, problem-solving strategy to do so may be benign, or even helpful in certain circumstances. However, in the context of the very negative, self-referent thoughts likely to be present at the time of low mood this approach may backfire. Circumstances wherein reflection may not succeed as a cognitive problem-solving mechanism were proposed in terms of the significance of processing modes. Specifically abstract, over-general processing was identified as an ineffective means of orientating reflection or cognitive problem-solving. Concrete processing was proposed as protective in terms of the relationship between reflection and depression and a mode of processing more likely to support the generation of helpful solutions. The unspecific, over-general processing that is characteristic of depressed and suicidal patients may moderate the effectiveness of reflection so that it is no longer a useful means of gaining insight or generating helpful solutions or behaviour.

While this would suggest that in some cases it is not a useful cognitive response, one may ask if that is really a perilous outcome. It is in line with the 'benign' conceptualization this process has gathered. Yet in some cases reflective pondering has been shown to relate to more depressive symptoms, even showing associations with the most severely negative cognitions seen in this disorder. What might explain these findings of maladaptive outcomes? Perhaps there is another factor that moderates

outcome and distinguishes helpful reflection from harmful. As was suggested by Marroquin and colleague's (2010) investigation into the effect of individual coping styles on the outcomes of this scale, perhaps it is not that reflection in and of itself is problematic but the fact that it can be confounded by other factors. Abstract processing was proposed as one such factor. However abstractness versus specificity may not be the only relevant dimension in terms of the adaptiveness of reflection. Indeed being very specific is not necessarily protective in and of itself. Watkins (2008) highlighted this in his review of constructive and unconstructive repetitive thought. He points out that the 'valence' of thought content is crucial in determining the outcome of this style of thinking. The negative quality of brooding has already been conveyed and seems clear. It involves a critical and comparative analysis of self and experience (Treynor et al., 2003; Joormann et al., 2006; Watkins & Teasdale, 2004; Watkins, 2008). The content or valence of reflection is not explicitly negative, and as such it has been less aligned with harmful thinking styles such as symptom-focused, depressive rumination and brooding. While these involve self-judgment and self-evaluation, reflection comprises a different sort of processing. It does involve bringing inner experiences to the fore and analyzing them–but the tone of this evaluation is neutral and objective. That is to say, the items on the scale do not inherently indicate any self-judgment or critical evaluation of the experience being reflected on, but is it in fact noncritical or nonjudgmental? It could be suggested that were reflective pondering to take place in the context of a judgmental, self-critical mode of mind it might have important consequences for the adaptiveness or benignity of this process. Furthermore, as theories of discrepancy-based processing have highlighted, one difficulty with rumination is that it reinforces an inability to relinquish unattainable goals. Instead individuals remain stuck engaging in repetitive, brooding comparisons unable to resolve the discrepancy. The neutral conceptualisation of

reflection suggests that it does not have this evaluative element, but what if the problem-solving efforts do not succeed? If the perceived difficulties remain unresolved and the individual cannot let go of this search for understanding or insight, it seems possible that this neutral pondering might become a persistent, cyclical process in which discrepancies become ever more salient. This tendency of some individuals to perseverate with this discrepancy-based, evaluative processing is the basis of a theory of depressive relapse that explicates the importance of the way in which individuals process their inner and outer experiences. In order to fully account for the influence of individual processing styles on the reflection measure it is necessary to explore recent developments in our understanding of the nature of self-focused attention.

1.7 'Doing' versus 'being' modes of processing

A theory of depression and suicidality has emerged that identifies two functionally distinct modes of mind: the 'doing' mode and the 'being' or 'mindful' mode. Researchers in this area have already determined that attempts to reduce mood discrepancies through the activation of the *doing* mode easily backfires, leading to both brooding and avoidance and an increase in depressive symptoms (Teasdale et al., 1995; Segal et al., 2002). Accordingly, teaching individuals to cultivate an alternative orientation toward inner experience, namely an experiential or *mindful* mode of being, is a core feature of mindfulness-based cognitive therapy (MBCT), a successful relapse prevention treatment for depression. MBCT research has drawn attention to the inflexible and persistent way in which the former, problem-solving approach is typically employed. It is the inability to let go or withdraw from this process when it fails to generate any understanding or solution that can heighten feelings of despair. Furthermore this research has identified the heightened attention paid to thoughts and feelings which is inherent in the *doing* mode, and the potential difficulty with this type

of self-focus. In particular, over-engagement with thoughts wherein there is no awareness of them as activity of the mind rather than as reality can be especially problematic in the context of self-critical, depressive and suicidal cognitions (Williams et al., 2006). An important aspect of facilitating a reduction in reactivity to what arises is the invitation to see thoughts as just thoughts rather than reflections of reality. The ability to step back and decenter from the content of thoughts is central to a *being* or mode of self-focus, and would indicate an ability to disengage and let go during reflective pondering also. As proposed by the *doing* mode, attempts to solve problems may fail and lead to more problematic forms of self-focus such as brooding so disengaging would prevent it leading to more deleterious forms. Added to this, the *being* or *mindful* mode of self-focus cultivated during this treatment emphasizes the importance of openness to the content of one's experience, particularly one's inner experience of self (Segal, Williams, & Teasdale, 2002). Rather than responding with judgement, this treatment emphasizes the cultivation of self-compassion and acceptance as a means of preventing the reactivation of a depressive state. As a form of self-focus, reflection also involves paying attention to one's self-experience; however the level of compassion, acceptance or openness with which this takes place cannot be measured from the scale alone. Research into the benefits of mindful self-focus suggests that this aspect could have important consequences in terms of the adaptiveness of this process. The reflection subscale is a form of self-focused thinking that has been conceptualized as a measure of 'cognitive problem-solving'. Thus it represents a form of the active, doing mode of cognitive processing, and perhaps has the potential to be problematic in the same way. To our knowledge however this 'mode of mind' theory has not been applied to the Reflection subscale to see whether the process that it measures may be vulnerable to the pitfalls already outlined. Thinking about reflection in the context of

this model raises a number of questions about the process taking place. It suggests that both reactivity and decentering may be important to take account of when considering the context in which reflection could be a maladaptive way of orientating to inner experiences. When problems or discrepancies are brought to the fore, does an individual react to them with acceptance or disparagement, and if they cannot be resolved how able are they to let go of the propensity to seek resolution or understanding? A measurement of these qualities of mindful attention or experiential processing in a study of reflection would allow for a better understanding of the quality of this self-focused thinking. Therefore it is proposed that taking account of these potential moderating factors is important in a study aimed at determining the harmful or helpful effects of reflection. How then could these facets be assessed?

1.7.1Assessing a tendency for mindful processing

In line with the growth in empirical evidence for the benefits of mindfulness-based treatment approaches for psychological disorders, measurements have developed to assess the specific skills and qualities that are cultivated by these interventions. A number of self-report scales have been developed and one particularly comprehensive measure takes account of five aspects understood to make up an overall mindfulness construct. The five-facet mindfulness questionnaire (FFMQ) allows for the measurement of the general tendency to be mindful in everyday life and can take account of the important elements of the trait processing style introduced above. Most of the mindfulness facets have been shown to have associations with well-being and psychological adjustment (Baer et al., 2006, 2008)

1.8 Conclusions

The neutral tone of the RRS reflective pondering subscale (Treynor et al., 2003) has led to its conceptualisation as a benign mode of self-focused thinking. However the

proposal that it may be at least as maladaptive as brooding may be consistent with more recent theories of modes of processing and self-focused attention (Watkins & Teasdale, 2004; Segal et al., 2002). The 'more adaptive' characterization ascribed to reflection was based on its more active, problem-solving approach to low mood or perceived discrepancies between current and ideal states. A recent study calls into question the notion that reflection is an 'active' strategy, and contemporary theories of self-focused attention suggest that maybe the 'problem-solving' conceptualization, which distinguishes it from other forms of rumination, should also be explored. Theories of abstract and concrete processing highlight the fact that this cognitive problem-solving may be hindered by other factors, and theories of modes of mind suggest that if it is unsuccessful in generating a solution or does not lead to helpful action, individuals may struggle to disengage from the process and shift their attention. Pysczcynski and Greenberg (1987) captured this potential problem in earlier theories of self-focused thinking when they noted that ruminating on unwelcome states can become maladaptive when an individual cannot resolve the discrepancy between current and desired states and cannot relinquish goals aimed at reducing these discrepancies. Also, while reflecting on one's current state may be an open, experiential activity for some individuals, in the case of others, it could be a very involved, self-critical process. Perhaps this is due to an element of individual response style or to a quality of self-focus that this measure cannot capture. Recalling that the Differential Activation Hypothesis highlighted the importance of individual differences in response to low mood; individuals who endorse the items on the reflection scale may differ greatly in how they react to the material that arises. While brooding clearly involves evaluating, analyzing and judging thought content, reflection may begin simply as an attempt to gain insight or understanding; however this well-intentioned effort could be derailed by

a failure to achieve insight or resolve the difficulty combined with a reactive or judgmental response to the content revealed. This is why a broader context is critical in analyzing how this thinking style relates to negative affect.

Furthermore, recent studies emphasise the need for more detailed analysis of the means by which reflection may exert a formative role in development of depressive symptoms and suicidal cognitions. The study by Surrence and colleagues (2009) demonstrates that while brooding is clearly associated with suicidal ideation, this is via the expected pathways of depression and hopelessness. In view of their findings, Surrence and colleagues (2009) suggest that individual differences should be taken account of in future studies aimed at exploring the adaptive and maladaptive effects of reflection. Their work among others has shown that the case for reflection as benign is not always clear and so taking account of an individual's dispositional response to their feelings and emotions may help to further distinguish constructive from harmful reflection. In other words, do other problematic modes of processing moderate how reflection might relate to current mood?

Therefore this research aims to look more broadly at the role of reflection in the depressive disorder. To investigate the role of reflection in this context, a sample of individuals with a history of recurrent major depression – and therefore a vulnerability to depressive symptoms and related cognitive processes – will be employed. The first stage of the study will involve examining reflection in relation to depressive symptoms and depressogenic cognitive characteristics such as dysfunctional attitudes and avoidance. It will explore whether reflection relates to measures of these factors to the same degree as brooding, in other words is it as maladaptive in the case of depression as other types of rumination? This will help to establish whether the two subscales show

the expected relationships with depressive symptoms and cognitive vulnerabilities, in line with previous research and theoretical models of depression.

The second aim of the thesis will be to expand an area of research with a smaller breadth of consistent findings. The relationship between reflection, brooding and suicidality in the context of Major Depressive Disorder will be investigated, taking account of the research that has been done so far. While the aim of the study is to extend what is known about rumination and suicidality in terms of both brooding and reflection, because of the wealth of previous research highlighting maladaptive associations with brooding there will be a particular focus on the reflection subtype in this study. The discrepant findings in the literature concerning this form of rumination provide further motivation to explore its role in the depressive disorder and suicidality. The finding of Surrence and colleagues (2009) raises the question of whether reflection might be a particularly unhelpful response for some individuals and highlights the ambiguity surrounding reflection more generally. There is little evidence in the literature that speaks to why reflection (as measured by the RRS) is related to depressive symptoms in some circumstances but not others.

However what is now known about types of self-focused attention and the importance of differences between the doing and being modes and abstract and concrete processing provides us with a framework from which to explore the reflective pondering subtype further. Therefore the final aim of this thesis is to investigate whether the important differences that have been identified between the forms that self-focused thinking can take and the mode of mind in which it occurs have implications for how reflection operates. This study will take account of how reflective pondering is orientated in order to give a clearer picture of when it might be benign or problematic. This will focus on a specific proposed moderating condition, examining whether reflection becomes

unhelpful in the context of an abstract *and* unmindful mode of processing. This type of investigation will allow for more detailed understanding of how and by what pathways reflection might relate to symptoms of depression or suicidality.

1.9 Aims and Hypotheses

Aim 1: Rumination and the depressive disorder

1a. As a basis for the next stages of analysis, to assess the association between two subtypes of rumination (brooding and reflection), and current depressive symptoms and severity of past depression. The levels of these subtypes will also be compared among the sample.

It is hypothesised that both brooding and reflection will be associated with current symptoms of depression but that, based on previous findings, the relationship between reflection and depression will be weaker than the relationship between brooding and depression. Due to the central role of brooding in the depressive disorder, it is expected that brooding, but not reflection, will be associated with past clinical severity of depression. Based on previous findings of elevated levels of brooding among formerly depressed individuals it is hypothesised that the sample will endorse more brooding than reflection.

1b. To explore the relationship between these forms of rumination and cognitive attributes associated with a vulnerability to developing, maintaining and relapsing to depression.

It is hypothesised that brooding will be associated with other cognitive features of depression including hopelessness, dysfunctional attitudes and emotional avoidance – while reflection will not show associations with these vulnerability factors.

Aim 2: Rumination and suicidality

2a. To investigate the study by Crane and colleagues (2007) by conducting a similar comparison of levels of reflection and brooding between subgroups of the sample, when divided on the basis of their history of suicidality. The study referred to found that reflection scores were significantly higher among the group without any history of

suicide ideation or behaviour, however only brooding and not reflection is referred to in past models of suicide.

Based on this it is hypothesised that the group with the most severe history of suicidality, those who have made a suicide attempt in the past, will show elevated levels of brooding.

2b. To explore the findings of Surrence and colleagues (2009) within this sample by examining the relationship between suicidal thoughts and the brooding and reflection subscales. Of particular interest is whether their finding that a higher degree of reflective rumination is associated with increased levels of current suicidal cognitions in those with a history of suicidal behavior will be replicated. Furthermore it is of interest as to whether any relationship between the subtypes of rumination and suicidal cognitions will still be evident once depression and hopelessness are accounted for.

It is hypothesised that brooding will be more strongly related to suicidal cognitions than reflection. In line with the findings of Surrence and colleagues (2009) it is hypothesized that the relationship between suicidal thoughts and brooding will no longer be significant when current depressive symptoms are accounted for, but that any relationship between reflection and ideation will not be accounted for by depressive symptoms.

Aim 3: Moderators of the maladaptive effects of reflection

3a. To explore the contexts in which higher levels of reflection might have maladaptive outcomes by examining potential moderators of the relationship between reflection and depression and suicidal ideation. Abstract and unmindful processing are proposed as comprising a cognitive condition in which reflective pondering may have maladaptive outcomes; these factors will therefore be examined for any joint moderating effect on the relationship between reflection and depression.

It is hypothesised that individual differences in levels of memory specificity and of mindfulness will, together, confound the relationship between reflection and depression, i.e. that reflective pondering will be a less adaptive process among those individuals with both reduced memory specificity and lower levels of mindfulness.

2 METHODS

2.1 Design

This study is part of a larger ongoing randomised clinical trial comparing Mindfulness-Based Cognitive Therapy and a psychological control treatment (Cognitive Psycho-Education), to usual care in prevention of relapse to Major Depressive Disorder–with a particular focus on suicidal depression. Within this thesis, cross-sectional data from the baseline assessment of this trial – carried out pre-randomisation – will be used.

2.2 Procedure

2.2.1 Recruitment method

Recruitment took place between October 2008 and October 2010 across two trial sites in Oxford and Bangor Universities. Participants were recruited from the community through poster advertisements as well as announcements on local websites and radio. Local GP surgeries were contacted and provided with detailed information on the study together with the inclusion and exclusion criteria. They were invited to inform any potentially suitable patients about the study and provide them with the contact details of the local recruitment team so that the patients could contact the recruitment team directly.

2.2.2 Study criteria

The principle study inclusion criteria were that participants must have had a history of recurrent major depressive disorder while meeting criteria for recovery or remission from depression at the point of entry into the study. Recurrent major depression was defined as: at least three episodes of major depression in the past with at least two of

these episodes having occurred within the past five years and one episode having occurred within the last two. Recovery/remission from depression was defined using the National Institute for Mental Health (NIMH) guidelines: participants were deemed not to be in recovery if they reported one week during the previous eight in which they experienced either a core symptom of depression or suicidal feelings, as well as at least one other symptom of depression.

Due to the particular trial focus on suicidal depression the original trial protocol restricted inclusion to participants who reported having been suicidal in past. These criteria were relaxed after the first eight months of the study, following ethical approval, in order to facilitate broader recruitment due to stigma associated with suicidal feelings. Those reporting *current* suicidal symptoms were excluded from the study. Current use of antidepressant medication was also another exclusion criterion in the original protocol which was revised following a review to facilitate broader recruitment, due to the fact that NICE guidelines for recurrent depression now specify that individuals should be treated with maintenance antidepressants following remission of acute symptoms (Staying well after depression: trial design and protocol, Williams et al., 2010).

Full details of the study inclusion and exclusion criteria are presented in Table 1 below.

Table 1: Principal inclusion and exclusion criteria for the study

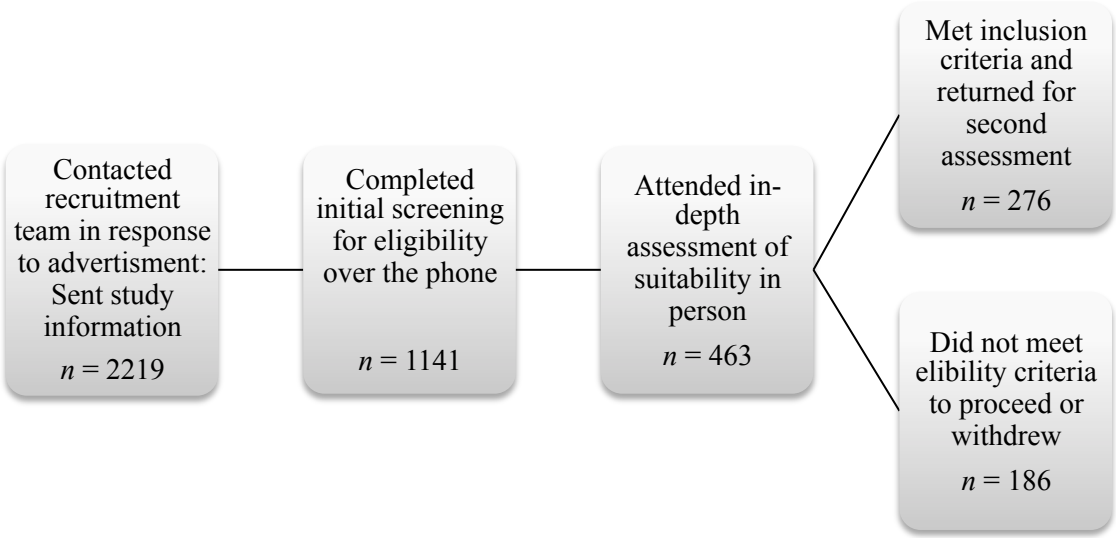
Inclusion criteria
-Aged between 18 and 70 years -Met DSM-IV criteria for a history of Recurrent Major Depression, namely a history of at least three episodes of depression, of which two must have occurred within the last five years, and one within the last two years. -Met the NIMH guidelines for recovery or remission at the time of baseline assessment. -Gave informed consent. -Consent received from the participant's General Practitioner.
Exclusion criteria
-A history of schizophrenia, schizoaffective disorder, bipolar I disorder, current severe substance abuse, organic mental disorder, pervasive developmental delay, a primary diagnosis of obsessive compulsive disorder or eating disorder. -Regular self-harm or current suicidal ideation. -Received CBT in the past and no subsequent relapse to depression. -Inability to complete the baseline research assessment (language, visual, or cognitive difficulties). -Receiving psychotherapy or counselling more than once per month.
Exclusion criteria prior to ethical amendment*:* -Current use of antidepressant medication. -No history of suicidal ideation or behaviour.

2.2.3 Process of recruitment

A flow diagram (Figure 1) outlining the process of recruitment and assessment is presented below. 2219 individuals contacted the recruitment team to enquire about the study. Of these 1141 (51.4%) were screened for eligibility over the phone. Screening included brief questions on clinical history of depression, current symptoms and potential excluding factors such as co-morbid diagnoses (see *Appendix 1*).

Appointments were made for 463 (40.5% of those screened) to attend in person, a more detailed assessment of suitability conducted by a trained researcher. Those who met inclusion criteria based on this more detailed assessment returned for a second assessment in order to gather the remainder of the baseline data. Those who did not proceed to the second assessment include those who withdrew from the study and those who were excluded based on the study criteria (n = 186). Data in this study was gathered from those participants who met eligibility criteria and attended both the first and second baseline assessment sessions (n = 276). These assessment sessions generally took place within one to two weeks of each other; across the two trials the average time lag was 14.5 days (this was not normally distributed; median at site one was eight days and twelve at site two).

Figure 1: Flow diagram to illustrate the process of recruitment from initial contact through to the final number of participants.



2.2.3.1 Initial assessment

Before proceeding with the first assessment the researchers presented the participants with a copy of the information sheet and discussed the trial procedure in detail. Participants were given the opportunity to raise queries and discuss fully what

participation would involve. They were reminded that they were free to withdraw from the study at any time. Following this briefing, written consent was sought to proceed with the assessment (see *Appendix 2*). Consenting participants were then asked a series of questions by the researcher in order to gather information about their demographic and socio-economic status (see *Appendix 3*).

The primary purpose of the initial visit was to assess eligibility, the first stage of which was an assessment of current and past diagnostic status using the Structured Clinical Interview for DSM-IV, the Hamilton Rating Scale for Depression, the Sheehan Suicidality Scale and the Suicide Attempt and Self-Injury Interview (full details of measures from page 53 onwards). The gathering of a full history of major life events, period of depression and suicidality was aided by the use of a life-timeline. Once suitability was established in terms of depressive history participants were asked about other symptoms, in order to assess co-morbidity. Screener questions were used to identify other potential psychiatric disorders, past or current, which were then investigated fully using the relevant SCID module. The researcher also gathered information on treatment history, in addition to information concerning current medication and any ongoing psychological treatment. Following the clinical interview participants were asked to complete a set of self-report questionnaires. If participants met all the criteria for inclusion and none of the exclusion criteria they were invited back for the second assessment.

2.2.3.2 Second assessment

Participants were asked to complete both cognitive and self-report measures at this assessment, and undertook the Autobiographical Memory Task (details on page 60).

2.3 Sample

The study sample consisted of 276 individuals, recruited by both trial sites (the Universities of Oxford and Bangor) for the Staying Well after Depression Project.

2.3.1 Demographic characteristics

Socio-demographic information was gathered from each participant and is presented in Table 2. The sample was comprised of 72.5% (n = 200) women and 27.5% (n = 76) men with a mean age of 43.5 years. 163 (59%) participants were in a relationship and of these, 92 (33.3% of total sample) were married. In terms of educational qualifications, 14.5% (n = 40) had received A-level qualifications, 20.7% (n = 57) of the sample had a degree and 38.1% (n = 105) had a postgraduate or professional qualification. With regards to current socioeconomic and employment status, 101 (36.6%) were currently in full-time employment and 54 (19.6%) were working on a part-time basis. The majority of participants (76%) identified themselves as White-British. All the participants were fluent in English and 88.4% (n = 243) of the sample identified English as their first language. For the majority of others their first language was Welsh due to the fact one of the recruitment sites was based in Bangor, Gwynedd.

2.3.2 Psychiatric diagnoses, depressive history and current symptoms

In line with exclusion criteria, all 276 participants met criteria for Recurrent Major Depressive Disorder but were currently well. Considering depression history, the participants' average number of episodes was categorised into three groups: less than five episodes (n = 63), between five and ten episodes (n = 155), more than ten episodes (n = 58). Length of past episodes was recorded. Based on this 17.4% (n = 48) of the sample was diagnosed with a history of chronic depression (i.e. at least one episode greater than two years in duration). Almost one fifth of the sample (18.1%, n = 50) had

been hospitalised in the past due to depression and half the sample were unable to work at some point in their lives due to psychological problems (51.1%, *n* = 141).

In terms of co-morbid diagnoses, 6.2% were diagnosed with a Generalized Anxiety Disorder (GAD), 13% had experienced Post Traumatic Stress Disorder (PTSD) at some point in the past and 13% had a history of Social Phobia. 13% of participants were diagnosed with having had an eating disorder but they met recovery criteria.

In terms of suicidal history, 104 participants (37.7%) reported during the clinical interview that they had engaged in some form of suicidal behaviour in the past. The Suicide Attempt and Self-Injury Interview (SASII, see page 56) was used to differentiate between those who had made a suicide attempt (*n* = 62) and those who had engaged in non-suicidal self-injury (*n* = 42). Based on the clinical interview 65.9% of the sample (*n* = 182) reported past suicidal ideation and 33% (*n* = 92) reported not having experienced either ideation or behaviour in the past.

2.3.3 Treatment history

Lifetime use of antidepressant medication among the sample was 78.3% (*n* = 216) and 43.8% (*n* = 121) of the sample were on antidepressants at the time of assessment. A majority of the sample had engaged in some form of psychotherapy in the past (73.2%, *n* = 202) and 24.6% (68) had received Cognitive Behavioural Therapy (CBT). Only 3.3% of the sample was currently in psychotherapy. Over half of the sample (63%, *n* = 174) had visited their GP for symptoms relating to depression at least once in the last year.

Table 3 presents the psychiatric and treatment history information for the sample.

Table 2: Demographic characteristics of the sample: n = 276

Age	**Mean (range)**
	43.5years (18-68 years)
Gender	***n* (% of sample)**
Male	76 (27.5)
Female	200 (72.5)
Marital status	***n* (% of sample)**
Married	92 (33.3)
Single	65 (23.6)
Divorced	48 (17.4)
Separated	10 (3.6)
Widowed	5 (1.8)
Co-habiting	38 (13.8)
Unknown	18 (6.5)
Ethnicity	***n* (% of sample)**
White	263 (95.3)
-White British	211 (76.4)
Other	13 (4.7)
Highest educational qualification	***n* (% of sample)**
No qualification	7 (2.5)
GCSE	48 (17.4)
A Level	40 (14.5)
Degree	57 (20.7)
Prof qualification	50 (18.1)
Post grad degree	55 (19.9)
Employment status	***n* (% of sample)**
Full time	101 (36.6)
Part time	54 (19.6)
Self-employed	17 (6.2)
Unemployed	54 (19.6)
Retired	27 (9.8)
Sick leave	12 (4.3)
Disability leave	8 (2.9)

Table 3: Clinical history of sample: n = 276

Lifetime depression	
	Mean
Average age of onset of MDD	20.9
	***n* (% of sample)**
No. of past episodes	
<5 episodes	63 (22.8)
5-10 episodes	155 (56.2)
>10 episodes	58 (21.0)
Hospitalised due to depression	50 (18.1)
Unable to work (psychological sxs)	141 (51.1)
Suicidality	***n* (% of sample)**
Suicide attempt	62 (22.5)
Non-suicidal self-injury	42 (15.2)
Suicide ideation	182 (65.9)
Co-morbidity	***n* (% of sample)**
PTSD	36 (13.0)
GAD	17 (6.2)
Alcohol abuse/dependence	20 (7.2) / 17 (6.2)
Substance abuse/dependence	11 (4) / 15(5.4)
Eating disorder in past	29 (10.5)
Social phobia	36 (13)
Obsessive compulsive disorder	6 (2.2)
Psychotic symptoms	8 (2.9)
Treatment history	***n* (% of sample)**
Past chronic episode diagnosis	48 (17.4)
Current anti-depressant use	121 (43.8)
Anti-depressant use in lifetime	216 (78.3)
CBT in past	68 (24.6)
Psychotherapy in past	202 (73.2)
Ongoing Psychotherapy	9 (3.3)
GP visit for depression in past 12mths	174 (63.0)

2.4 Measures

2.4.1 Psychiatric diagnosis, depressive history and current symptoms

2.4.1.1 SCID-I

The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) is a semi-structured psychiatric interview for making the major DSM-IV Axis I diagnoses (First, Spitzer, Gibbon, & Williams, 2001). This was conducted to establish a history of MDD and to assess recovery. The standard depression MDD module was administered to assess current symptoms (see *Appendix 4*). A history of major depression was assessed based on the worst episode in the past (as identified by the participant). Symptoms reaching threshold criteria for MDD were rated as '3', sub threshold as '2' and absent as '1'. In order reach a diagnosis of depression the participant was required to meet the threshold criteria in at least five out of the nine symptoms assessed including at least one core symptom (depressed mood or anhedonia). As well as MDD symptoms, other diagnostic factors such as impairment in social or occupational functioning were assessed as well as potential precipitating factors such as a general medical condition or bereavement. In each case the interview focused on establishing diagnostic status rather than symptom severity.[1]

Other SCID modules were administered to investigate if potential co-morbid disorders were identified (for details of screening questions see *Appendix 5*). Administration of the SCID could therefore take from fifteen minutes up to two or three hours depending on the psychiatric co-morbidity of the participant.

2.4.1.2 Life Timelines

In order to explore the participant's clinical history in more detail a life timeline was implemented. The timeline was laid out year by year from the age of ten onwards. The

[1] Inter-rater reliability for the SCID interview was examined in terms of the reliability of the interveiwers' ratings of relapse to major depression in the follow-up phase of the trial and it was not examined at baseline. In order to investigate the reliability of this data, two independent psychiatrists rated audiofiles

participants were instructed firstly to mark their current age on the chart. They were then asked to make note of significant life-events at the age at which they occurred. Having previously identified one episode of MDD during the SCID, the participants were asked to mark the occurrence of this episode with a sticker along with any other episode similarly debilitating in terms of symptom-severity and impact on social and occupational functioning. Any experience of suicidality was identified with a red sticker. The timeline was used to assist the researcher and participant in calculating an estimated number of episodes, the date they occurred, and their respective lengths.

2.4.1.3 Hamilton Rating Scale for Depression (HAMD)

Severity of current symptoms was assessed using the Hamilton Rating Scale for Depression (Snaith, Bridge, & Hamilton, 1979). This clinician-rated scale was used to assess severity of current symptoms. The 17 items cover the various symptoms of depression (e.g. low mood, anhedonia, insomnia, and feelings of guilt), which were rated for severity (e.g. absent, mild, moderate, marked, severe) based on the response provided to each item. Most items had a possible score of between zero and four. The highest possible total score is 52, with a score above 16 indicating some level of depression and a score below seven indicating full remission. The scale has been widely used with good reports of validity and reliability (Hamilton, 1960).

2.4.1.4 Beck Depression Inventory (BDI-II)

This is a well-established 21-item self-report measure developed by Beck, Ward, Mendelson, Mock and Erbaugh (1987) to measure symptoms of depression. Scores on each item range from 0 to 3 with a maximum score of 63 on the total questionnaire. A higher score on the scale indicates a greater severity of depression with 0-13 indicating minimal symptoms, 14-19 indicating mild depression, 20-28 moderate and 29-63 severe (Beck, Steer, & Brown, 1996). Although participants completed this at the initial

assessment it was not used to assess eligibility but as a baseline measure of current symptoms. The reliability and validity of the BDI have been shown to be high (Beck et al., 1961). Carlson (1998) reports stable internal consistency (0.79-0.90 across six samples), adequate test–retest reliability (e.g., between 0.60 and 0.90 in non-psychiatric samples), and good construct validity. In the current study the BDI-II has good internal consistency, with a Cronbach alpha coefficient of .90.

2.4.2 Measures for suicidality

2.4.2.1 Beck Scale for Suicide Ideation (BSS formerly the SSI)

The Beck Scale for Suicide Ideation was used to assess severity of current suicidal ideation. It is a 21-item self-report measure (Beck, Kovacs, & Wiseman, 1979). The first five items of the questionnaire are a screener. Items 4 and 5 ask the participant to rate how far they would have gone to save their own life, as well as their desire to kill themselves during their worst-ever episode. If the participant scores 0 on questions 4 and/or 5 they do not go on to answer items 6 to 19. Items 1 to 19 are used to calculate a total score. All items on the scale are measured from 0 to 2 and total scores can range from 0-38. There are no cut-off points for severity on the questionnaire; any positive response may represent suicidal intention (Beck & Steer, 1993a). The internal consistency of the BSS, based on the five-item screener questionnaire, was good in the present study: $\alpha = .84$.

2.4.2.2 Beck Scale for Suicide Ideation- Worst (BSS-Worst)

The Beck Scale for Suicidal Ideation- Worst (Beck AT, Brown GK, & Steer RA, 1997), which was used to record severity of suicidal symptoms during an individual's worst episode of depression, is a reworded version of the BSS. The format required that the participant identified this episode before proceeding to rate each item. The structure of this measure follows the same format as the original BSS with a five-item screener with

the option to exit the scale if no symptoms are reported at this point. There are two extra items at the end of the scale, used to elicit relevant information about a history of suicidal behaviour; item 20 asks whether or not suicide has been attempted in the past, and if so, item 21 asks for a rating of the strength of the wish to die at the time of this attempt. In the present sample the internal consistency of the BSS-Worst was good, with an alpha score of .92. A copy of the BSS-Worst can be found in *Appendix 6*.

The scoring criteria are identical to the previous measure with no cut-offs. All participants undertook this questionnaire regardless of whether they reported a history of suicidality during clinical interview.

2.4.2.3 The Mini International Neuropsychiatric Interview: Sheehan Suicidality Tracking Scale (STS)

The Suicidality Tracking Scale (Sheehan et al., 1998) was used to screen for the presence of any current suicidal symptoms. The Sheehan-STS is an eight-item scale that can be administered either by a researcher or patient through self-report. In this case the researcher read each question to the participant and rated their response on a 5-point Likert scale (0 = not at all, 1 = a little, 2 = moderately, 3 = very, and 4 = extremely). The scale tracked both suicidal ideation and behaviours over the previous seven days. The STS was adapted from the Suicidality Module of the Mini International Neuropsychiatric Interview (MINI) Structured Diagnostic Interview for DSM-IV. The MINI is one of the most cited diagnostic tools, with extensive reliability and validity testing.

2.4.2.4 The Suicide Attempt and Self-Injury Inventory (SASII)

To gather a detailed account of past suicidal behaviour the Suicide Attempt and Self-Injury interview was conducted with those participants who reported any incidence of self-harm. The SASII is a 47-item semi-structured interview that measures the type of behaviour, intent, medical severity, expectation of death, social context, precipitating

events, and outcomes for single episodes (or clusters of multiple similar acts, e.g. repeated cutting over a week-long period), (Linehan, Comtois, Brown, Heard, & Wagner, 2006). Based on all the information obtained, the researcher classified the self-injury as either a suicide attempt or non-suicidal self-injury. A copy of the SASII can be found in *Appendix 7*.

2.4.2.5 Suicide Cognitions Scale (SCS)

The Suicide Cognitions Scale (Rudd et al., 2004) was used to measure suicidal cognitions. This measure consists of 20 questions about core beliefs of perceived burdensomeness ('I am a burden to my family'), helplessness ('no one can help solve my problems'), unlovability ('I am completely unworthy of love') and poor distress tolerance ('when I get this upset, it is unbearable'). These four factors correspond to four subscales or categories; however for the purpose of this study the total score was used. Each item is rated from 1 (strongly disagree) to 5 (strongly agree). Scores on the total scale range from 20 to 100. Validation of the SCS has been demonstrated in previous studies (Rudd, 2004) with the SCS demonstrating significant correlations with other measures of suicidality, e.g., Beck Scale for Suicide Ideation (see above). The SCS showed good internal consistency in the present sample with an alpha score of .94. A copy of the SCS can be found in *Appendix 8*.

2.4.3 Self-report cognitive measures

2.4.3.1 Ruminative Response Scale of the Response Style Questionnaire (RRS)

The Ruminative Response Scale was used to assess trait responses to depressive symptoms, specifically the tendency to ruminate in response to depressed mood (Nolen-Hoeksema & Morrow, 1990). A recent study (Treynor et al., 2003) demonstrated that the RRS consists of three distinct subscales: *depression-related rumination* (twelve items, e.g. 'think about feelings of achiness and fatigue', 'think about how hard it is to

concentrate'), *brooding* (five items, described as 'moody pondering' e.g. 'think "why can't I handle things better?"'), and *reflection* (five items referring to neutrally valenced pondering, e.g. 'analyse recent events to try and understand why you are depressed'). The total scale is therefore comprised of twenty-two items rated and each item was rated by the participant on a 4 point scale, from 1 = *never* to 4 = *always* according to how much they engaged in the ruminative response described when feeling low. The RRS has been shown to have good internal consistency and validity (α = .89; Nolen-Hoeksema & Morrow, 1991). In the current study the Cronback alpha coefficient was .87 and the three subscales – depressive rumination, brooding, and reflection – also showed adequate internal consistency with Cronbach alpha coefficients of .86, .68 and .73 respectively. A copy of the RRS can be found in *Appendix 9*.

2.4.3.2 Five-Facet Mindfulness Questionnaire (FFMQ)

The Five-Facet Mindfulness Questionnaire is a 39-item questionnaire used to measure participants' dispositional levels of mindfulness, or general tendency to be mindful in daily life. The factors that make up this scale are drawn from an exploratory factor analysis of several measures of mindfulness that suggested a five-factor solution, all of which are components of an overall mindfulness construct (Baer et al., 2006; Neuser, 2010). *Observing* includes noticing or attending to internal and external experiences; *Describing* refers to labelling internal experiences with words; *Acting with awareness* includes focusing on one's activities of the moment rather than placing attention elsewhere; *Nonjudging of inner experience* refers to taking a non-evaluative stance toward thoughts and feelings; *Nonreactivitiy to inner experience* is the tendency to allow thoughts and feelings to come and go without getting caught up in them. The five facets demonstrate adequate to good internal consistency, with alpha coefficients ranging from .75 to .91 (Baer et al., 2006). However previous studies have indicated

that the *Observing* subscale performs differently from the other subscales and does not load onto the higher order 'mindfulness' construct (Baer et al., 2004, 2006). For this reason the observe factor was not included in the total mindfulness score. In this study the internal consistency of the overall scale was good with a Cronbach alpha coefficient of .90, and omitting the *Observing* subscale the internal consistency of the scale remains adequate, α = .89. A copy of the FFMQ can be found in *Appendix 10*.

2.4.3.3 Dysfunctional Attitudes Scale (DAS)

The Dysfunctional Attitudes Scale (Weissman & Beck 1978) is used to measure depressogenic beliefs or cognitive distortions based on Beck's (1967) cognitive theory of depression. It measures beliefs indicating cognitive vulnerability or predisposition to depression (Olivier & Baumgart, 1985). It is a 40-item scale and responses are recorded on a 7-point Likert scale from 1 (disagree totally) to 7 (agree totally). The DAS has been to shown to have very good internal consistency, with an alpha coefficient of .90, and very good reliability, with test-retest correlations over six weeks of .73 (Olivier & Baumgart, 1985). The DAS showed good internal consistency in the present sample; a = .94. A copy of the DAS can be found in *Appendix 11*.

2.4.3.4 Acceptance and Action Questionnaire (AAQ)

The Acceptance and Action questionnaire (Hayes et al., 2004) is the most widely used measure of psychological inflexibility and experiential avoidance. The version implemented in this study was the short, 9-item scale. Items are rated on a 7-point Likert scale from 1 (never true) to 7 (always true). Higher scores on this measure indicate less avoidance and greater psychological flexibility or acceptance. The AAQ has been shown to have adequate internal consistency, with an alpha coefficient of .70, and it has been shown to have a test-retest reliability over four months of .64 (Hayes et

al., 2004). The AAQ showed good internal consistency in this study, with a Cronbach alpha coefficient of .88. A copy of the AAQ can be found in *Appendix 12*.

2.4.3.5 Beck Hopelessness Scale (BHS)

The Beck Hopelessness Scale was used to measure current levels of hopelessness (Beck & Steer, 1988). This is a 20-item scale that measures negative attitudes about the future. Participants rated True or False for each item. Total scores range from 0 to 20 on severity of hopelessness: 0 to 3 is the minimal range, 4 to 8 is mild, 9 to 14 is moderate and over 14 is severe (Beck & Steer, 1993b). The BHS has been found to be reliable and sensitive: in the original validation of the measure, internal reliability ranged from .87 to .93 and one week test-retest reliability was .69 (Beck & Steer, 1988). The reliability of the BHS, as determined by Cronbach's alpha, was .89 in this study.

2.4.4 Cognitive tasks

2.4.4.1 Autobiographical Memory Test (AMT)

Participants' ability to recall specific memories of events in their lives was measured using the Autobiographical Memory Test (Williams & Broadbent, 1986). Participants were presented with 18 cue words and given 30 seconds in each case to recall a specific memory that occurred at a particular time and place. The words included in the task were positive, negative and neutral (six of each) presented in a fixed mixed order. Memory responses were scored and categorised according to the level of specificity of memory-response given. Scores ranged from 0 to 4, with a score of 4 indicating that the participant followed the instructions of the task correctly and generated a specific memory of an event that lasted a day or less. Non-specific memories included extended memories, score 3, events that lasted for longer than a day, and categoric memories, score 2, events that occurred repeatedly over a period of time, semantic associates, score 1, participant makes a simple word association, and omissions, score 0, no response. In

line with the majority of previous studies using this measure (Williams et al., 2007), the present study uses the number of *specific memories generated* for analysis purposes, therefore scores on this measure range from 0 to 18. Full details of the words and instructions given can be found in *Appendix 13 & 14*.

2.4.4.1.1 Inter-rater reliability for AMT

The coding of the AMT was conducted by one of four assessors. These assessors received training by an expert coder, and trial joint-coding was conducted prior to proceeding with individual coding. Inter-reliability was examined based on seven percent (n = 19) of the sample selected at random. The data from these 19 complete autobiographical memory tasks (345 memories) were coded by all four assessors as well as by an expert coder. Inter-rater reliability was established by comparing each rater's scores with the expert coder, examining it using Cohen's kappa. Results of this analysis indicated good reliability and are presented in Table 4.

Table 4: Inter-rater reliability of memory specificity as measured by the AMT

	Reliability with expert coder (κ)
Rater 1	0.82**
Rater 2	0.81**
Rater 3	0.83**
Rater 4	0.83**
Overall (average)	0.82

Notes: $^{**}p < .001$.

2.5 Ethical approval

This study received ethical approval from the National Research Ethics Service, Oxfordshire REC C Ref: 08/H0606/56

3 RESULTS

Treating the data:

Tests of normality were conducted for all measures. Measures of current mood and suicidality were not normally distributed. Transformation of the data was attempted but this did not normalise the distributions and as a result, where available, non-parametric tests were used. Comparisons of the results of these non-parametric tests with their parametric equivalents indicated that they were materially equivalent in most cases and so where no non-parametric alternative existed, attempts were made to improve normality by removing outliers and a parametric test was conducted.

In terms of treating missing data, cases with up to ten percent missing data were included and a score was imputed for the missing variables; missing values were replaced by the mean score on available items for the scale as a whole – or subscale in the case of analyses involving subscales. In any case where there was more than ten percent missing, the participant's data for that measure was excluded. Following this the amount of missing for each of the measures included in the analyses that follow are: BDI-II, n = 1; BSS- Worst, n = 3; AAQ, n = 2; DAS, n = 2; BHS, n = 0; RRS total scale, n = 3; RRS-Brooding, n = 2; RRS-Reflection, n = 3; SCS, n = 3; FFMQ, n = 3.

3.1 Aim 1: Depression and rumination

Before investigating associations between depression and rumination, levels of current symptoms (mean score for the BDI-II) were calculated. As expected the average score among this recovered sample was low (M = 8.22) but participants' totals ranged widely,

from 0 to 50.[2] Severity of previous episodes of depression is summarised in terms of the number of depressive symptoms (meeting SCID Major Depressive Disorder criteria) experienced during a past episode as well as the intensity of wish-to-die during the worst episode as identified by the participant (BSS-Worst screener items 1-5).

Average scores on the subscales of rumination (RRS: brooding and reflection) were calculated. Looking specifically at a comparison between levels of brooding and reflection reveals that the sample as a whole endorsed significantly more brooding than reflection, $t(272) = 5.29$, $p < .0005$. This finding is consistent with the hypothesis and expectations for a previously depressed sample.

Means, medians and standard deviations for depressive symptoms and levels of rumination among the sample are presented in Table 5.

Table 5: Means, medians, and standard deviations of clinical measures of current and past depressive symptoms as well as rumination subscales

	Depressive symptoms *n*(275)	Past MDD symptoms *n*(276)	BSS-Worst episode *n*(273)	Brooding *n*(275)	Reflection *n*(273)
Mean	8.22	7.92	5.83	13.27	12.12
(SD)	(8.04)	(1.09)	(3.42)	(3.01)	(3.14)
Median	6	8	6	12	12
(range)	(0-50)	(4-9)	(0-10)	(5-20)	(5-20)

3.1.1 Do brooding and reflection differentially relate to depressive symptoms, past and present?

Associations between the rumination subscales, current depressive symptoms, and severity of past depression are presented in Table 6. It was expected that brooding would be associated with more depression concurrently; however the results do not reveal any correlation between these measures. Furthermore brooding is not associated with the number of clinical symptoms experienced during past episodes of major

[2] All statistics are reported to 2 decimal points, with the exception of *p* where the exact value is reported.

depression; again this doesn't provide support for the hypothesis. It is possible that the failure to find any association between brooding and BDI-II scores is a result of the generally low BDI-II scores among the sample. It was also expected that reflection would show a positive association with current symptoms of depression, however the results show a small but significant negative association between reflection and the BDI-II, $r(272) = -.12$, $p < .05$. While it was predicted that both ruminative subscales would be associated with depression it was expected that brooding would show a greater association with depression than reflection. Offering some support for this, the correlation coefficient for the reflection-depression association is significantly smaller than that for brooding and depression, $Z_{diff} = -2.97$, $p < .01$.

Table 6: Correlations between depressive symptoms and rumination

	Current depressive symptoms (BDI)	Past MDD symptoms-worst episode	Past suicide ideation (BSS-Worst)
Brooding	.09	.04	.08
Reflection	-.12*	.07	.02

*Notes: two tailed tests, *p < .05, BDI-II was non-normally distributed therefore Spearman's Rho correlations were conducted for this measure.*

In terms of lifetime chronicity, individuals were divided into three groups based on their number of previous episodes of depression (less than five, between six and ten, more than ten). An ANOVA was conducted to investigate whether more episodes was associated with higher scores on any of the rumination subscales. Results from this analysis reveal no differences between the groups on any of these measures (brooding: $F(2,272) = .35$, $p = .74$; reflection: $F(2,270) = .85$, $p = .71$).

In terms of current depression, results from this stage of analysis reveal that the expected positive associations with brooding and reflection are not present among this sample, but the results do support the hypothesis that reflection would show less of an

association with depressive symptoms than brooding. Both brooding and reflection were unrelated to severity of past depression.

3.1.2 Do brooding and reflection differentially relate to markers of cognitive vulnerability to depression?

In order to explore the relationships between the subtypes of rumination and cognitive characteristics of vulnerability to depression, current levels of the cognitive vulnerability factors were first established. Sample means for hopelessness (BHS), dysfunctional attitudes (DAS) and acceptance (AAQ) were all calculated and the means and standard deviations for these measures are presented in Table 7. Relationships between rumination and other cognitive attributes of depression are summarized in Table 8.

Table 7: Means, medians, and standard deviations of cognitive measures

	AAQ *n*(274)	DAS *n*(275)	BHS *n*(276)
Mean (SD)	39.95 (5.84)	95.10 (25.56)	5.28 (4.62)
Median (range)	40 (23-57)	95 (41-157)	4 (0-19)

Table 8: Correlations between rumination and other cognitive vulnerability factors

	Brooding	Reflection	AAQ	DAS	BHS
Brooding (RRS)	-				
Reflection (RRS)	.32**	-			
AAQ	-.39**	-.09	-		
DAS	.41**	.11	-.52**	-	
BHS	.12	-.06	-.29*	.25*	-

*Notes: two tailed tests, *p < .05, **p < .001, RRS=Ruminative Response Scale, AAQ=Acceptance and Action Questionnaire, DAS=Dysfunctional Attitudes Scale, BHS=Beck Hopelessness Scale*

Looking firstly at the brooding subscale, it shows a moderate negative association with the AAQ, $r(271) = -.39$, $p < .001$, indicating it is associated with more experiential avoidance and less acceptance. It is also positively correlated with dysfunctional attitudes, $r(268) = .41$, $p < .001$, suggesting higher levels of brooding are associated with more depression-related cognitive distortions. Finally, the relationship between brooding and hopelessness is positive at trend level, $r(275) = .12$, $p = .05$; although low, this indicates the direction of the relationship between these two variables. The mean scores on the hopelessness measure were very low among the sample, possibly making any association more difficult to detect.

The reflection subscale shows no significant relationship with the AAQ, $r(269) = -.09$, $p = .16$, indicating that it is not associated with level of experiential avoidance. Furthermore, reflection does not show a significant association with number of dysfunctional attitudes, $r(266) = .11$, $p = .07$ or levels of hopelessness, $r(273) = -.06$, $p = .32$.

These findings are in line with the prediction that brooding would be associated with cognitive vulnerabilities to depression but that reflection would not. They indicate that brooding is more directly related to depressogenic factors than reflection among this sample.

3.2 Aim 2: Suicide and rumination

3.2.1 How does past suicidality relate to current levels of brooding and reflection?

(Replication of study by Crane et al., 2007)

This stage of the analysis aimed to explore whether individuals with different suicidal histories would differ in their levels of reflection and brooding. This involved dividing the sample of 276 into three groups based on previous history of suicidality: those without any history of suicidality ($n = 94$), those who experienced ideation in the past

(n = 120), and those who had made a suicide attempt (n = 62). The *never suicidal* and *suicide ideation* groups were differentiated based on whether they identified past suicidal symptoms during any episode of Major Depression as reported during the clinical interview. 'Thoughts of death' were not classified as ideation. The SASII interview was used to determine those participants in the *suicide attempt* group. Although this was conducted with participants reporting *any* behaviour in the past, a clinical rating of whether the behaviour reported was self-harm or a suicide-attempt was made by the researcher based on all the information available. Participants whose behaviour was classified as 'self-harm' were included in one of the other two groups depending on whether they had experienced ideation in the past.

Descriptive statistics by group are presented in Table 9. A comparison of the gender breakdown within each of the three groups reveals a significant difference, $\chi^2 = 18.06$, $p = <.001$. It seems that this may be explained by the greater proportion of females in the suicide attempt group (females: n = 58, males: n = 4). The average age of participants did not differ significantly between groups, $F(2,273) = 1.098$, $p = .34$.

3.2.1.1 Do the groups differ in terms of their depressive history?

In order to determine whether there were any differences between the groups with regards to their clinical history of depression, Kruskal-Wallis tests were used compare the groups on three factors. Firstly, the age of onset of Major Depressive Disorder was investigated and revealed a significant difference across the three groups, $H(2) = 16.35$, $p < .001$. The *suicide attempters* show the earliest average age of onset (median = 15 years) while the *never suicidal* group show the latest (median = 20 years), (the median age of onset for the suicide ideation group was 19 years). Mann-Whitney U tests were used to follow up this finding and these tests reveal that there was a significant difference in age of onset between the *suicide attempt* group and the *never suicidal*

group, with the *suicide attempt* group showing an earlier average age of onset, U = 1860.5, Z = -3.74, $p < .001$. The *suicide attempt* group also showed an earlier onset than the *suicide ideation* group, U = 2555, Z = -3.46, $p < .01$. The average age of onset did not differ significantly between the *suicide ideation* group and the *never suicidal* group, U = 5219.5, Z = -.81, p = .42. Secondly, the severity of past depression was measured in terms of the number of depressive symptoms meeting DSM-IV criteria during a previous episode. Again there was a significant difference between the groups, $H(2)$ = 39.81, $p < .001$. An inspection of the median for each group indicates that the *suicide attempters* experienced the highest number of depressive symptoms during the worst past episode (median = 8.5), while the *never suicidal* experiencing the lowest (median = 7). Mann-Whitney U tests were used to follow up this finding and these tests reveal that there was a significant difference between the *suicide attempt* group and the *never suicidal* group, with the suicide attempt group showing higher average scores, U = 4292, Z = 5.18, $p < .001$. Similarly the *suicide ideation* group showed higher average scores than the *never suicidal* group, U = 8001.5, Z = 5.48, $p < .001$. However by endorsing 'suicidality', the suicidal group would by definition have one more symptom, therefore this difference of less than one is to be expected. The averages scores did not differ significantly between the *suicide attempters* and the *suicide ideators*, U = 4036.5, Z = 1.02, p = .31. Finally, comparing the groups on the level of suicidal ideation during their worst episode of depression reveals the groups differ on this factor also, $H(2)$ = 101.09, $p < .001$ (median scores for each group: *suicide attempt* = 9; *suicide ideation* group = 7; *never suicidal* = 2).[3] Mann-Whitney U tests were used to follow up this

[3] 'Worst episode' in this case refers to that episode identified by the participant in response to BSS-worst measure and not necessarily the same episode investigated by the researcher during the clinical interview. Further, the BSS-worst screener was used so as to gather data from as many of the participants as possible (the full measure would have been completed only by those endorsing suicidal ideation as opposed to a wish to die.)

finding and these tests reveal that there was a significant difference between each pair of groups. The *suicide attempt* group showed higher average scores on this measure than both the *suicide ideation* group, $U = 4751.5$, $Z = 3.67$, $p < .001$, and the *never suicidal* group, $U = 5121.5$, $Z = 8.59$, $p < .001$. Similarly the *suicide ideation* group scored significantly higher than the *never suicidal* group, $U = 9191$, $Z = 8.09$, $p < .001$. Unsurprisingly, the *suicide attempters* report a stronger wish to die/kill themselves compared with the other two groups.

These findings indicate a more severe clinical history for those individuals with a history of suicide-attempt. Those who have never been suicidal show a less severe pattern overall with a later onset and fewer symptoms during past episodes.

3.2.1.2 Do the groups differ in levels of current symptoms of depression and suicidality?

The following tests were conducted to explore whether differences in clinical severity between the groups were evident in present levels of depression. A Kruskal-Wallis test revealed no significant effect of group on depression scores, $H(2) = .02$, $p = .99$, Similarly there was no significant difference between groups in levels of hopelessness, $H(2) = .85$, $p = .66$, or suicidal ideation, $H(2) = 1.86$, $p = .39$, at the time of participation in the study. The sample met criteria for remission or recovery from Major Depressive Disorder on admission to the study, in line with this the results indicate that the groups did not present with significantly different levels of depression or ideation regardless of their suicidal history.

This requirement for a diagnosis of remission at entry to the study meant levels of current suicide ideation were also unlikely to vary greatly. However a measure of the prevalence of suicide-related thoughts over the previous 3-month period allowed for further exploration of any differences between the groups. Scores on the Suicide Cognitions Scale (SCS) were compared between the three groups and revealed a

statistically significant difference at the $p < .05$ level in levels of endorsement of the items, $H(2) = 8.46$, $p < .05$. Mann-Whitney U tests were used to follow up this finding and these tests reveal that there was a significant difference between the *suicide attempt* and *never suicidal* groups, with the *suicide attempt* group having higher average scores, $U = 2125$, $r = -.21$.[4] A difference between these two groups on this measure was not surprising as the measure is not necessarily as relevant for the *never suicidal* group. It is more applicable to the *suicide attempt* and *suicide ideation* groups and scores do not differ significantly between these two groups, $U = 3282.5$, $r = -.07$. The SCS allowed for more variance when investigating current suicidal thinking among participants who experienced ideation in the past compared with those with an attempt history, but the findings indicated that when in remission, these two groups did not differ significantly in frequency of suicidal thoughts.

3.2.1.3 Do the groups differ in levels of rumination?

To explore whether there were any differences across the groups in overall levels of rumination, an ANOVA was conducted which indicated that the groups did not differ significantly in overall rumination scores (RRS-total), $F(2, 270) = .63$, $p > .50$. As this stage of analysis was more specifically aimed at investigating any differences between the three groups in their endorsement of the brooding and reflection subscales, a two (measure: brooding, reflection) x three (group: never suicidal, suicide ideation, and suicide attempt) mixed ANOVA was conducted to explore differences between the groups in the balance of brooding to reflection.[5] The results of this analysis are presented in Table 9.

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[4] A Bonferroni correction was applied to account for any Type 1 errors and so all effects are reported at a $p < .0167$ level of significance.

[5] They were also compared on a combined score of reflection and brooding and again no significant differences were found, $F(2, 270) = .39$, $p < .50$. The relationship between the two subscales, brooding

This analysis revealed no main effect of group, $F(2, 270) = .39$, $p = .68$. Comparing levels of reflection and brooding between groups revealed no interaction between measure and group, $F(2, 270) = .31$, $p = .74$, indicating no difference between participants in current levels of reflection and brooding based on their past history of suicidality. This does not replicate the Crane et al. study, which found that the *never suicidal* group had significantly higher average scores on reflection than *suicide attempters* and showed a trend towards higher average scores than the *suicide ideation* group.

Crane and colleagues, in their study, also found a trend towards more reflection than brooding among the *never suicidal* group, equivalent levels of reflection and brooding among the *suicide ideation* group, and significantly more brooding than reflection among the *suicide attempt* group. Paired sample t-tests were carried out to compare levels of brooding to reflection within each group in the current sample. This revealed that all three groups endorsed significantly less reflection items than brooding [*never suicidal*: $t(92) = 3.76$, $p < .0005$, *suicide ideation*: $t(118) = 2.96$, $p < .05$, *suicide attempt*: $t(60) = 2.42$, $p < .05$]. This is in line with the expectation that reflection scores would not differ between the three groups and does not replicate the finding by Crane and colleagues (2007) of significantly higher levels of reflection among participants with no history of suicidality. However these results do not support the present study's hypothesis that those with a history of suicidal behaviour would show higher levels of brooding.

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and reflection, was examined prior to this analysis. Correlational analysis indicated there was a moderate association between the two variables, $r(273) = .32$, $p < .05$.

Table 9: Suicide groups: Descriptive statistics and between-groups ANOVAs

Suicide group	*Never Suicidal (n = 94)*		*Suicide Ideation (n = 120)*		*Suicide Attempt (n = 62)*		**Analysis**		
	n	%	*n*	%	*n*	%	χ^2	df	*p*
Male	30	31.9	42	35	4	6.5	18.06	2	.00
Female	64	68.1	78	65	58	93.5			
	Mean	SD	Mean	SD	Mean	SD	*F*	df	*p*
Age	44.48	12.16	43.60	11.70	41.60	12.25	1.10	2	.34
Clinical history	Mean	SD	Mean	SD	Mean	SD	*H*	df	*p*
Age of onset	23.23	12.39	21.28	10.23	16.53	7.37	16.35	2	<.01
Past MDD sxs	6.89	1.01	7.19	.90	7.34	.87	39.81	2	<.01
BSS-Worst screener	3.02	2.95	6.79	2.66	8.27	2.07	101.09	2	<.01
Mood measures	Mean	SD	Mean	SD	Mean	SD	*H*	df	*p*
Depression SXS (BDI-II)	8.06	8.64	8.10	7.79	8.71	7.68	1.26	2	.53
Hopelessness (BHS)	5.30	4.36	5.39	4.82	5.02	4.70	.38	2	.83
Suicidal Ideation (BSS)	.20	.95	.30	.93	.33	1.18	1.86	2	.39
Suicidal Thinking (SCS)	29.60	9.43	33.03	11.68	36.31	16.24	8.46	2	.02
Rumination	Mean	SD	Mean	SD	Mean	SD	*F*	df	*p*
RRS-Total score	57.27	9.76	58.82	10.32	57.80	10.80	.63	2	.54
RRS-Brooding	13.18	2.86	13.26	3.18	13.44	2.92	.14	2	.87
RRS-Reflection	11.81	2.93	12.30	3.10	12.18	3.55	.64	2	.53

3.2.2 Does reflection relate to current suicidal cognitions and does this behave as a function of suicide attempt history?

(Replication of study by Surrence et al., 2009)

The purpose of this stage of analysis was to investigate how rumination relates to frequency of suicidal thoughts. This was explored among those participants who had made a suicide attempt in the past (n = 59) and those who had experienced ideation but never attempted (n = 135). To maximise statistical power participants who endorsed any degree of past suicidal ideation were included in this analysis.[6] Those without any history of ideation (n = 82) were excluded from this analysis as the measure of suicidal cognitions in the recent past would not be relevant to them.[7]

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[6] This was determined based on the BSS-worst self-report measure (item 4 > 0).

[7] [7] Analyses were also conducted with the whole sample; the number in the suicide attempt group remained the same (n = 59) but the non-attempt group size increased to 217. The two groups were compared on measures of current mood and rumination; as per the main analyses there were no significant differences between the groups in levels of depression (U = 6449.00, p = .29), hopelessness (U = 6260.00, p = .80), suicidal ideation (U = 6454.00, p = .45), brooding $t(273)$ = -.39, p = .70, or reflection $t(271)$ =..07, p = .95. Unlike the main analysis however, these groups differed in levels of suicidal thinking (SCS) with the suicide attempters endorsing significantly more suicidal cognitions than the non-attempters, U = .7493.00, p < .05. A reduction in the average SCS score among the non-attempters must explain this finding (as the suicide attempters score has remained the same) which is not unexpected considering the inclusion of individuals with no attempt history within that group. As before, correlational analyses were conducted to examine whether brooding and reflection were associated with suicidal cognitions. Among the sample as a whole, brooding showed a small association with suicidal thoughts, $r(272)$ = .26, p < .001, as did reflection, $r(270)$ = .14, p < .05. The difference between these correlations was not significant (Z_{diff} = 1.74, p = .10) indicating that the subscales are comparably associated with SCS. These relationships were then examined across the groups. Among *non-attempters* brooding is significantly associated with suicidal cognitions ($r(214)$ = .22, p < .001), while reflection is not ($r(213)$ = .09, p = .19). In line with the main analysis however, the difference between these correlations is not significant, Z_{diff} = 1.64, p = .08. Furthermore this is line with the main finding that in both groups the reflection-SCS relationship is in the same direction as the brooding-SCS and, although only the brooding association is significant in both cases, the correlation coefficients do not differ significantly from each other. Looking specifically at the role of reflection, the relationship between reflection and suicidal cognitions were compared across the groups. As per the main results, among the non-attempt group in this analysis there is not a significant association between reflection and suicidal cognitions, $r(213)$ = .069, p = .19, and although this relationship had shown a trend towards significance among the non-attempters the difference between the groups in terms of this association is, again, not significant, Z_{diff} = 1.01, p = .31. The inclusion of the whole sample showed results that are largely comparable to those confined to participants who endorsed some history of suicidal thinking or behaviour. The only notable change was a difference between groups in SCS scores. In terms of relationships between study variables – in particular the ruminative subscales and suicidal cognitions – the associations are similar to the more restricted sample.

3.2.2.1 Rumination and current mood in groups

Before further analysis was conducted, Mann-Whitney *U* tests were used to compare the groups on measures of current symptoms. These revealed no significant differences between the two groups in depression (BDI-II), $U = 3650.00$, $p = .40$; hopelessness (BHS), $U = 3933.00$, $p = .89$; suicidal ideation (BSS screener), $U = 3850.50$, $p = .98$; or suicidal thinking (SCS), $U = 3413.00$, $p = .18$. Independent samples t-tests confirmed there were no significant differences between the groups on the rumination subscales, indicating that the groups were relatively homogeneous in terms of levels of rumination and current mood: brooding, $t(192) = .40$, $p = .69$, reflection, $t(190) = .10$, $p = .92$.

3.2.2.2 Is brooding or reflection associated with depressive or suicidal symptoms?

Correlational analyses were performed to examine relationships among the study variables. Taking the sample as a whole firstly, brooding showed a small positive correlation with suicidal thoughts (SCS)[8], $r(180) = .18$, $p < .05$, whereas the relationship between reflection and suicidal thoughts was not significant, $r(178) = .08$, $p = .28$. However comparing these correlations (Meng, Rosenthal, & Rubin, 1992; Steiger, 1980) revealed that the difference between them was not significant ($Z_{diff} = 1.15$, $p = .24$), indicating that the subscales are comparably associated with suicidal cognitions among the sample as whole – similar to the original study in which they reported was no significant difference between these associations across the combined sample.

[8] Due to criteria for inclusion requiring 'no current ideation' at the entry point of the study, the average BSS screener scores among the sample were very small (M = .27, SD = .10). Therefore to compare the groups on this factor, the SCS was used to assess the occurrence of suicidal cognitions within the previous three month period.

To explore any differences in the rumination/suicidal-thinking relationship between *suicide attempters* and *non-attempters*, correlational analyses were conducted separately by group.[9] The results of these analyses are presented in Tables 10 and 11.

Among *non-attempters* brooding is significantly associated with suicidal cognitions, while reflection is not. This is consistent with previous findings (e.g. Chan et al., 2009; O'Connor & Noyce, 2008), in that brooding seems to be more strongly related to ideation, $r(134) = .19$, $p < .05$, than reflection, $r(133) = .04$, $p = .68$, but the difference between these two correlations is not significant, $Z_{diff} = 1.48$, $p = .14$. Surrence and colleagues (2009) found that among this group neither brooding nor reflection were significantly related to ideation; however they similarly noted that although brooding appeared to be more strongly related to ideation, the difference was not significant ($Z_{diff} = 1.17$, $p = .24$).

[9] A Kolmogorov-Smirnov test was performed on the variables to examine whether the data were normally distributed; BHS, $D(182) = .18$, $p < .001$; BDI-II, $D(181) = .17$, $p < .001$; SCS, $D(180) = .15$, $p < .001$. All scales were found to be non-normally distributed therefore non-parametric tests were used.

Table 10: ***Non-attempters:*** *Correlations between study variables*

	RRS-Ref	RRS-Brd	BDI-II	BHS	SCS
Reflection (RRS-Reflection)	--				
Brooding (RRS-Brooding)	.30**	--			
Depression SXS (BDI)	-.12	.17*	--		
Hopelessness (BHS)	-.07	.10	.58**	--	
Suicidal Cognitions (SCS)	.04	.19*	.44**	.30**	--

Note: **$p < .01$; *$p < .05$

Table 11: ***Suicide Attempters:*** *Correlations between study variables*

	RRS-Ref	RRS-Brd	BDI-II	BHS	SCS
Reflection (RRS-Reflection)	--				
Brooding (RRS-Brooding)	.32*	--			
Depression SXS (BDI)	-.17	.08	--		
Hopelessness (BHS)	-.01	.12	.46**	--	
Suicidal Cognitions (SCS)	.24^{+}	.33**	.36**	.49**	--

Note: **$p < .01$; *$p < .05$, $^{+}p < .10$

Among the *suicide attempt* group (Table 11) in the present study the relationship between brooding and suicide cognitions also reached statistical significance, $r(58) = .33$, $p < .05$, and again this was not the case for reflection, $r(57) = .24$, $p = .07$. As before the relationship between reflection and suicidal cognitions was in the same direction as brooding. This indicates that two subtypes were comparably associated with suicidal cognitions in this group also, supported by the finding that two correlation coefficients were not significantly different, $Z_{diff} = .57$, $p = .57$. In contrast, the original study by Surrence and colleages (2009) found a significant association between suicidal ideation and reflection but not brooding among participants with a history of suicide attempt. However, whether or not the difference between the reflection-ideation, $r(35) =.35$, $p < .05$, and brooding-ideation, $r(35) = .24$, $p = .16$, relationships was significant was not reported. Therefore a comparison was conducted to measure the difference

between the correlation coefficients they reported in their paper and this suggested that this was not significant, $Z_{diff} = .58$, $p = .56$. Therefore the results of this investigation were consistent with their findings that reflection and brooding were comparably associated with ideation among both *suicide attempters* and *non attempters*, and the sample as a whole.

Looking specifically at the role of reflection across the groups, the paper by Surrence and colleagues highlights a finding of a significant relationship between reflection and ideation among the suicide-attempt group only. In line with this, in the present study the reflection-ideation association showed a trend toward significance, $r(57) = .24$, $p = .07$, among the *suicide attempt* group but not among the *non-attempt* group, $r(133) = .04$, $p = .68$. Despite appearing to be stronger among the *suicide attempt* group, the size of the correlation coefficients were in fact comparable, $Z_{diff} = 1.27$, $p = 0.21$. In the original paper, Surrence and colleagues did not report whether the reflection-ideation relationship among the *suicide attempt* group was significantly different to that found among the *non-attempters*. In order to compare results, analysis of the correlation coefficients reported in that paper were conducted and this suggested that the associations were not significantly different, $Z_{diff} = 1.50$, $p = .13$. This would suggest that the results of the present analysis are consistent to some degree with their findings. Reflection is not significantly associated with suicidal cognitions in the *suicide attempt* group (although it shows a trend toward that result), while it is significant in the analysis by Surrence and colleagues; however further analysis suggests that in both studies the actual difference between the groups in terms of this relationship is not statistically significant.

The conclusion of this analysis is that there is not a significant difference between reflection and brooding in terms of their relationship with suicidal cognitions. Looking

at associations between the variables across the two groups, the correlation between brooding and suicidal thinking was significant for both groups. The association was marginally stronger for the the *suicide attempt* group but it was not significantly different to that for the *non-attempters*. Similarly a comparison of the correlation coefficients for reflection and suicidal cognitions between the groups indicated they were not statistically different.

3.2.2.3 Does suicide attempt history moderate the relationship between rumination and the frequency of current suicidal cognitions?

In line with the study by Surrence and colleagues (2009) a hierarchical linear regression was conducted to assess whether brooding and reflection would interact with suicide-attempt history to predict suicidal cognitions (scores on the SCS) adjusting for symptoms of depression and hopelessness. The results of this analysis are presented in Table 12.

Step 1: Suicide-attempt history (attempt/no-attempt), depression symptoms (BDI-II), hopelessness (BHS), and brooding (RRS) and reflection (RRS) were entered together into the first block of the analysis to examine whether the ruminative subtypes predicted the occurrence of suicidal thoughts after adjusting for other symptom variables. All continuous predictor variables were centered around their means as per the recommendation of Aiken and West (1991).[10] The model was found to be significant, $F(5,183) = 10.77$, $p < .0005$, accounting for 22.7% of variance in scores on the suicide cognitions scale. At this step, depression scores (BDI) were significant predictors of current suicidal cognitions, $t(183) = 3.74$, $p < .001$, as were scores on the reflection subscale, $t(183) = 2.21$, $p < .05$. A history of suicide attempts did not significantly predict current suicidal cognitions, $t(183) = 1.92$, $p < .06$; although a p value of .056

[10] The dependent variable SCS was centered around its mean also and analyses were run with both the centered and original scores with no difference in results. Therefore results presented are based on original scores.

suggests a possible association. In earlier analysis brooding showed a small but significant association with suicide cognitions among the sample as a whole.

Table 12: Hierarchical multiple regression analyses predicting suicidal cognitions from brooding, reflection, and suicide-attempt history.

Step 1	**B**	**SE B**	**β**	***p***	**t**
Constant	32.95	0.99		.000	33.33
Suicide attempt	3.47	1.81	.13^{+}	.056	1.92
Depression symptoms	0.47	0.13	.31*	.000	3.74
Hopelessness	0.35	0.22	.13	.117	1.58
Brooding	0.49	0.30	.11	.103	1.64
Reflection	0.62	0.28	.15*	.029	2.21
Step 2	**B**	**SE B**	**β**	***p***	**t**
Constant	32.97	0.98		.000	33.51
Suicide attempt	3.62	1.80	.13*	.046	2.01
Depression symptoms	0.47	0.13	.32**	.000	3.77
Hopelessness	0.35	0.22	.13	.129	1.53
Brooding	-0.56	0.89	-.13	.448	.77
Reflection	-0.18	0.84	-.05	.298	1.04
Brooding x Attempt	0.83	0.65	.26	.203	1.28
Reflection x Attempt	0.56	0.57	.20	.325	.99

Note: R^2 = .23 for Step 1; ΔR^2_{adj} = .02 for Step 2, *p < .05, ^{+}p < .10

However the results presented here indicate that the relationship between brooding and ideation is no longer significant when other factors, such as depressive symptoms and hopelessness, are accounted for. The finding that reflection is a significant predictor of ideation is noteworthy considering that it did not correlate significantly with this measure in earlier analysis. This suggests that reflection is related to suicidal ideation

when other potentially confounding factors such as depression, brooding, and attempt-history, are held at constant.

Step 2. To examine whether a history of suicide attempt might moderate the relationship between suicidal ideation and the rumination subscales, the interactions of attempt history with reflection and brooding were entered into the second block of the analysis. The model remained significant, $F(7,181) = 8.30$, $p < .0005$. The R-square value in this case was 24.3, indicating that the addition of these interaction variables resulted in a very small increase (< 2%) in the amount of variation in levels of suicide cognitions that could be accounted for by the overall model. This change was not significant, $F(2,181) = 2.18$, $p = .11$. Depressive symptoms remain significant predictors of suicidal ideation, $t(181) = 3.77$, $p < .001$ and a history of attempt becomes a significant predictor, $t(181) = 2.01$, $p < .05$. The predictive effect of reflection alone however is no longer significant, $t(181) = 1.04$, $p = .23$.

Unlike the findings of Surrence and colleagues (2009) the interaction of attempt-history with reflection does not predict scores on the Suicide Cognitions Scale, $t(181) = .99$, $p = .33$ (similarly the interaction of brooding and attempt-history was not a significant predictor of suicidal cognitions in this sample, $t(181) = 1.28$, $p = .20$). This reflects the earlier results of a between-groups comparison on the reflection measure; the *suicide attempt* group and the *non-attempt* group do not differ significantly in terms of the relationship between reflection and suicidal cognitions. However the results of step 1 of this analysis provide some support for what was found by Surrence and colleagues (2009) in that reflection predicts ideation when symptoms of depression are controlled for, suggesting that, perhaps due to its links to depression, brooding is only related to ideation through depressive symptoms whereas reflection may be more independent of depression.

3.3 Aim 3: Reflection and modes of processing

3.3.1 Does reflection relate to more depression under certain circumstances?

3.3.1.1 Tests for the moderating effects of autobiographical memory specificity and trait mindfulness on the reflection-depression relationship

This stage of the analysis sought to explore the relationship between reflection and depression across levels of memory specificity (AMT) and mindfulness (FFMQ) and to examine the conditions under which reflection might predict higher levels of depressive symptoms. The aim was therefore to investigate whether memory specificity and mindfulness and their interaction moderated the relationship between reflection (RRS subscale) and depression symptoms (BDI-II).

3.3.1.2 Correlational analyses

Correlational analyses were conducted to explore the bivariate interrelationships among the study variables. These indicated that there was a small positive association between reflection and specific memories recalled, $r(273) = .19$, $p < .01$. The relationship between reflection and mindfulness showed a trend toward significance in a negative direction, $r(270) = -.11$, $p = .07$. There was no significant relationship between the other two variables, mindfulness and memory specificity, $r(273) = .09$, $p = .13$.

Although the correlations between the variables were low, before further analysis was conducted the three predictors (reflection, memory specificity and mindfulness) which constituted the interaction term were mean-centered to mitigate the potential threat of multicollinearity (as per Aiken & West, 1991).[11] Using a $p < .001$ criterion for Mahalanobis distance no multivariate outliers among the cases were found.

[11] On inspection BD I-II did not meet assumptions of normality and had one outlier which was converted to next highest score plus one. All other scales met assumptions of normality although there was one outlier on the FFMQ measure so this value was converted to next highest score plus one.

3.3.1.3 Moderation: Regression analyses

To test the hypothesis that the reflection and depression relationship would be moderated by autobiographical memory specificity and trait mindfulness, a multiple regression was performed with depressive symptoms as the dependent variable and reflection, memory specificity, and mindfulness as the independent variables. To maximise statistical power, these analyses were conducted with the sample as a whole; consequently, differences between attempters and non-attempters were not investigated.

In the first step of the analysis the three independent variables were entered, followed in the second step by the three, two-way interactions between the predictor variables. In the final step the three-way interaction was entered into the regression. Table 13 presents the results of this analysis.

Step 1. Reflection, numbers of specific memories recalled, and levels of mindfulness were entered together into the first block of the analysis. The model was found to be significant, $F(3,266) = 11.80$, $p < .001$, accounting for 11.7% of variance in the BDI-II. At this step, higher levels of mindfulness showed a significant negative relationship with less depressive symptoms, $\beta = -.30$, $p < .001$, and depression showed a negative relationship at trend level with both reflection, $\beta = -.10$, $p = .08$, and number of specific memories recalled, $\beta = -.11$, $p = .06$.

Step 2. Three, two-way interactions between the predictor variables were entered into the second block of the analysis. The model remained significant, $F(6,263) = 6.48$, $p < .001$, accounting for 12.8% variation in BDI-II scores, indicating that the addition of these interaction variables resulted in a very small increase (< 2%) in the amount of variation in levels of depressive symptoms that could be accounted for by this model. This change was not significant, $F(3,263) = 1.08$, $p = .36$. None of the individual two-way interactions emerged as significant predictors of the BDI-II scores

Step 3. A three-way interaction between the three predictor variables was entered into the final block of the analysis. The total model was found to be significant, $F(7,262) = 6.18$, $p < .001$, accounting for 14.2% of variance in BDI-II scores. The addition of the three-way interaction therefore resulted in a small increase in the amount of variation in BDI-II scores that could be accounted for by the overall model; this change was significant, $F(1,262) = 4.12$, $p < .05$. As before, none of the three two-way interactions emerged as significant; however these lower order observations were qualified by a significant three-way interaction between reflection, memory specificity and mindfulness, $t(262) = 2.03$, $p < .05$, predicting BDI-II scores.

Multiple regression analyses predicting depression symptoms from reflection, memory specificity and mindfulness.

	Step 1 $R^2 = .12$						**Step 2** $R^2 = .13$, $\Delta R^2_{adj} = .011$					**Step 3** $R^2 = .14$, ΔR^2_{adj} =		
	B	SE *B*	β	*t*	*p*		B	SE *B*	β	*t*	*p*	B	SE *B*	β
	8.26	.46		18.17	.000		8.26	0.47		17.45	.000	8.35	0.47	
	-0.26	0.15	-0.10^{+}	-1.75	.081		-0.23	0.15	-.09	-1.56	.121	-0.30	0.15	-.12^{+}
ries	-0.21	0.11	-0.11^{+}	-1.90	.058		-0.21	0.11	-.11^{+}	-1.93	.055	-0.18	0.11	-.09
	-0.15	0.03	-0.30**	-5.16	.000		-0.15	0.03	-.29**	-4.89	.000	-0.16	0.03	-.33**
·ies							-0.04	0.04	-.06	-0.97	.333	-0.03	0.04	-.05
							-0.01	0.01	-.07	-1.18	.240	-0.01	0.01	-.07
ries							0.01	0.00	.04	0.68	.494	0.00	0.01	.00
·ies												0.01	0.00	.13*

)01; *$p < .05$, $^{+}p < .10$

The significant three-way interaction was interpreted graphically using procedures advised by Dawson and Richter (2006). In order to probe the nature of the conditional relationship, the regression of depression scores on reflection was examined at specific values of the moderators; the simple slopes for predicted BDI values were plotted at low and high values of the interaction variables, one standard deviation above and below the mean in each case (see Figure 2). The significance of the simple slopes was calculated using the t-test defined by Preacher, Curran, and Bauer (2006), and showed that all four slopes were significant at the $p < .05$ level. The results of these tests are presented in Table 14. The simple slopes t-tests and the corresponding plot showed a pattern that seemed to follow the hypothesised interaction: higher reflection was associated with less depression in all circumstances except when both memory specificity and mindfulness were low (see Figure 2). In the case where scores on memory specificity and mindfulness were both low, more reflection was associated with increased depressive symptoms.

Table 14: T-tests for significance of simple slopes in 3-way interaction

Slope	*t*	*p*
1	-2.04*	.04
2	-2.48*	.01
3	-2.37*	.02
4	2.07*	.04

*Note: **1**=high memory specificity/high mindfulness, **2**=high memory specificity/low mindfulness, **3**=low memory specificity/high mindfulness, **4**=low memory specificity/low mindfulness; *p < .05*

3.3.1.4 Slope difference tests of three-way interactions

Dawson and Richter's (2006) slope difference tests were used to assess this inference empirically and the results are displayed in Table 15. Looking at the differences between the slope for low memory specificity and mindfulness (slope 4) and each of the

other three slopes, two are significant and one is approaching significance. Specifically, there is a significant difference between the slope for low mindfulness/low memory specificity and slope 2 (high memory specificity/low mindfulness: $t = -2.03$, $p < .05$), and also slope 3 (low memory specificity/high mindfulness: $t = -2.23$, $p < .05$). The difference between slope 1 (high memory specificity/high mindfulness) and slope 4 was not significant ($t = -1.668$, $p = .10$). The finding of no differences between slopes 1 and 4 is surprising considering they represent the extremes of each grouping. However on comparing predicted BDI scores at levels of high reflection, the high-high and low-low group show the biggest difference: high reflection relates to lowest levels of depression among those high in mindfulness and high in memory specificity. High reflection relates to highest levels of depression symptoms among those low on both measures. This test of slope differences indicates that among those individuals less specific and less mindful, levels of depression increase with levels of reflection. This pattern is not evident among the rest of the sample, which show a decrease in depressive symptoms with increased reflection. This provides support for the hypothesis that reflection is protective against depression unless people have low memory specificity and low mindfulness.

Figure 2. Regression slopes for the three-way interaction: Predicted BDI total score as a function of reflection, memory specificity, and mindfulness.

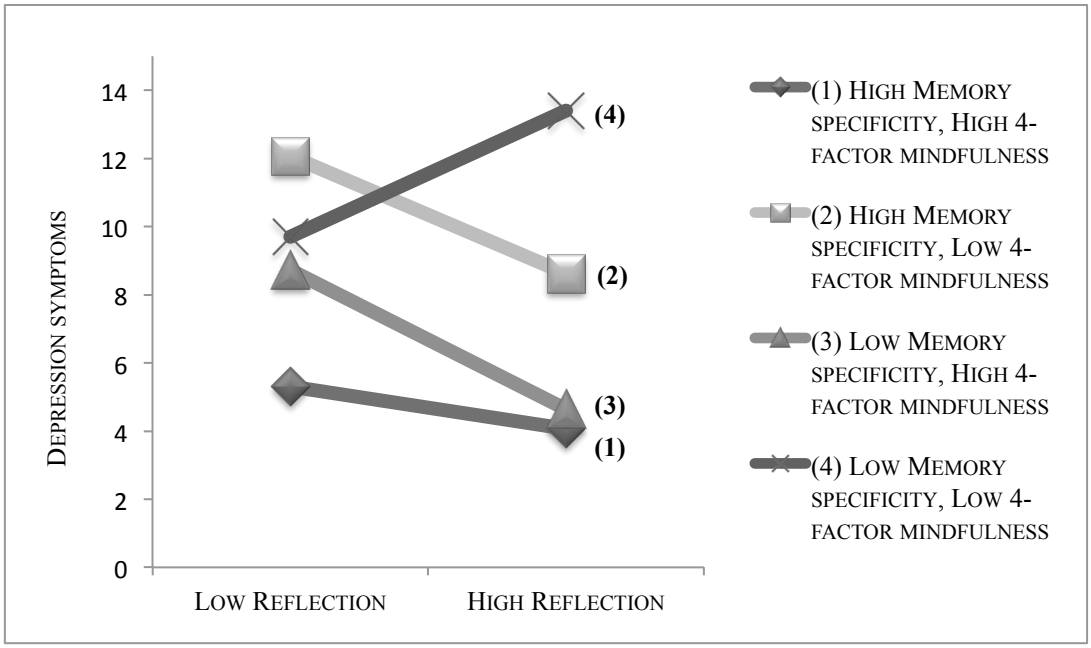


Table 15: T-tests for differences between regression slopes plotted in Figure 2

Pairs of slopes	*t*	*P*
1 and 2	.60	.55
1 and 3	.78	.44
1 and 4	-1.67	.09
2 and 3	.20	.84
2 and 4	-2.03*	.04
3 and 4	-2.23*	.03

*Note: **1**=high memory specificity/high mindfulness, **2**=high memory specificity/high mindfulness, **3**=low memory specificity/low mindfulness, **4**/low memory specificity-low mindfulness; *p < .05*

3.3.2 Do these variables moderate the relationship between brooding and depression?

An identical regression analysis was performed, with reflection replaced by brooding as an individual predictor and in all of the interactions. The model as a whole was significant, $F(7,264) = 4.88$, $p < .001$. Step 3 of the model was examined to determine

whether there was any indication, with the inclusion of the interaction variable, of a moderating effect of the mindfulness and memory specificity on the relationship between brooding and depressive symptoms. This revealed that brooding did not significantly predict BDI-II scores, $t(264) = .05$, $p = .96$, and the interaction of the three predictor variables was not significant, $t(264) = .43$, $p = .67$. This analysis suggested that moderating effects of mindfulness and memory specificity were only relevant in the case of the reflection-depression relationship.

4 DISCUSSION

Based on well-established theories of depression and depressive relapse, rumination is known to be a central factor in the emergence and recurrence of this disorder (Nolen-Hoeksema, 1991). Following the identification of ruminative subtypes (Fresco et al., 2002; Treynor et al., 2003) research has mainly implicated a passive, brooding form of rumination in the exacerbation and recurrence of depressive symptoms. Another subtype within this measure, described as reflective pondering, captures the tendency to actively seek a solution to one's problems. There is less evidence of this response style prospectively predicting depressive symptoms; however a number of studies show it to be associated with increased concurrent depression (Fresco et al., 2002; Joorman et al., 2006; Roberts et al., 1998; Siegle et al., 2004). Thus it has been suggested that while reflective pondering may lead to short term emotional distress it may be adaptive in the long run because it leads to successful problem-solving (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Treynor et al., 2003). It has also been proposed that the inconsistency regarding reflection's associations with depressive symptoms in test-retest analysis may relate to confounding factors that impact the efficacy of reflective attempts to understand and resolve self-discrepancies. Primarily it has been suggested that in the presence of low mood or unsuccessful problem resolution, reflection may turn into or become contaminated with more maladaptive rumination processes such as brooding, resulting in its association with depression concurrently (Joorman et al., 2006; Miranda & Nolen-Hoeksema., 2007; Takano & Tanno, 2009). Recent research in the suicidality literature however, suggests this explanation cannot fully account for the maladaptive outcomes of reflection. Studies of the association between rumination and suicide

ideation show direct concurrent and prospective relationships between reflection and ideation unaccounted for by brooding, hopelessness or symptoms of depression (Miranda and Nolen-Hoeksema., 2007; Surrence, Miranda, Marroquin, & Chan, 2009).

As is the case in depression research, the role of rumination in suicidality has garnered strong support. It is considered to be one of a number of dysfunctional cognitive processes that facilitate the formation and maintenance of suicidal ideation (Morrison & O'Connor, 2003; O'Connor, 2011; Williams, 2001). However these theories suggest that it is the negative, unremitting brooding type of rumination which might facilitate the increased sense of hopelessness and perceived burdensomeness central to the suicidal crisis. Therefore the findings for reflection in the studies mentioned above are a divergence from the typical conceptualisation in the literature. They draw further attention to the need for better clarity regarding this subtype, a subtype that has undergone less scrutiny on account of its conceptualisation as a benign process and the neutral tone of the scale items. Exploring dispositional factors which may confound the adaptiveness of the reflective pondering process, thus discerning more about the quality or effectiveness of the problem-solving taking place, was one of the central objectives of this study.

4.1 Individual differences in modes of processing

It has been suggested that rather than having an inherently negative tone, the reflection measure captures a tendency to purposefully turn inward in an attempt to make sense of one's experience (Treynor et al., 2003). The neutral quality of the items might suggest that the reflective pondering experience varies significantly from person to person depending on what this process uncovers; differences in cognitive and emotional processing of self-related information may therefore be relevant to the outcomes of

reflection. For example, do we know how easily individuals might find it to disengage from this process once they have begun? Also, the endorsement of an item like 'I write down what I am thinking and analyze it', does not gauge whether this takes place from a decentered standpoint wherein there is an awareness of the process taking place. Is an individual objective in their analysis or do they judge and react critically to the content that is revealed? As the reflection measure does not capture or take account of these factors, the introduction to this study proposed that an analysis of whether reflection is a helpful or harmful process should include an investigation of the effect of these types of individual differences. This was in line with important developments in research on self-focused attention and thinking that have expanded the focal point of interest from the tone of this attention (positive or negative) to include aspects such as form and mode. This investigation was exploratory in nature; based on prominent aspects of self-focused attention research, two particular factors known to have important consequences for the effect of self-focus on mood were proposed as having the potential to create the conditions under which reflection would show maladaptive outcomes. For this reason we proceeded to enter a three-way interaction term rather than just exploring a series of two-way interactions. The suggestion of the significance of both factors centred on the idea of reflection as 'cognitive problem-solving'; each of the factors were proposed to contribute a different element to a model of how this problem-solving cognitive process might relate to negative outcomes. While overgeneral, abstract processing might account for unsuccessful problem resolution, it was proposed that this alone may not lead directly to increased negative affect. It was suggested however that together with a non-mindful, reactive and judgemental cognitive disposition, a failure to make sense of or gain insight into one's experience could result in a heightened sense of dejection and a further decrease in mood.

In particular, it was suggested that a recent theory of depression and suicidality – which highlights fundamental differences between two modes of mind – might have important implications for reflection. This theory identifies the *doing* mode and the *being* as functionally distinct. While a doing or discrepancy-based mode of processing is considered an unhelpful response to low mood, a being or experiential mode of processing is seen as a more adaptive form of self-focus, and a less problematic way of orientating one's attention (Segal et al., 2002). Mindfulness-based cognitive therapy research has drawn attention to the inflexible and persistent way in which the former, discrepancy-based problem-solving approach is typically employed. It is the inability to let go or withdraw from this process when it fails to generate any understanding or solution that can heighten feelings of despair. Furthermore this research has identified the heightened attention paid to thoughts and feelings which is inherent in the doing mode, and the potential difficulty with this over-engaged type of self-focus. In particular, over-identification with thoughts wherein there is no awareness of them as activity of the mind rather than reality can be especially problematic in the context of self-critical, depressive and suicidal cognitions (Williams et al., 2006). It was suggested earlier in this study, that in a sense reflection is a form of the doing and while it may be more benign than other forms such as brooding it is possible that it may also be susceptible to many of the problematic elements of this mode of mind. To our knowledge however the distinction highlighted by *mode of mind* theory had not previously been explored with regards to the widely-used RRS measure.

A review of literature in the field of self-focused thinking highlighted another important hypothesis which was thought to have relevance for the way reflective pondering might operate. This centred on Watkins' theory of abstract versus concrete forms of self-focused thinking, and the negative effects of higher order, abstract thinking on mood

and problem-solving. While it had been suggested previously that reflection may be an abstract process (Surrence et al., 2009), the items on the measure itself can not necessarily be characterized as such. In the introduction however, it was proposed that in some circumstances this type of pondering could be employed in an over-general, unspecific way and that in the context of an abstract mode of processing it would be likely that the effectiveness of this problem-solving strategy might be hindered. If individuals attempt to draw on past experiences to make sense of their current mood, a lack of ability for specific recall was highlighted as problematic. Furthermore, studies of the effect of overgenerality on problem-solving more broadly suggested that it would hinder the generation of specific helpful strategies to overcome their difficulties. Such conditions have already been shown to impede social problem-solving capabilities (Williams et al., 2005) and the present study set out to investigate whether they may have similar implications for an individual's attempt to resolve perceived discrepancies in their inner world.

A model was therefore proposed that would take account of individual trait processing styles, as measured by levels of mindfulness and memory specificity. It was proposed that these might give a more accurate impression of the process taking place during reflective pondering. The objective was to attempt to gauge the form and valence of the process taking place, in order to explain contradictory findings and the ambiguity around this measure. As well as the potential for the reflection strategy to be unsuccessful in yielding helpful solutions, it was hypothesized that under certain circumstances the process may become a catalyst for more suffering.

4.2 The effect of these modes of processing

The analysis took account of the effect of the interaction between these proposed moderating conditions on the relationship between reflection and depression. It was

proposed that, jointly, these two factors may represent the conditions under which reflection relates to more negative mood symptoms. A tendency for over-general memory retrieval might hamper the problem-solving process increasing the likelihood that earnest attempts to gain insight would trigger a sense of dejection, and dispositional mindfulness – as a measure of the tendency to let go and disengage from this process when it is fruitless – would also capture an individual's propensity to react negatively to the material generated during this self-analysis process, a response likely to drive their mood even lower. Looking at the effect of these proposed moderators together, it was of interest as to whether reflection would relate to more or less depression at different levels of these variables, and the combined effect of these moderators was found to be significant. The corresponding plot of the regression slopes demonstrated that this interaction effect was particularly relevant among participants scoring one standard deviation below the mean on both moderator variables. As levels of reflection increase among this group so too do symptoms of depression. For those participants low in both mindfulness and memory specificity it seems that reflective pondering is a maladaptive response style in the context of depression. Within the other three groupings the direction of the association between reflection and depression is negative, indicating reflection is not problematic in these cases. Furthermore mindfulness or memory specificity alone do not alter the direction of the relationship between reflection and depression, suggesting that the likely default direction of the relationship is negative. Three of the four groupings show this association indicating that, in general, more reflection relates to less depressive symptoms. This is line with previous research attributing adaptive qualities to the reflective subtype. It is within one cohort of the sample however, that reflection shows a distinctly different association. This finding points to the susceptibility of the process to become problematic under

certain circumstances. As hypothesized, it seems abstract or over-general processing in combination with a tendency to react less mindfully represents a condition under which turning inward to reflect on one's inner experience may result in the worsening of mood and intensification of distress.

4.3 Theoretical implication for depression

While the 'reflection' construct has been empirically linked to more psychological well-being and fewer symptoms (Treynor et al., 2003; Burwell & Shirk, 2007; Armey et al., 2009), theoretically it has also been hypothesized to have important functional qualities. Theories of self-regulation posit that reflective thinking is a critical component in creating an awareness of discrepancies between an individual's current state and their goal, thus allowing them to direct their behaviour toward reducing such discrepancies by the formation and pursuance of goals. To this end it may facilitate a level of self-awareness that prompts an individual to make positive changes in their life; certainly it seems like a less deleterious way to focus ones attention than the passive, brooding rumination characteristic of depression. Yet the results of this study undoubtedly support the idea that reflection can – under particular circumstances – relate to more depressive symptoms. The results of this study challenge another aspect of the original conceptualization. By drawing on important developments in self-attention research, these findings highlight the vulnerability of the reflective process to confounding factors in the form of individual modes of processing. How might this help explain past research, which has shown the process to be associated with depressive symptoms concurrently but not over time? The suggestion has been that perhaps reflection may lead to problem-resolution over time and a reduction in symptoms as a result. The concurrent associations it has shown with depression in previous studies have generally been explained in terms of the impact of brooding on reflective pondering, wherein

reflection becomes contaminated with brooding thoughts. However the results of the current study may expand our understanding of how these associations may form. Perhaps the problematic context revealed by the analysis (low memory specificity and low mindfulness) mirrors the cognitive state of individuals at the time of low mood and can explain why reflective problem-solving becomes a faulty process with maladaptive outcomes.

We have suggested that this model may represent the kind of unhelpful processing styles prevalent during low mood and that while the low mood activates this problem-solving response style, it also hinders it.

From another theoretical perspective these findings are somewhat unsurprising. There has been a large body of research conducted in the area of self-focus that has identified two functionally distinct forms of self-attention with equally divergent consequences on mood. Teasdale (1999) identified an experiential form of self-awareness, considered an adaptive way to orientate one's attention. In contrast, analytical or ruminative attention – focused on one's symptoms and the causes of these symptoms – was recognized as maladaptive. Brooding very clearly falls into the latter category; however the classification of reflection is somewhat overlooked in the self-focused attention literature. As a conceptual, thought-based mode of processing it may seem logical to categorise it as analytical rather than experiential. However even exponents of the superiority of experiential awareness acknowledge that according to cognitive models of depression, long-term treatment effects rely on "knowing what one is thinking and feeling" (Watkins & Teasdale, 2004) suggesting that there are elements of the reflective process that can yield some psychological benefits. Also the emphasis within this subscale is on understanding rather than evaluation and it is the evaluative element of rumination that has been identified as central to its maladaptiveness. That is not to say

that the RRS reflection subscale captures an experiential mode of focus, however the suggestion is that it may not be quite so "distinct and incompatible" with this processing style of thinking as compared with other forms of ruminative thinking (Teasdale, 1999). Rather than being distinct from this mode of mind, the results of this study reveal that it may be employed at different levels of mindful processing, and depending on another dispositional processing style this may have important consequences for reflections association with low mood.

The other processing style in question was proposed as significant in terms of the 'effectiveness' of the reflection taking place. It relates to the particular vulnerability of depression sufferers for over-general, abstract processing – a dispositional factor that is exacerbated at a time of low mood. Previous research has indicated that the effectiveness of interpersonal problem-solving following a low-mood induction deteriorates significantly among individuals exhibiting low memory specificity (Williams et al., 2005). Could this processing style moderate cognitive problem-solving in the same way? The suggestion is that in the context of low mood the effectiveness of reflection may diminish among those with low specificity. Williams and colleagues (2005) suggested that individuals who struggle to generate specific memories have less event-specific knowledge from the past to help them resolve current discrepancies. Furthermore, they point out that without this confirmation of having dealt effectively with difficulties in the past their belief that current difficulties are surmountable may also be diminished. In such circumstances persisting with a problem-solving approach to inner experience may serve only to highlight a perceived lack of solutions rather than contributing to goal-clarification and constructive action. Attempting but not succeeding to generate solutions is certainly not useful, but it is the response to this failure that may be especially maladaptive. It is for this reason that dispositional levels of mindfulness,

as measured by the five-factor mindfulness questionnaire, are of relevance. This measure captures the reactivity, judgement and over-engagement in thoughts often activated in the context of low mood. The cognitive reactivity theory states that low mood may result in the reinstatement of highly negative self-referent thoughts and judgements (Teasdale, 1988). Such attitudes may exacerbate any sense of despair generated by an inability to gain insight or reduce discrepancies, and this sense of despair may hinder any willingness to relinquish the problem-solving effort and refocus attention. The finding that, among individuals with reduced memory specificity, low mindfulness moderates the relationship between reflection and mood supports the idea that reflection may be an unhelpful response in the context of a depressive episode wherein emotional reactivity, self-critical thinking, negative biases, and overgeneral, abstract thinking are all aroused. Therefore these two factors together comprise a condition wherein reflective thinking is maladaptive.

This study highlights two critical factors in determining the adaptiveness of reflection: low mindfulness and low memory specificity, neither of which can be taken account of in the RRS measure alone. Over-general and unmindful processing are both prominent features of the depressed mind, their significance as moderating factors provides a context for previous findings of concurrent associations between reflection and depressive symptoms.

4.3.1 The 'observing' facet of the FFMQ

The finding that reflection is susceptible to the prevailing mode of processing is interesting in light of findings related to the measure of mindfulness itself. One of the five facets of this measure was omitted because previous research suggested it was not reliable across samples and did not load onto the five-factor structure as well as other measures (Baer et al., 2004, 2006). In particular it was shown to operate differently in

samples without meditation experience such that it was unexpectedly associated with a number of maladaptive psychological processes. An element of this *observing* factor includes noticing or attending to internal experiences such as cognitions and emotions (Baer et al., 2008), and the researchers suggested that this type of close inward focus and observation may have maladaptive consequences if not carried out with a mindful disposition. In other words, the tendency to observe without a decentered openness to, and acceptance of internal experience is a not an adaptive strategy. The reflection measure in this study showed a small positive correlation with this subscale but negative correlations with the other facets of mindfulness. Past research indicating the importance of other elements of mindfulness in the context of internal observation may add some support to the proposition that rather than being inherently adaptive or maladaptive, it may be an individual's present processing mode that determines the correlates of reflection.

4.4 Rationale for this investigation

Having established a theoretical model of how and when reflection may operate as a maladaptive process it is worth returning to the original motivation for this study – the divergent findings in the suicidality literature. It was the ambiguous role of reflection in this context that highlighted the lack of clarity about the functionality and outcomes of this subtype more generally. Can the model that has been presented shed any light on these previous discrepancies and the results of the replications conducted in this study? Recalling what was proposed in the earlier studies and what was found in the current investigation, there are two important aspects worth exploring in terms of this model.

4.4.1 Reflection and suicidal cognitions

Previous studies found reflection to predict, both concurrently (Surrence et al., 2009) and prospectively (Miranda & Nolen-Hoeksema, 2007), the most severe negative

cognitions seen in the depressive disorder. This was particularly interesting considering many previous studies have found it to be unrelated to depression. Our replication supported the proposed maladaptive outcomes of this thinking style by finding it to predict concurrent suicidal cognitions in this sample also. As depressive symptoms were accounted for in the analysis, the findings highlight the distinct quality of this relationship which, unlike brooding, is not contingent on either symptoms of depression or hopelessness. Therefore we cannot explain the relationship between reflection and suicidality by an extension of the reflection-depression model presented above. However, what the model of reflection presented in the section above might suggest is that this measure captures a process rather than content and as such it is susceptible to failure. A theory of suicidality already present in the literature proposes this idea of a failed problem-solving response leading to, and perpetuating suicidal ideation (Williams et al., 2011). We propose that this process may be well represented by the items on the reflection subscale. The mode of mind theory of suicidal processes may elucidate how the demonstrated effect of the moderators is still instructive in terms of reflection's potential role.

4.4.2 The 'mode of mind' hypothesis and suicidality

The activation of a doing mode of mind in which individuals monitor and attempt to reduce a perceived discrepancy (such as feeling rejected), without the implementation of any action, has been identified as problematic (Williams et al., 2011). In this case the discrepancy may remain salient while the problem-solving process or *doing* mode persists. The futility of this doing response is particularly pertinent in the presence of suicidal cognitions. When ideations arise, an individual may react with this active mode of mind in an attempt to 'resolve' these painful thoughts and it is these efforts that may cause them to persist (Williams et al., 2011). The theory proposed by Williams and

colleagues (2011) is that it is problem-solving attempts that perpetuate suicidal cognitions and without the activation of such a response these cognitions might pass by themselves. It seems that reflection, however well-intentioned, might be just the kind of problem-solving response that could perpetuate this cycle. Persistence in attempting to solve a perceived problem is a core feature of the measure and in the context of this model the finding in the present study that reflection predicts the frequency of suicidal cognitions is less surprising. The findings, here and in previous studies, that reflection emerges as a predictor when depressive symptoms are controlled for suggest that unlike brooding, the association between reflection and ideation is not maintained by a heightened focus on depressive symptoms. Instead it may represent a failed attempt to make sense of, or generate a concrete solution to emotional distress. An inability to relinquish efforts to make sense of these desperate cognitions may result in the formation of a direct relationship between reflection and suicidal thoughts, independent of symptoms of depression or hopelessness; as the 'cognitive problem-solving' persists, so too do the suicidal thoughts.

The results of the three-way interaction analysis in the current study may provide support for this model that focuses on unconstructive problem-solving as facilitating the perpetuation of suicidal ideation. As mentioned, the reflective pondering measure may capture a tendency to respond to negative cognitions with attempts to make sense of them; the finding in the current study of a particularly maladaptive condition in terms of this measure may provide an insight into the problematic elements of this response. The moderating condition presented here indicates that it is a processing mode – one that is abstract and overgeneral, as well as judgmental and reactive – that makes this, at times, a problematic response style. During or at the beginning of a suicidal crisis, amidst feelings of hopelessness or defeat, the cognitive reactivity theory would suggest that

overgeneral thinking would be likely to be aroused along with heightened self-judgment and emotional reactivity. This sort of cognitive and emotional landscape may create conditions in which reflection would lead to the continuation rather than resolution of suicidal thoughts and the results of this study support the idea that reflective thinking could be moderated in this way.

4.4.3 Reflection and suicide attempt history

4.4.3.1 Do suicide-attempters engage in less reflection?

One aspect of this study involved comparing levels of reflection among the sample when divided according to their past history of suicidality. It was a replication of the study by Crane and colleagues (2007) who found that individuals with an attempt history have significantly reduced levels of reflection when compared with those with no suicidal history. Crane and colleagues (2007) suggested that the lower levels of reflection among those individuals with a suicide attempt history may be representative of the problem-solving deficits among this group. Our findings suggest that within this sample, levels of reflection do not distinguish between those who engage in suicidal behaviour and those who do not. However the explanation by the previous researchers that their finding might relate to a lack of problem-solving skills may have some relevance to what has been demonstrated in this study in relation to the reflection measure. Although our study suggests that previous suicide attempters may not engage in less reflection, it is possible that the 'cognitive problem-solving' that they do engage in is unsuccessful as the moderating factors this study has drawn attention to are likely to be prevalent among individuals with a severe history of suicidal depression. Furthermore, if it is, as the mode of mind theory might suggest, that the presence of suicidal cognitions activates a maladaptive form of reflective problem-solving then this might help to explain why Crane and colleagues (2007) did not find elevated levels of

this response style among the suicidal ideators or suicide attempters in their study. Perhaps, as that sample was recovered – therefore suicidal thoughts were less likely to be present – a problem-solving mode of mind was not activated by the presence of unwanted, distressing cognitions needing to be 'resolved'.

Further, while they found the *never-suicidal* group to have the highest levels of reflection, what this study has shown is that the content and tone of this reflection may not be fixed and correspondingly an individual's score on the measure may not indicate the type of reflection being engaged in or the outcome for their psychological well-being.

4.4.3.2 Is the reflection-ideation association relevant only among suicide-attempters?

A factor that emerged in this investigation was that the association between reflection and suicidal cognitions was evident across the combined sample of participants. This did not support the proposition by the Surrence and colleagues (2009) that this association was only relevant among individuals with a history of suicide attempt but there are sample issues that may account for these differences.

It is possible that the make-up of the overall sample in the study by Surrence and colleagues, as well as the criteria employed in the division of their sample into the groups *suicide attempters* and *non-attempters*, may at least in part account for the difference between the results of the two studies. In their investigation of the reflection-ideation relationship, Surrence and colleagues (2009) employed a sample of ninety-six college undergraduates. Thirty-seven of the total sample had a history of suicide attempt and were allocated to the attempters group. The non-attempters comprised individuals reporting current ideation (n = 16) as well as those reporting no ideation (n = 43). There is no indication as to whether those in the non-attempt group who do not report current

ideation have ever experienced thoughts like this in the past. It is possible that they may have had no history of either depression or suicidality. The two groups in the original study by Surrence and colleagues are therefore potentially very distinct in terms of psychological vulnerability. This suggestion is supported by their finding of significant differences between the groups on depression, hopelessness, and current ideation – with the suicide attempters scoring higher in all cases. This stands in contrast to the two groups in the current study which did not differ on these measures. Furthermore the *non-attempters* in the present study were not equivalent to those in the original study as the present group had an acute clinical history of suicidal depression and only those with an experience of past ideation were included. Although they differ with regards to engaging in suicidal behaviour, the two groups in this group were more homogenous in terms of their depressive history and experience of suicidal ideation than those in the original paper. Thus our findings may suggest that the association between reflection and suicidal cognitions is relevant across the range of suicidality in the context of Major Depressive Disorder.

A possible reason for the discrepancy between the two studies has already been proposed in relation to differences in the clinical severity of the samples. However there is also a model of suicidal behaviour which indicates that no difference between attempters and non-attempters on a measure such as this is unsurprising: it relates to the stage of the suicidal crisis at which these sorts of cognitive processes are implicated.

4.4.4 Integrated Motivational-Volitional model

The Integrated Motivational-Volitional (IMV) model of suicide specifies the various factors involved in the build-up to an act of suicidal behaviour. It proposes that ruminative processes are critical in the development of feelings of entrapment which in

turn lead to the formation of ideation and intent (O'Connor, 2011). However the transition from thinking about suicide to acting on those thoughts involves behavioural rather than cognitive factors. Suicide attempters in this sense do not represent a more 'severe' end of the ideation spectrum: instead, their behaviour indicates an impulse and will to act not present among the other group. Within this model, levels of ruminative processing play a role early on – at the motivational phase of suicidal behavior (O'Connor, 2011). Following a threat to the self, an individual's processing style will moderate the effect of this experience, resulting in more or less feelings of entrapment. Although feelings of entrapment are critical early on in the build-up to behaviour, according to this model the prevalence of ruminative, repetitive thinking should not differentiate between those who make a suicide attempt and those who do not (O'Connor, 2011). In fact, this model proposes that although ruminative processes exacerbate a sense of entrapment, other "motivational moderators" are necessary to facilitate the transition from entrapment to suicidal ideation. Therefore without an imminent 'threat to self', levels of rumination are unlikely to distinguish those vulnerable to ideation from those without any experience of suicidality. Furthermore this model suggests that the prevalence of ruminative processes alone should not set apart those individuals likely to act on their suicidal ideations from those who do not. This is in line with the results of this study which found no differences with regard to either brooding or reflection in terms of differentiating between participants based on suicide attempt history. It supports the earlier proposal that the relationship between reflection and suicidal cognitions should be relevant across the whole sample and not moderated by suicide attempt history.

While this model presents a rationale as to why these processes in isolation should not differentiate between those who ideate and those who do not, it does still implicate

rumination as central in the progression toward a sense of entrapment. In detailing the role of repetitive, ruminative thinking, O'Connor (2011) singles out brooding as being particularly problematic:

"Although the individual is thinking about the cause(s) of their distress, they are not actively seeking to solve the problem; rather, they are dwelling on their distress, comparing their situation unfavourably with the outcome they desire."

[as cited in O'Connor, Platt & Gordon (2011) page 190]

This idea that brooding heightens a sense of entrapment by amplifying the feeling that a particular situation is inescapable was proposed originally in the Arrested Flight model of suicide (Williams, 2001). Central to this theory is the idea that passive brooding, on low mood or a sense of defeat, exacerbates the mood, heightens a sense of hopelessness and leads to ideation. Conversely, the reflective subtype is not referred to explicitly in either of these prominent models of suicide. Perhaps this is explainable by the fact that the role played by rumination in models of suicide centre around its capacity to exacerbate a sense of defeat when it arises; brooding thoughts such as 'what am I doing to deserve this' presuppose a preceding negative state, while items on the reflection scale such as 'I write down what I am thinking and analyze it' do not reference the presence of a desperate sense of defeat or very depressed mood. This may account for the fact that it is not a focus of these theories of suicide. Considering our findings in light of these models however, it is reasonable to propose that the reflective process may have a role to play, but is it compatible with the current theories regarding the role of rumination in suicidality?

We have already presented a model, based around the mode of mind theory, which can account for why a reflective style of thinking might be dangerous once suicidal ideations are present, but can reflection be just as problematic earlier in this process

also? Can it lead to the sense of entrapment identified as critical at this stage, and thus lead to the formation of these highly negative self-referent thoughts? What this study has demonstrated is that the 'neutral' nature of this subscale may leave it sensitive to moderation by other variables. If measured when an individual is symptom-free, it does not capture how reflection may operate following failure, or in the presence of a threat to self. However as form of self-focus with the potential to identify perceived discrepancies, it seems quite likely that following a defeat it could become as problematic as brooding in perpetuating a sense of despair. The *mode of mind* theory extends to a broader conceptualization of the development of suicidal ideation wherein this role of reflection is conceivable. When confronted with distressing thoughts or emotions an individual may adopt a problem-solving approach in order to reduce the discrepancy between their current situation and a desired state. If and when this process fails, the discrepancy becomes more salient, activating brooding or avoidant processes in response (Williams et al., 2011). So as well as a potential maladaptive role once suicidal cognitions have emerged, perhaps reflection may also play a formative role at the early stages of ideation developing. The toxic, maladaptive brooding rumination may be resorted to when an individual's reflective strategy (e.g. 'go away by myself and think about why I feel this way') does nothing to improve their situation. The *mode of mind* hypothesis identifies an initial stage of doing activated in response to distress, and this process may be well represented by the items on the reflection subscale. In and of itself it may not be harmful; however the consequences if this problem-solving fails may highlight why this thinking style may be problematic in the context of a mind predisposed to suicidality or in the presence of suicidal cognitions.

4.5 Overall contribution of this model of reflection

This investigation of the reflection subtype expands our understanding of the measure in three main ways.

Firstly it explores the measure in terms of developments in self-focused attention research – wherein the debate has moved past whether or not this type of focus is maladaptive toward an understanding of the different forms it can take and the important consequences of these. This is the first time that these progressions in our understanding of the conditions under which self-focused thinking is problematic have been applied to this measure. This study presents a model of reflection which firstly identifies that the neutral quality of the items on this measure leaves it vulnerable to moderation by prevailing modes of processing, and secondly identifies the modes of processing that are problematic in this respect. The findings that the combined effect of low mindfulness and reduced memory specificity aligns this measure with higher depression scores may explain previous findings of a concurrent relationship with depression. Previous research has shown that depressed individuals are abstract and over-general in their thinking and that latent negative self-beliefs and biases emerge during low mood; in this way the moderating condition in this study may mirror the typical processing during an episode of depression. Explicating in terms of the reflection measure why this type of thinking in situations of low mood, or the presence of ideation, is problematic. This may explicate why reflective thinking – as conceptualised by the Ruminative Response Scale – in situations of low mood, or the presence of ideation, is problematic.

The second important contribution of this study was its support for the idea that reflection plays a problematic role in the perpetuation of suicidal cognitions. These associations were found among a clinical sample thereby building on the previous work

in this area, which investigated these associations among student and community samples. The participants in this study were 'in remission' however which allowed for an examination of correlates of suicidality that weren't obscured by more prominent or proximal factors such as negative life-events, severe depressive symptoms or feelings of entrapment and despair. Because of the cross-sectional nature of the study there is no basis for proposing that reflection is involved in the formation of these thoughts. However this measure may capture the tendency for a particularly unconstructive response to these cognitions once they have surfaced. Past research on suicidal cognitions has largely centered on the content of these thoughts but more recently some researchers have shifted focus onto how individuals respond to them when they occur. The *mode of mind* theory of suicidality elucidates two particularly deleterious responses to negative thoughts. One involves thought suppression or avoidance and the other is a *doing* response aimed at resolving the negative state. In line with this theory a measure has been developed to capture the chronic tendency to suppress suicidal thoughts (Hepburn et al., 2009). The reflection subscale measures a tendency for active, problem-focused processing, and perhaps in the context of suicidal cognitions this captures the type of *doing mode* response hypothesized as problematic.

Such a proposition is plausible given what this study has shown about the potential for the process to fail or lead to more symptoms; as a response to suicidal cognitions, the initiation of this active, problem-solving response may backfire and facilitate their persistence.

Finally, bringing these two aspects of the investigation together, the present study extends previous research into suicidality and reflection by revealing the potential for the reflective process to fail or lead to more symptoms. Grounded in recent theories of self-focused attention and thinking, the current study highlights the significance of

individual processing modes – identifying a particular combination of moderating factors – that could account for previous contradictory findings related to the reflection measure.

4.6 Strengths, limitations and future research

The initial findings in this study provide further support for the original conceptualization of the Ruminative Response Scale, wherein brooding is associated with cognitive vulnerability to depression and reflection is not. A particular strength of the study is that it extends the empirical knowledge of the relationship between reflection and suicidality by conducting replications of two studies and supporting in part the findings of one. The analysis supports the results of Surrence and colleagues' (2009) paper which suggested a direct association between reflection and ideation. They found this to be relevant only among 'suicide attempters' and put forward the argument that reflection may build direct associations with ideation over time and that these may be particularly salient among individuals with an attempt history (Surrence et al., 2009). This is based in part on the differential activation theory of suicidality which suggests suicidal thoughts are more chronically accessible among former suicide attempters (Lau et al., 2004; Surrence et al., 2009). However the findings of the present study, wherein the association was significant regardless of attempt history, qualify the suggestion by Surrence and colleagues (2009) in an important way. By conducting this study among a group all of whom have a severe clinical history of depression and suicidality we can propose that suicidal behaviour may not be critical in building this association. Both the suicide attempters and non-attempters in this study had experienced suicidal thoughts in the past, often during numerous episodes, suggesting that it may be repeated exposure to suicidal ideation rather than behaviour that builds associations with reflection. A second strength of the study sample is the fact the participants are in remission from

depression concurrently. During the time of a depressive or suicidal crisis, more palpable associations or triggers may supersede reflection in terms of accounting for the occurrence of suicidal thoughts. While the study sample is outside of episode, there is an opportunity to investigate precipitating cognitive vulnerabilities that may not be detectable at the time of severe ideation or attempt.

There is however an important limitation related to the study sample that has implications for the generalizability of the findings. Individuals were recruited to the study based on their depressive history and because of the nature of the clinical trial within which this study took place it was necessary that they met criteria for a minimum of three previous episodes of major depression. One of these episodes was to have occurred at some point within the last five years and another within the last two years – indicating a high vulnerability to future relapse during the follow-up period. As a result of this criterion, the present sample had quite a severe profile in terms chronicity and relapse within the depressive disorder. The fact that they have experienced a relapsing pattern indicates that associations between mood and certain cognitive processes such as rumination might be particularly well-formed. For example, the relationship between reflection and depressive symptoms among such a sample may be stronger, or at least differ to that of individuals with only on or two episodes which may have occurred further in the past. This study has drawn attention to an important aspect of the reflection-depression relationship: overgeneral memory and low mindfulness together. Low mindfulness, capturing self-judgment and reactivity to inner experiences, and overgeneral memory are both cognitive biases characteristic of depression that could be expected to have formed strong associations with other cognitive features of depression over time. The finding of an interaction between reflection, memory specificity, and mindfulness in this sample that are recovered and outside of an episode may indicate the

strength of the associations among a group with a severe and recurrent history of depression. It is possible that such an interaction would not be detected among a sample that had a shorter, less acute history of this disorder. If however, this less severe sample were to be currently depressed the relevant biases may be present therefore allowing an examination of this sort of interaction – perhaps the finding of this interaction effect among a sample of *recovered* depression sufferers is limited to a sample with a recurrent, and recent history of depression.

Along with the criterion related to the number and recency of depressive episodes, individuals with a history of suicidality were actively recruited as this element of the depressive disorder was of particular interest. The fact that the majority of the sample had experienced suicidality within a past episode indicates the severity of their depressive history and limits the generalizability of the findings further. However research involving a sample such as this may also add to the suicidality literature in another way. Surrence and colleagues (2009) suggest that the relationship they found between reflection and ideation among suicide attempters – independent of depression and hopelessness – may represent a "relatively automatic link between problem solving or suicide". They propose that "among former suicide attempters, these suicidal thoughts are more chronically accessible" and therefore among this group, reflection may build direct associations with ideation over time. The results of the current study did not support the idea that a suicide attempt history was a key aspect of the reflection-ideation association; however the present findings may support the basis of this argument which relates to sensitization theories of depression and suicide (Lau et al., 2004). Surrence et al (2009) suggest that attempt history contributes to a stronger reflection-ideation association because suicide attempters represent a group who hold a stronger association with suicidal thoughts – more accessible and less dependent on

other factors such as life-events or cognitive factors such as hopelessness. By replicating their finding of a reflection-ideation association among a group with a history of severe and recurrent episodes of depression – more than five in the majority of cases – this study may offer support for the supposition that a direct reflection-ideation pathway develops over time while suggesting that it is the repeated experience with suicidality rather than a suicide attempt per se that builds this association.

A limitation of the findings is the cross-sectional nature of the data. As a result no suggestions of causality were made in terms of relationship between reflective thinking and suicidal thoughts. The emphasis was placed instead on the implications of a reflective type of response *when* these thoughts have emerged. However a previous study found that reflection longitudinally predicts suicidal ideation suggesting that at some level there may be a causal link between higher levels of reflective thinking and more suicidal cognitions (Miranda & Nolen-Hoeksema, 2007; Surrence et al., 2009). Furthermore, the longitudinal study by Miranda and Nolen-Hoeksema (2007) that reported the prospective effect of reflection on ideation also found that it was not mediated by depression; this is consistent with the findings of the present study and the results of the study being replicated. The mode of mind theory helped elucidate how a reflective response could potentially be implicated in the development of these cognitions as well as their maintenance and persistence once they have surfaced.

Surrence and colleagues (2009), the researchers of the replicated study, suggested that future research should explore individual differences that determine whether reflection is helpful or harmful. This was the premise of the second stage of the current investigation. It is the first study, to our knowledge, to investigate the types of cognitive processing styles that might moderate the adaptiveness or benignity of reflection. Previous research has made reference to discrepant findings in relation to reflection's

association with psychological symptoms concurrently and across time; however there has been little investigation of the factors that might moderate this. The specific condition identified as problematic in terms of reflective pondering is consistent with recent research into different forms of self-awareness and self-focused thinking. By identifying the significance of these theoretical developments for the RRS reflection subscale, this study serves to update our understanding of the construct being measured.

Again the analysis conducted is cross-sectional in nature and does not inform us as to whether these dispositional factors affect whether reflection leads to more depression over time. Future investigations would therefore benefit from going beyond self-report methodology. Marraquin and colleagues (2010), in their study challenging the conceptualization of reflection as an active process, make reference to the experimental manipulations of mood and ruminative processing used by Nolen-Hoeksema, Watkins and others. They suggest experiments such as these 'may help disentangle the effects of state and trait rumination and better address causality'. Although the present findings suggests that reflection may be moderated by low memory specificity and abstract processing, it is quite possible that other theories and experiments related to abstract rumination might all apply to reflection – however the inclusion of this measure is not explicitly indicated in those studies.

Watkins and colleagues, for example, conducted rumination inductions with depressed patients (Watkins, 2004; Watkins & Teasdale, 2001), inducing an analytical focus or an experiential focus using rumination stimuli developed by Nolen-Hoeksema, Lyubomirsky, and colleagues previously (Lyubomirsky & Nolen-Hoeksema, 1993a; 1995). In the analytical focus condition, patients were instructed to 'think about the causes, meanings, and consequences of their feelings'. Although it is not made explicit, it seems that this prompt – akin to the items on the brooding subscale – is inducing this

passive, evaluative form of rumination rather than reflective pondering. The experiential focus induction involved participants being instructed to 'think about the concrete experience of…' some suggested stimuli. This is not analogous to reflective pondering either and therefore it would be of interest to replicate these kinds of experiments using items from the reflection scale specifically. Experimental studies such as these have shown that a more experiential focus improves social problem-solving and reduces engagement in global negative self-judgments among depressed participants (Watkins & Moulds, 2005; Rimes & Watkins, 2005). Using induction stimuli based on the reflection measure would present an opportunity to test empirically whether this subtype of rumination corresponds more with an analytical or experiential mode of self-focus in terms of outcomes for psychological adjustment. The investigation by Moberly and Watkins (2006) for example, studying the effect of processing mode prior to failure on the subsequent response to stressful event, may provide a model for testing the hypothesis of this thesis empirically. The results of their study highlight the interaction between processing mode and trait rumination whereby higher levels of rumination relate to increased emotional vulnerability among individuals whose prior processing mode was abstract and evaluative. Models of suicide highlight the critical role of emotional response to, and emotional recovery from perceived failure or loss in terms of the development of feelings of entrapment and hopelessness (Williams, 2001; O'Connor, 2011). Conducting experiments similar to those described above, using the reflection as the response style under investigation, may be a useful means of further investigating how the reflective process may relate to these early stages of the suicidal crisis.

Finally, previous findings generally support the distinction between a more adaptive pondering and less adaptive brooding but they still suggest it is difficult to separate

depressive symptoms, reflection and brooding, in sample of clinically depressed patients. In this study there was a moderate correlation between brooding and reflection, indicating that they do increase with each other. Therefore if brooding increases (as it is likely to during depression) then it becomes another negative context (like low mood, negative thoughts or suicidal ideation) in which reflection can become toxic. Reflection in the absence of brooding and depressive symptoms might indeed be generally adaptive – making it possible to identify moderating factors – but among a depressed sample these factors may perpetuate each other, blurring the distinction between the maladaptive and adaptive outcomes of reflective pondering. Therefore the findings of this study are limited to a sample of currently well individuals.

4.7 Clinical implications

In his IMV model of suicide, O'Connor (2011) focuses on risk factors for suicide but also on the many cognitive and social factors contributing to the development of suicidal crises. There is a suggestion here and in previous models that there is room for intervention along the path to suicide through the strengthening of social problem-solving and the development of increased positivity and hopefulness about the future. In terms of rumination, the focus of treatment interventions has generally involved a reduction in brooding. This passive, self-evaluating process is evidently maladaptive and targeting it is critical. While brooding by its very nature is negative and contingent on depressive symptoms, this study has suggested that reflection's association with suicidal ideation is direct and not mood-dependent. Reflection may represent a response style to suicidal cognitions, rather than a central factor in their development. Therefore reducing this response style may be important in limiting the persistence and recurrence of these thoughts. This may represent an important treatment target in terms of the reduction of suicidal thoughts once they have arisen. Teaching individuals to disengage

from a problem-solving focus may be helpful in stemming the persistence of these thoughts. MBCT has recently been adapted to target suicidal depression; these findings support the theory that reductions in the doing mode of mind that are cultivated throughout this treatment will be an important element of the efficacy of this treatment in dealing with suicidality.

Psychotherapeutic treatments for depression often rely on increasing reflection in order to pursue an understanding of one's motivations, goals, and emotional patterns. In line with this, developing reflective insight can be the first focus of therapy and is considered an important clinical tool. Knowing that repetitive, self-focused thinking is characteristic of depressed patients, how helpful is it to encourage these individuals to turn inwards when it may be a process from which they find it difficult to disengage?

MBCT, as a treatment targeted specifically at individuals vulnerable to relapse, takes a somewhat different approach to the development of self-awareness. Rather than developing a foundation in reflective insight, the focus is on building present-centered attention, self-acceptance, and meta-cognitive awareness (Segal et al., 2002). Rather than trying to formulate an understanding of one's experience conceptually, this process facilitates the emergence of insight through open awareness. The success of MBCT in preventing relapse highlights the importance of the form self-focused attention takes, and in line with the findings of this study, suggests that the context of mindful processing is important in determining the quality of reflection. Research on the efficacy of mindfulness-based treatments has highlighted the benefit of a self-focus that is less linguistic and more open and experiential.

However reflective thinking is a central tenet of human experience – one that is habitual and automatic – and the present study suggests that in the main, this conceptual or linguistic processing of experience is not problematic. The findings support the idea that

reflective techniques, in the context of the psychotherapeutic process for example, can be a useful tool for generating solutions or insight; however the ways in which they are employed are of particular importance. If an individual is supported to be concrete and specific in the creation of solutions, while mindful of their reactions to the thoughts and emotions being reflected on, this study would suggest that there would be no increase symptoms among individuals engaging in such a process. However for vulnerable individuals – perhaps those already showing symptoms of depression – this might be a risky means of attempting to resolve low mood, a process they are likely to struggle to disengage from, and therefore an unconstructive time to engage in the reflective process. The over-general and reactive mode likely to be activated at such a time would potentially result in a reflective process that evoked self-critical judgement without revealing any constructive course of action, or leading to meaningful change.

4.8 Conclusion

Reflection involves a searching through past intra- and inter-personal events for an explanation of current experience. This suggests an approach that in and of itself is relatively benign, with the potential to provide some helpful insight. The Response Style conceptualization of reflection that was applied in this study is that of a 'cognitive problem-solving' process, not necessarily critical or judgmental and seemingly more active than other forms of self-focused thinking (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Treynor et al., 2003). However the present study highlights two types of processing styles that together moderate the outcome of reflection on mood and may have important implications for how we conceptualize this construct in future studies. The main premise of the study was that despite the conceptualization attributed to the reflection construct, the measure alone tells us little about the quality of the 'problem-solving' or reflective pondering taking place. In theory, if reflection were just

an epistemological curiosity then there may be no reason to suggest it should be problematic. However reflective thinking does not just involve an open curiosity; it seeks understanding and meaning with the intention of resolving some difficulty or unwanted situation. Applied as a linguistic, conceptually-based means of 'solving' sadness the question is, how likely is it that such an approach will result in the generation of an actual solution? If this analytical-type search is exacerbated by an abstract processing style then the likelihood of solutions being reached reduces further. Added to this, a reactive, judgemental response to what is unearthed during reflection and this response has the potential to be not merely unhelpful, but harmful. This is relevant not just in the context of depressive symptoms; the presence of painful, intolerable suicidal cognitions may result in the activation of this 'problem-solving' process and what we can now see is the potential impact of an inability to let go or step back from this process. The results of this study suggest that reflection cannot be overlooked as a benign process, particularly in context of suicidal depression. Reflective thinking is positively correlated with the occurrence of suicidal cognitions among participants for whom suicidality is a recurring symptom within the depressive disorder. While brooding thoughts, structurally similar in their negative content, seem to be intrinsically linked to depressive or suicidal thoughts, the relationship of reflection to these cognitions is different. It may operate at a level in which its relationship with ideation can subsist outside the context of low mood, meaning that it may have a particular significant role to play in the maintenance and persistence of these suicidal cognitions.

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APPENDICES

Staying Well Trial Documents

1. Phone-screening Questionnaire
2. Consent Form
3. Demographics Questionnaire

Questionnaires and Measures

4. SCID interview for Major Depressive Disorder (assessing recovery)
5. SCID Screening Questionnaire
6. Beck Scale for Suicide Ideation-Worst ever
7. The Suicide Attempt and Self-Injury Inventory
8. Suicidal Cognition Scale
9. Ruminative Response Scale
10. Five-Factor Mindfulness Scale
11. Dysfunctional Attitudes Scale
12. Acceptance and Avoidance Questionnaire
13. Autobiographical Memory Test Instructions
14. Autobiographical Memory Test Word Lists