**Rumination in adolescent depression
The impact on intrusive memories**

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Contents of Volume 1

Rumination in adolescent depression: the impact on intrusive memories

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The current study was conducted in conjunction with another project also submitted in partial fulfilment of the degree of Doctorate in Clinical Psychology in 2014. Screening procedures were carried out jointly with the other researcher but the experimental phases were conducted separately with separate participants and with different research questions being posed in each.

Contents

List of tables

List of figures

Abstract

Rumination, a type of repetitive negative thinking, is implicated in the onset and maintenance of adult and youth depression (Nolen-Hoeksema et al., 2008). Whilst experimental studies, key to establishing causality, have shown rumination (in comparison to alternative processing styles including concrete thinking) has a negative effect on cognitive maintaining factors amongst depressed and dysphoric adults, there is a paucity of research with adolescents. Vivid, intrusive memories of autobiographical events are often reported by depressed adults (Brewin et al., 1999). Depressed young people also experience intrusive memories, however, there is little research exploring the nature of these (Meiser-Stedman et al., 2012). Inducing a ruminative processing mode in comparison to distraction resulted in undergraduates rating an intrusive memory as more distressing (Williams & Moulds, 2010). This study aimed to explore the nature of intrusive memories provided by a dysphoric adolescent sample. It then aimed to determine if analytical rumination, in comparison to concrete thinking, impacted on the experience of intrusive memories. High dysphoric adolescents were recruited from a secondary school. They completed the Intrusive Memory Interview and experimental inductions were used to compare the effect of processing styles (rumination vs concrete) on how participants emotionally evaluated their memory.

Intrusive memories were experienced frequently in our sample; roughly 1.5 times a week. The memories mainly concerned death/ injury/ illness to a close other, or interpersonal problems. They were experienced as vivid and distressing, with a considerable sense of reliving. The emotions most experienced in relation to the memories were sadness and anger. No significant differences were found regarding memory evaluation between participants in the rumination and concrete conditions. Reasons for these non-significant results are discussed and the need for further research is highlighted. This study is one of very few to explore the experience of intrusive memories in adolescent depression. This study points to the importance of considering intrusive memories in cases of youth depression, and supports the exploration of new avenues regarding the treatment of depression when intrusive memories are present.

1. Introduction

1.1. Overview

Rumination can be defined as a cognitive processing style which focuses an individual's attention on his or her depressive symptoms and the possible causes and consequences of those symptoms (Nolen-Hoeksema 1987, 1991). For example "Why do I always feel like this? ... Why can't I pull myself together?"….and so on. Rumination is a passive style of thinking where individuals focus on the causes and consequences of their depression but do nothing to change their circumstances (Nolen-Hoeksema, Morrow & Fredrickson, 1993).

Rumination has been implicated in the onset and maintenance of depression in both adults and young people (Nolen-Hoeksema, Wisco & Lyubomirsky, 2008). Rumination, when compared to distraction has experimentally been shown to have a negative effect on mood (Nolen-Hoeksema et al, 2008), and when compared to a concrete processing mode, to have a negative effect on other cognitive aspects of depression, including the experience of negative intrusive memories (Williams & Moulds 2010), in dysphoric adult samples. These experimental studies have started to reveal what it is about rumination that results in the maintenance of depressive symptoms in dysphoric samples. While self-focus appears to lower mood in the short term, an analytical mode of processing seems to maintain a number of cognitive factors known to be important in depression in the long term. There is, however, very little research into the effect of experimentally inducing rumination and alternative thinking styles in young people.

The experience of intrusive memories is one cognitive aspect of depression found to be involved in the maintenance of depression. There is very little research into the experience of intrusive memories in young people and none that looks at the impact of rumination on this experience. This study therefore aims to explore the nature of the intrusive memories provided by a dysphoric adolescent sample and then aims to use experimental inductions to see if inducing rumination affects participants distress and sadness ratings of their negative intrusive memory, from pre to post induction, in comparison to participants induced to think in a concrete, experiential way. This

design allows exploration of the mechanism by which rumination may have a negative effect.

This chapter will review the relevant literature in relation to styles of cognitive processing in adult and youth depression, the experience of intrusive memories in depression, and how intrusive memory experience may be affected by rumination.

1.2 Depression in young people

Depression is common in young people and represents a "significant, persistent, and recurrent public health problem" (Weisz, McCarty and Valeri, 2006, p132). It has a negative impact on social and school functioning, is associated with severe family distress, and results in significant use of mental health services (Angold et al 1998; Clarke, DeBar & Lewinsohn, 2003). It is a recurrent disorder which will often continue into adulthood (Rao et al., 1995). The scope, impact, and long-term nature of youth depression highlight the need for effective treatment (Weisz et al., 2006).

      1.2.1 Presentation. The essential feature of a major depressive episode according to the Diagnostic Statistical Manual 5th edition (DSM-V) (American Psychiatric Association, 2013) (ICD-10 classification criteria are broadly similar[1]) is a period of at least two weeks duration where there is either depressed mood, or the loss of interest or pleasure in nearly all activities. The depressed mood in a Major Depressive episode (MDE) must last during waking hours and is often described by the person as sad, hopeless or discouraged. Loss of interest in activities is almost always reported with individuals describing "not caring anymore" or not feeling any enjoyment in activities that were previously experienced as pleasurable (DSM-V).

A number of associated features can occur alongside low mood in depression, at least four of which are required for a diagnosis of a MDE. Changes in appetite and/or weight are common when depressed with many individuals reporting that they have

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[1] The International Statistical Classification of Diseases and Related Health Problems, tenth revision (ICD-10), published by the World Health Organisation (WHO), is widely used in the UK and elsewhere. Its classification of depression is broadly similar to the DSM-V and thus will not be repeated here.

little appetite, although some experience increased appetite. Sleep disturbance is also frequently reported. The type experienced most often is insomnia, but hypersomnia (over-sleeping) is sometimes described. Psychomotor changes experienced during a MDE can include agitation (e.g. pacing, hand wringing) or retardation (e.g. slowed speech, thinking, and body movements). Decreased energy including tiredness and fatigue is common in depressed individuals who report that even the smallest tasks require substantial effort. Feelings of worthlessness or guilt tend to be associated with a MDE and may include negative, unrealistic evaluations of one's worth, or guilty preoccupations and ruminations over past failings. Recurrent thoughts of death and/or suicidal ideation, plans or attempts can be further features of a MDE. Motivations for suicide when depressed may include "a desire to give up in the face of perceived insurmountable obstacles, an intense wish to end what is perceived as an unending and excruciatingly painful emotional state, an inability to foresee any enjoyment in life, or the wish to not be a burden to others" (DSM-V, p164).

For a diagnosis of a MDE, the episode must additionally be accompanied by clinically significant distress and/or impairment in social, occupational, or other important areas of functioning (DSM-V). Where impairment is severe, individuals may be unable to perform basic self-care (e.g. feeding and clothing) or to maintain minimal personal hygiene.

The clinical and diagnostic features of depression are generally similar in adults and young people. The DSM-V, however, additionally states that in children and adolescents, depression can be defined by irritable rather than depressed mood. In terms of weight loss as a symptom of a MDE, the DSM-V further notes that failure to make expected gains should be considered in children.

Despite the extra guidance provided by the DSM-V to help identify depression in young people, there is concern that episodes of youth depression may be missed due to the "prominence of irritability, mood reactivity, and fluctuating symptoms" (Thapar, Collishaw, Pine, & Thapar, 2012, p1057).

Research does suggest some slight differences in the picture of a MDE between children, adolescents, and adults. Drawing on this research the DSM-V notes that

symptoms such as hypersomnia and hyperphagia are more likely in younger individuals, whereas melancholic symptoms and psychomotor disturbances are more common in older individuals. Carlson and Kashani (1988) studied 4 depressed groups across the age span of childhood to adulthood and found symptoms of depressed mood, diminished concentration, insomnia, and suicidal ideation to occur with similar frequency across the developmental span. Anhedonia, hopelessness, psychomotor retardation, and delusions increased with age whereas depressed appearance, low self-esteem, and somatic complaints decreased with age. In other research higher rates of suicidal behaviour have been reported among depressed adolescents, particularly female adolescents, compared to depressed adults (see Lewinsohn, Petit, Joiner & Seeley, 2003; Carlson & Kashani, 1988).

1.2.2 Prevalence and Epidemiology. Depression is present in about 2.8% of children and 5.6% of adolescents (Costello, Erkanli, & Angold, 2006). First onset of depression often occurs between the ages of 14 to 19 years and the life time prevalence for mood disorders by the end of adolescence is estimated to be as high as 25% (Kessler, Avenevoli, & Ries Merikangas, 2001). The dramatic rise in prevalence with the transition from childhood through adolescence appears primarily due to the large increase of depression rates in girls post puberty. Before puberty, boys and girls are at equal risk for depression, whereas after the onset of puberty, the rate of depression is about twice as high in girls (Brent & Birmaher, 2002).

It is important to try and understand why this dramatic rise in depression occurs with the transition pre to post puberty as this may provide clues about the factors that cause and maintain adolescent depression and thus potential areas to target via interventions. A number of theories have been put forward to explain why girls are more likely than boys to develop depression post puberty. Explanations range from those concerned with hormonal changes in females (e.g. Brooks-Gunn & Warren, 1989), to those focusing on psychosocial factors and response styles, which may differ between the genders, during the adolescent transition period.

Cyranowski, Frank, Young and Shear (2000) outline an interesting theoretical model to explain the adolescent onset of the gender differences in depression, incorporating a number of explanatory factors. They present their model as one of "correlated

consequences" in which a number of combined factors trigger the onset of a depressive episode. In addition to the relevance of hormonal differences, one factor they highlight to explain the increased prevalence of depression in females is the role of limited coping abilities (in comparison to males) in response to negative life events (which adolescent females report more of than adolescent males; e.g. Larsen & Ham, 1993), particularly interpersonal events. This model indicates that the way adolescents respond to and cope with stressors, particularly interpersonal ones, can contribute to the likelihood of them developing depression. Coping styles include the way that people think about their circumstances. The association of thinking styles with depression is supported by the fact that females (who are more likely to experience depression) evidence a more ruminative style of thinking and coping when distressed, in contrast to males' more active or distracting responses (Nolen-Hoeksema et al., 1993). The importance of engaging in different thinking styles in response to adverse life events and circumstances is a key focus of this study and is considered in detail in later sections.

1.2.3 Co-morbidity. The majority of people who experience depression have at least one co-morbid psychiatric disorder at some point in their lives (Rohde, Lewinsohn, & Seeley, 1991). The most common psychiatric disorders co-morbid with depression in adults are anxiety disorders (e.g. Sartorius, Üstün, Lecrubier & Wittchen, 1996). Before children reach puberty, depression occurs more frequently alongside other mental health disorders, primarily anxiety disorders, disruptive behaviour disorders and attention-deficit disorders (Angold & Costello, 1993). In adolescents, depression is similarly often associated with anxiety disorders, disruptive behaviour disorders, and attention-deficit disorders, but also substance-related disorders, and eating disorders (DSM-V). Ford, Goodman, & Meltzer (2003) found that two thirds of adolescents with depression have at least one co-morbid disorder and 10-15% has two or more co-morbidities.

1.2.4 Risk and resilience factors. The more understanding we have of factors that increase and decrease an individual's likelihood of developing depression, the more clues we have about potentially useful areas to target prevention and intervention initiatives.

One of the most well researched and significant risk factors in youth depression is having a parent with a history of depression. This is found to increase a child's risk of a depressive episode by a factor of 2 to 4 (Beardslee, Versage & Gladstone, 1998) and is likely to be due to genetic and environmental factors.

Research has increasingly shown that it is the interaction of certain genetic and environmental factors that represent a risk of developing psychiatric disorders including depression (Caspi & Moffit, 2006). Environmental factors found to be relevant and which may be even more so in those at high genetic risk (Hariri et al., 2002), include chronic illnesses and stressful life events such as the loss of a friend, parent or sibling (Birmaher et al., 1996). Chronic, severe stressors that affect relationships seem most important (Thapar et al., 2012) such as parent-child discord, abuse, and neglect (Brent & Birmaher, 2002).

In terms of resilience, individual factors that are found to protect against the development of depression in high-risk adolescents include inherited factors and high intelligence. Social competence is a skill found to protect adolescent children of depressed mothers from psychopathology (Conrad & Hammen 1993). Other findings also highlight the protective effects of good quality interpersonal relationships (Thapar et al., 2012). Other potentially modifiable factors found to protect against the development of depression in high-risk adolescents include emotion-regulation capacities, coping mechanisms, and thinking styles (Brennan, Le Brocque, & Hammen, 2003; Collishaw et al., 2007; Silk et al., 2007; Pargas, Brennan, Hammen & Le Brocque, 2010). In terms of emotional regulation, low levels of negative emotionality, high levels of positive emotionality, and/or the ability to effectively regulate emotions are found to contribute to resilience among children at risk for depression (Masten, 2004). Efforts to emotionally regulate are influenced by people's thinking styles (the way in which individuals encode and construe information around them; Thompson, 1994), further highlighting the importance of thinking styles in youth depression.

    1.2.5 Outcomes and treatment. In the absence of treatment, a major depressive episode lasts an average of eight months (Brent & Birmaher, 2002). The risk of recurrence is high, approximately 40 percent at two years and 72 percent at

five years (Birmaher et al., 1996). The long term and recurrent nature of the disorder highlights the importance of developing effective treatments.

Current NICE (2005) recommended first line treatments for moderate to severe depression in young people include Cognitive Behavioural Therapy (CBT) and Interpersonal Psychotherapy (IPT). Both these psychological treatments focus on at least some of the risk/resiliency factors described above where the depressed individual has the potential to change such factors or their experience of them. In terms of medication, NICE has advised that selective serotonin reuptake inhibitors (SSRIs) should not be prescribed to depressed adolescents without a concurrent specific psychological treatment.

CBT for depression is based on Beck's (1976) cognitive theory of depression. In CBT patients learn to increase pleasurable activities, acquire skills to improve interpersonal effectiveness, and identify and modify dysfunctional and self-defeating patterns of cognition that can lead to depressed mood (Brent and Birmaher, 2002).

Interpersonal Psychotherapy was developed by Klerman (1984) and is a well-established treatment for adult depression (Mufson and Fairbanks, 1996). Mufson and colleagues adapted IPT for adolescents (IPT-A) with major depression. In IPT-A adolescents learn to cope with interpersonal difficulties such as loss of relationships, discord, and role transition that are often associated with depression (Brent and Birmaher, 2002).

Despite the evidence for CBT and IPT, in their meta-analysis of youth depression treatment trials Weisz et al., (2006) found the mean effect of psychotherapy to be 0.34, a small to medium effect. This indicates that treatments for youth depression lag significantly behind those for other youth conditions. The meta-analysis also revealed that the beneficial effects of current treatments did not endure for more than a few months post treatment. Furthermore, while data for CBT says it is likely to be effective in adolescents with mild depression, it is not consistently effective for those with more severe depression (Thapar et al., 2012). And although it might be hoped that adding a psychological therapy to medication treatment may increase treatment effectiveness, Dubicka et al's. (2010) meta-analysis found no significant additional

benefit for CBT when combined with antidepressant medication. This lack of benefit was in terms of depressive symptoms, suicidality, and global improvement in the short and longer term.

Research has also indicated that non cognitive treatments for youth depression are as robust as cognitive treatments (Weisz et al., 2006). This is in line with adult research (e.g. Hollon, 2000; Jacobson et al., 1996, 2001) which has found that non-cognitive behavioural activation strategies are not improved upon by adding treatment components with a cognitive focus. This suggests effective treatment for youth depression may not require directly altering cognitions, despite this being one of the key aspects of CBT.

Increasingly research is suggesting that the mechanisms by which current depression treatments for young people, including CBT, can work may not be fully understood, and the treatment effects may be modest and not maintained in the longer term. One potential way to improve treatments for a psychological disorder is to identify maintenance mechanisms and target these in treatment (Clark, 1999). This has led some to suggest that shifting focus from *content* to *process* of thoughts may be useful (Harvey, Mansell, Watkins & Shafran, 2004), which is consistent with what we know about the importance of thinking styles in youth depression. One such thinking style that has received increased attention in recent years is rumination. Rumination has been identified as a maladaptive cognitive processing style that is causally implicated in the onset and maintenance of depression (Nolen-Hoeksema et al., 2008).

1.3 Cognitive processing

1.3.1 Repetitive thinking. Repetitive thought (RT) is defined as the "process of thinking attentively, repetitively or frequently about one's self and one's world" (Segerstrom, Tsao, Alden & Shortridge, 2003, p909). All individuals regularly engage in RT (Harvey et al., 2004), with examples including worry, reflection, rumination, problem solving, and emotional processing.

RT can have both helpful and unhelpful consequences (Watkins, 2008). For example, as will be discussed in detail later, some forms of RT about symptoms and upsetting

events can help people come to terms with these (Watkins, 2008; e.g. Tedeschi & Calhoun, 2004) whereas other forms of RT are associated with depression (Nolen-Hoeksema, 1991, 2000). This leads to the question of what it is about RT which determines whether it is helpful or unhelpful (discussed in detail in sections 1.3.4 & 1.3.5).

Repetitive negative thinking (RNT), as an unhelpful process, is transdiagnostic, found to be elevated in as many as 13 different disorders including affective disorders, anxiety disorders, insomnia and psychosis (Ehring & Watkins, 2008). Worry, in Generalised Anxiety Disorder (GAD) for example, typically involves RNT about future imagined catastrophes, uncertainties, and risks (e.g. "What if they have an accident?"; Watkins, 2008). It is understood as an attempt to avoid negative events, to prepare for the worst, and to problem solve, and is linked to unconstructive outcomes such as increased negative affect, interference with cognitive function, and disruptions to physiological processes (Borkovec, Ray, & Stöber, 1998). Depressive RNT, as another example, is known as rumination. Ruminative responses can be defined as thoughts that focus the depressed individual's attention on his or her symptoms and the possible causes and consequences of those symptoms (Nolen-Hoeksema 1987, 1991). For example "Why do I always feel like this? …What is wrong with me?... Why can't I pull myself together?"….and so on. People engaging in ruminative responses may worry about the causes and consequences of their depression, but they do not take action to change their situation, and they spend much of their time thinking about how badly they feel (Nolen-Hoeksema et al., 1993).

The different definitions for RNT across the different identified disorders have three characteristics in common; thinking processes that are repetitive, passive and/or relatively uncontrollable, and focused on negative content. The disorders differ with regard to the negative content (e.g. symptoms of depression, future negative events, past traumas). The key aspect of RT (including RNT) is not *what* the person is thinking about but *how* they are thinking about it.

Repetitively and passively thinking about symptoms, causes, and consequences of low mood in depression, i.e. rumination, has been shown to have a significant role in the development and maintenance of depression. The following two sections

summarise the cross-sectional research supporting this idea in both adults and young people.

1.3.2 Rumination and depression. The Response Styles Theory (Nolen-Hoeksema, 1991) suggests that depressive rumination is a particular response style to depressed mood, which is causally implicated in the onset and maintenance of depression (see Nolen-Hoeksema et al., 2008 for a review). According to the Response Styles Theory rumination exacerbates and prolongs distress, particularly depression, through several mechanisms. Firstly, and of particular relevance to the present study, is the suggestion that rumination enhances the effects of depressed mood on thinking, making it more likely that people will use the negative thoughts and memories activated by their depressed mood to understand their current circumstances. Second, rumination interferes with effective problem solving, partly by making thinking more pessimistic and fatalistic. Third, rumination interferes with instrumental behaviour, leading to an increase in stressful circumstances. Lastly, people who chronically ruminate will lose social support which in turn will fuel their depression (Nolen-Hoeksema & Davis, 1999). The Response Styles theory argues that these consequences of rumination make it more likely that the initial symptoms of depression will become more severe and develop into episodes of major depression. In addition, they could prolong current depressive episodes (Nolen-Hoeksema et al., 2008).

Watkins' (2008) review reveals that there is an extensive body of findings suggesting that ruminative thinking is involved in the onset and maintenance of depression. For example in cross-sectional studies using the Response Styles Questionnaire (RSQ; a self-report questionnaire which assesses the extent to which people respond to feelings of sadness with rumination) (Nolen-Hoeksema & Morrow 1991), depressive rumination is found to be elevated in currently depressed patients, formerly depressed patients, and women relative to men (Riso et al., 2003; Roberts, Gilboa, & Gotlib, 1998), as well as being associated with depressive symptoms in adults (e.g. Eshun, 2000; Ito et al., 2003).

Depressive rumination also predicts future depression in longitudinal prospective studies. For example the Response Styles Questionnaire (RSQ) predicts the future

onset of a major depressive episode across a range of follow-up periods in initially non depressed individuals (e.g. Just & Alloy, 1997; Nolen-Hoeksema, 2000), depressive symptoms across a range of follow-up periods in initially non depressed individuals, after controlling for baseline symptoms (e.g. Abela, Brozina, & Haigh, 2002; Butler & Nolen- Hoeksema, 1994), and depressive symptoms in patients with clinical depression, after controlling for baseline depression (e.g. Kuehner & Weber, 1999; Nolen-Hoeksema, 2000).

1.3.3 Rumination and depression in young people. Compared to the adult rumination literature, there is less research on the role of rumination in youth depression. Questionnaire studies are consistent with the hypothesis that rumination is a predictor of depression in young people. Abela, Vanderbilt & Rochon (2004) found that third graders (mean age: eight years, three months) and seventh graders (mean age: 12 years, four months) who exhibited a ruminative response style reported higher levels of depressive symptoms than those who did not exhibit such a style. In terms of adolescents, Kuyken, Watkins, Holden and Cook (2006) found that adolescents at risk for depression (operationalized as high scores on a measure of neuroticism) reported more rumination than adolescents not at risk. Abela and Hankin (2011), who collected data over a two year period, found that in a sample of 11-15 year olds higher levels of rumination at baseline were associated with a greater likelihood of exhibiting a past history of major depressive episodes, a greater likelihood of experiencing the onset of a future major depressive episode, and greater duration of future depressive episodes. Rumination was found to moderate the association between the occurrence of negative events and the development of future depressive symptoms and major depressive episodes. In addition, Leigh et al (in prep a) found that rumination partially mediated the relationship between depressive symptoms at time 1 and depressive symptoms at time 2 in a large sample of UK adolescent school children.

This body of research has consistently linked depressive symptoms with individual differences in tendency to ruminate. In order to demonstrate and understand which aspect of ruminative processing is causally implicated in depression, experimental studies which manipulate the potential mechanisms by which rumination has its

effects are required. The two mechanisms considered in the following sections are level of self-focus and processing style.

1.3.4 Rumination and adaptive processing in depression: self-focus mechanism. One way rumination may produce its negative consequences is via the considerable extent of self-focus involved. Research has repeatedly evidenced an association between self-focused attention and depression (e.g. Smith, Ingram & Roth, 1985). Compared to non-depressed individuals, depressed individuals evidence greater self-focus responding and less externally focused responding (Ingram & Smith, 1984). The role of self-focus in rumination has been investigated through comparison to distraction, where the level of self-focus is minimal. Distraction has been considered an adaptive and instrumental alternative to rumination where the individual is encouraged to redirect their thoughts away from the negative self-content they have been focusing on to something pleasant or neutral.

Experimental studies which have compared rumination and distraction have tended to use the rumination and distraction inductions designed by Nolen-Hoeksema and Morrow (1993). In the rumination induction participants are asked to focus on the meanings, causes, and consequences of their current feelings for eight minutes (e.g. "think about the level of motivation you feel right now", "think about the long term goals you have set") and the contrasting distraction induction is designed to divert participants' attention to non-self-related stimuli (e.g. "think about the layout of your local shopping centre"). Using these inductions, numerous studies have shown that rumination significantly increases dysphoric mood in dysphoric participants but not in non-dysphoric participants. In comparison distraction decreases dysphoric mood in dysphoric patients but has no effect on mood in non-dysphoric participants (for a review see Nolen-Hoeksema et al., 2008). Such experimental research suggests that self- focused rumination does play a causal role in the development and maintenance of depression.

In addition to the consistent finding of self-focused rumination impacting on mood, self-focused rumination has been found to impact on other aspects of depression. For example, in an experimental study, over general memory decreased and mood

improved after a brief distraction procedure, compared to rumination (Watkins, Teasdale & Williams, 2000).

The findings described above suggest that self-focus may be an important mechanism determining the impact of rumination on depressive symptoms, and that distraction may be a positive alternative processing style to rumination. Focusing on non-self-related information when depressed, however, may not be an ideal strategy for a number of reasons (Watkins & Teasdale, 2004). Firstly it may require too much effort. Secondly focusing attention away from negative thoughts and feelings may be similar to thought suppression and experiential avoidance, both of which are associated with recurrence rather than remediation of negative affect. Thirdly not attending to what one is thinking prevents one developing alternative interpretations of experiences, a key component of treatment according to the cognitive model (Watkins & Teasdale, 2004). In addition to this, self-report data is inconsistent and has produced mixed findings as to whether distraction is linked to a reduction in depressive symptoms (e.g. Bagby & Parker, 2001; Schmaling et al., 2002; Abela et al., 2002).

Watkins and Teasdale (2001) noted that focus of attention was not the only non-constant variable between rumination and distraction and thus investigated the reasons behind Watkins, Teasdale and Williams' (2000) finding that over general memory decreased and mood improved after a distraction procedure, in comparison to rumination. They aimed to see whether the effects depended on reductions in self-focus or reductions in analytic thinking. They found that thinking style significantly affected over-general memory, whereas focus of attention significantly affected despondent mood. In other words diverting individuals' attention (distraction) improved mood in the short term. In Watkins et al., (2000) this short term improvement in mood appeared to mask the lack of effect distraction actually had on over general memory. The analytical style of self-focused thinking (rather than self-focus per se) worsened over general memory in Watkins and Teasdale (2001) suggesting that high levels of naturally occurring ruminative analytic thinking may be important in the maintenance of over-general memory, which in turn may contribute to the long term maintenance of depression.

The findings described above suggest that self-focus may be a mechanism important to understanding the unhelpful consequences of rumination but that it is not the only mechanism involved. Watkins and Teasdale (2004), building on the idea that non self-focus (distraction) may only be a short term solution which does not allow sufficient processing of material long term, suggested that processing style could be important in depression, even when focusing on the same content. They were developing from the idea that *how* an individual thinks about something is more important than *what* they are thinking about.

1.3.5 Rumination and adaptive processing in depression: processing style mechanism. Processing style is a mechanism which may explain the longer term unhelpful consequences of rumination in depression. Teasdale (1999) conceptualised rumination as thinking about or thinking around experience in contrast to focusing on the direct experiential awareness of experience. In this way rumination, like distraction, can be understood as a form of avoidance. This is consistent with research by Burwell and Shirk (2007) who found rumination to function like passive brooding and to be associated with voluntary disengagement strategies, whereas active reflection was associated with voluntary coping aimed at changing one's attitude towards the stressor. Brooding was associated with self-rated depressive symptoms in the study whereas, once brooding was accounted for, reflection was unrelated to self-reported depressive symptoms.

Building on this, and on research that has identified reduced concreteness as a key concept in unhelpful repetitive negative thinking, particularly worry, Watkins and Teasdale (2004) identified a thinking style which encouraged a concrete and experiential focus rather than avoidance. Concreteness is a key variable in terms of appropriate definition and analysis of problems which are important steps on the way to problem solution. By being associated with problem elaborations of reduced concreteness, worry, and potentially other forms of repetitive negative thought, is thought to impede detection and implementation of appropriate problem solutions (Stöber, Tepperwien & Staak, 2000). Research in this area has found that in comparison to more concrete words and sentences, less concrete words and sentences elicit detailed mental images much slower and with less ease (Stöber et al., 2000; e.g. Marschark & Cornoldi, 1991). Worry has consistently been associated with

avoidance of aversive imagery (e.g. Borkovec, 1994) and thus it may be that the reduced concreteness of worry enables this avoidance.

To investigate the effects of concrete thinking in depression, Watkins (2008) developed a new experimental procedure which involves inducing analytical focus or experiential focus in depressed patients, using the rumination stimuli developed by Nolen-Hoeksema et al. (2008). In the analytical condition patients are instructed to think about the causes, meanings, and consequences of their feelings in relation to the stimuli. In the experiential focus condition, the same stimuli are presented to participants, but they are instructed to "think about the concrete experience of x".

The studies described below show that while concrete thinking may not improve mood in the short term, it does have a positive effect on a number of the processes that maintain depression in the long term, in comparison to rumination. This suggests that thinking style (analytical vs concrete) may be a key mechanism underlying the longer term negative effects of rumination in depression.

Rimes & Watkins (2005) demonstrated that inducing a ruminative analytic thinking style in comparison to an experiential thinking style in depressed patients increased ratings of the self as worthless and incompetent pre- to post-manipulation. This was not the case for non-depressed participants. The increase in global negative self-judgements following analytical self-focus remained after controlling for change in mood. The finding that the increase in depressed mood after analytical self-focus was no longer significant once the change in worthlessness/incompetence was covaried out points to a potential maintenance cycle involving low mood, rumination and global negative self-judgements.

A further cognitive aspect of depression implicated in the maintenance of depressed mood, social problem solving, is also found to be negatively affected by rumination in comparison to concrete thinking. Watkins and Moulds (2005) found that experiential inductions prompted depressed participants to engage in better problem solving compared to after analytical rumination inductions. The inductions did not have a differential effect on mood, again suggesting the effect was not only due to changes in participants' mood.

Experimental studies with rumination and concrete inductions have additionally found that trait predisposition towards ruminative repetitive thinking is moderated by the thinking style participants adopt. Thinking about negative self-experience has maladaptive effects on emotional self-regulation when thinking in a ruminative way for example, but not when thinking in a concrete process-focused mode. This was demonstrated by Moberly and Watkins (2006) whose participants repeatedly focused on both positive and negative scenarios in either a concrete, process-focused or an abstract, evaluative mode, before a failure experience. After the failure experience, higher levels of trait rumination were associated with lower levels of positive affect, but only for participants in the abstract, evaluative condition and not for participants in the concrete, process-focused condition.

The studies outlined in this section all support the hypothesis that an analytical mode of self-focused rumination may be particularly maladaptive in adult depression. Non self-focus does lead to improvement in mood but the more recent research suggests inducing concrete thinking may be more beneficial in the longer term. The process of thinking on its own can affect levels of depressive symptoms even if the content of thoughts is not changed and a high level of self-focus remains. A concrete mode of thinking may be better than both distraction and rumination in the long terms as it does not allow difficult experiences to be avoided.

1.3.6 Cognitive processing and depression in young people: experimental research. Compared to the adult literature there are far fewer experimental investigations of the role of rumination in adolescent depression. Park, Goodyer and Teasdale (2004) found that compared to distraction experimentally induced rumination increased depressed mood in both adolescents with first episode Major Depressive Disorder and in control adolescents. The finding that induced rumination worsens depressed mood in comparison to distraction is consistent with the findings in the adult literature. However, the fact that rumination increased depressed mood in the control as well as the depressed adolescents is in contrast to most of the adult literature where clear differences in the impact of rumination on dysphoric and non-dysphoric participants has been demonstrated (e.g. Lyubomirsky & Nolen-Hoeksema, 1993, 1995).

Rood, Roelofs, Bögels & Arntz (2012) found an unexpected decrease in negative affect after adolescent participants were induced to think about a self-generated stressful situation in a ruminative way. In this study the effects of inducing rumination, acceptance, distancing and positive appraisal in response to thinking about a recent stressful experience were observed in a sample of adolescents. Overall positive appraisal significantly increased positive affect in comparison to the other three conditions. The authors suggest a number of potential methodological explanations for the unexpected finding that rumination did not produce a negative effect on mood. These included ceiling effects after the stress-induction and the possibility that the effect of naturally occurring rumination was attenuated because of the structure provided by the induction cards. Perhaps most importantly the authors state that the rumination condition was not characterized by reduced concreteness / increased abstractness of thought compared to the other conditions (based on observer rated VAS). This supports the possibility that the rumination induction may have been more adaptive than intended with greater concreteness meaning less avoidance of experience.

Hilt and Pollack (2012) examined the utility of three different brief interventions for stopping an induced ruminative process. They found that distraction and mindfulness were successful in reducing rumination. Although the specific mechanisms of action were not examined, the authors suggest it is likely that distraction limited the mind from wandering to self-relevant content. This fits with Watkins and Teasdale (2001) conclusion that focus of attention affects mood in the short term. Mindfulness, which focuses on the acceptance of self-relevant thoughts, may have had positive effects because it encouraged experiential awareness in comparison to rumination. Problem solving was not helpful in getting children out of a ruminative state, but the authors put forward a number of explanations for this including methodological limitations and the fact that Nolen-Hoeksema (1991) has suggested distraction is needed to raise mood first for problem solving to be effective. The study acknowledges its findings only apply short term and future research is needed to determine the longer term effects of these strategies.

In terms of thinking styles and their effects on longer term maintenance of depression in young people, Park et al. (2004) looked at the effect of inducing rumination (in comparison to distraction) on over-general memory as well as on state mood. They found that experimentally induced rumination increased negative over general memories in depressed adolescents. In comparison to the adult research in this area (e.g. Watkins et al., 2000) where distraction reduced over-generality, in Park et al. (2004) rumination increased over-general memory whereas distraction per se had no significant effect.

Although induced rumination in Park et al. (2004) affected mood, it did not affect over-general categoric memory in non-depressed adolescents. The increase in over-general memory was specific to depressed participants. The authors argue that given the lack of positive correlation between mood and memory change, the differential impact of rumination on negative over-general memory is not just a reflection of mood change. These findings imply that rumination may be unhelpful in youth depression, possibly by forming part of a vicious cycle involving lowering mood, increased rumination and negative over-general memories (Williams, 1996). It should also be noted, however, that the comparison of rumination to distraction in this study rather than a concrete mode of thinking means it is not possible to determine the mechanism which resulted in the effect of rumination. The level of self-focus and the content of thoughts differ between the conditions in addition to the style of processing.

Two studies (Taylor et al., in prep; Leigh et al., in prep b) suggest that it is an analytical style of thinking which maintains depression in the long term for young people. In both these studies adolescents were induced to think about themselves in hypothetical and personal scenarios in either a concrete or ruminative way. Taylor et al (in prep) demonstrated that adolescents experienced more negative thinking about the future and the self when they were engaged in analytical rumination compared to when they were engaged in concrete processing, regardless of their current level of depressive symptoms. Furthermore, the study revealed that the detrimental effect of engaging in analytical rumination was over and above its influence on mood. Leigh et al (in prep b) also found that adolescents, regardless of their current level of depressive symptoms, performed more poorly on the Means End Problem Solving

(MEPS) task when engaging in analytical rumination compared to when engaged in concrete processing. Again this effect was over and above the influence of analytical rumination on mood.

The research considered so far suggests that an analytical mode of processing maintains a number of factors known to be important in depression. It appears to drive these effects via acting as an avoidance mechanism. Cognitive avoidance of intrusive memories in post-traumatic stress disorder (PTSD) has been shown to maintain PTSD symptoms (see section 1.5). It therefore follows that intrusive memories, a key feature of adult depression (see section 1.4.2) may be an aspect of depression maintained by rumination. It may be, for example, that lowering mood, increased rumination, and distress resulting from unprocessed negative intrusive memories, form a vicious cycle that helps maintain depressed mood. In line with Taylor et al (in prep) and Leigh et al (in prep b), and building on findings with adults, this study will compare a ruminative and concrete mode of processing to help identify the mechanism by which rumination may be unhelpful in relation to intrusive memory experience in youth depression.

As this study will be investigating the nature of intrusive memories in youth depression and the impact of rumination, it is important to understand how rumination might influence the experience of intrusive memories in depression. This is considered in section 1.5. Firstly the role and nature of intrusive memories in depression will be discussed to demonstrate their significance in depression and thus why it would be important to know if a process like rumination were maintaining them.

1.4 Intrusive memories

1.4.1 Definition. Intrusive memories can be defined as the spontaneous intrusions of autobiographical memories. For example, a memory of last night's dinner recalled deliberately in response to "What did you have for dinner last night?" can be contrasted with a memory of the same event that is generated involuntarily and interrupts activity (e.g. when studying late at night and getting hungry, an image of last night's dinner pops into mind) (Starr & Moulds 2006).

Intrusive cognitive phenomena are most typically associated with PTSD, where the intrusive memories are of a traumatic event. Research, however, has demonstrated that intrusive memories of negative past events are not unique to PTSD but are also reported in depression.

1.4.2 Intrusive memories in adult depression. Adult patients with depression, like patients with PTSD, typically have memories of specific autobiographical events that intrude into consciousness at high frequency (Brewin, Reynolds & Tata, 1999). Reynolds and Brewin (1999) report that studies of depressed psychiatric patients have found that around 86% described experiencing repetitive intrusive memories (Kuyken & Brewin, 1994; Brewin, Hunter, Carroll, & Tata, 1996). The content of intrusive memories in depression generally consists of family illness and death, personal injury or assault, and interpersonal crises (Brewin et al, 1996). Reynolds and Brewin (1999) found in their study that a depressed group of participants were more likely to report intrusive memories consisting of death, illness or injury to family members, or interpersonal problems, whereas participants with PTSD were more likely to report memories consisting of personal illness or injury, or personal assault.

PTSD and depressed patients both commonly report intrusive memories as being vivid and as being accompanied by physical sensations and by a sense of reliving the original experience (Reynolds & Brewin, 1999). Patel et al. (2007) found that the two main emotions associated with intrusions (intrusive memories and intrusive images) in their study involving moderately to severely depressed patients were anger and sadness. Ratings of vividness were high as were levels of physical and emotional re-experiencing.

Earlier thinking in the area of intrusive memories within depression was that the frequency of negative intrusive memories, as well as the extent to which people tried to avoid their intrusive memories, was predictive of depression severity. The evidence for this, however, is mixed. For example Brewin et al. (1999) conducted a prospective study of clinically depressed adults and found that depression symptoms at six month follow up were predicted by the degree of intrusiveness and avoidance

of intrusive memories of stressful life events at initial interview, even after controlling for baseline depression levels. In contrast Brewin, Watson, McCarthy, Hyman and Dayson (1998) found in a prospective study of depressed and non-depressed cancer patients that after controlling for baseline depression, intrusion and avoidance did not predict depression symptoms at follow up (Newby & Moulds 2011a).

In PTSD the presence and frequency of intrusive memories can be poor predictors of PTSD symptoms prospectively (Newby & Moulds, 2011a; e.g. Michael, Ehlers, Halligan & Clark, 2005); rather specific memory qualities like nowness, the lack of context, and level of distress predict PTSD symptoms longitudinally (Michael et al., 2005). Williams and Moulds (2007a) showed that similarly, sensory features (including perceived nowness and distress) of intrusive memories were associated with concurrent levels of depression and accounted for unique variance in the prediction of depression, even after controlling for intrusion frequency and severity (Newby & Moulds, 2011a). Negative meanings of intrusive memories have also been correlated with depression, even after intrusion frequency and memory severity are accounted for (Starr & Moulds, 2006). These findings concerning the characteristics of intrusive memories which predict depression severity can potentially be explained using relevant principles outlined in cognitive models of PTSD (Ehlers & Steil, 1995). Such models focus on the process of thinking and are discussed in section 1.5.1.

Interventions which have successfully targeted intrusive memories have furthered our knowledge of their role in depression. Lang, Blackwell, Harmer, Davison and Holmes (2012) evaluated a computerised cognitive bias modification intervention targeting interpretation bias in depression via positive mental imagery. Compared to a control condition, individuals in the treatment condition demonstrated significant improvements in depressive symptoms, cognitive bias and intrusive symptoms. Interestingly the analysis showed that within the treatment condition, reductions in negative biases in interpretation and appraisal of intrusions were associated with reductions in depressive symptoms. This further demonstrates that the use of a particular thinking style can impact on cognitive processes in depression.

Research has also started to show that imagery rescripting is an intervention associated with significant reduction in distress when depression is accompanied by distressing intrusive memories (e.g. Wheatley et al., 2007). Brewin (2006) has put forward a retrieval account to explain these findings. He presents evidence that beliefs about the self do not only take the form of general semantic knowledge (e.g. "I am a bad person") but are also underpinned by episodic memories of specific autobiographical incidents. Thus it would be expected that symptom improvement could be achieved not only by helping individuals challenge their maladaptive, negative beliefs (as in traditional CBT) but also by preventing the retrieval of episodic memories supporting depressive thinking (Wheatley et al., 2007). Such an explanation provides a good way of understanding why intrusive memories may be a key feature of depression. If rumination is involved in determining the experience and appraisal of intrusive memories (discussed in section 1.5.2), then this points to the importance of reducing rumination in treatments for depression.

1.4.3 Intrusive memories in youth depression. The presence and nature of intrusive memories in much of child and adolescent psychopathology is under researched.

Life events such as bereavements, parental separation or serious illness, can play a significant role in youth mental health problems (e.g. Goodyer, 1990). In fact 95% of major depressive episodes in young people arise in children and adolescents with long-standing psychosocial difficulties (NICE 2005).

Copeland, Keeler, Angold and Costello (2010) support the idea that intrusive memories are associated with life stressors (rather than just extreme stressors) in children. They found that low-magnitude stressors, which were far more common than extreme stressors, generated a greater proportion of the negative outcomes among the child community sample in their study, accounting for half of those with subclinical PTSD and two-thirds of those reporting 'painful recall' (defined as unwanted, painful, and distressing recollections, memories, thoughts, or images of an event). For most of the children who developed PTSD symptoms after exposure to low magnitude stressors, the symptoms followed interpersonal loss (e.g. parental separation, break up with girl/boy-friend).

Given that intrusive memories are considered a common reaction to negative events (also see Brewin, Dalgleish, & Joseph, 1996), it makes sense that intrusive memories would play a role in maintaining youth depression. In line with this a recent study by Meiser-Stedman, Dalgleish, Yule and Smith (2012) has found that non-traumatic intrusive memories do feature in depression in young people. Meiser-Stedman et al. (2012) found that in an adolescent school sample intrusive memories were a relatively common phenomena and the frequency of intrusive memories was similar for traumatic events and life events. The study found that similar to the adult literature, intrusive memory frequency and memory quality (e.g. sensory based quality, fragmented structure) contributed to the on-going experience for young people of intrusive memories of a negative life event. Intrusive memory frequency and memory quality also partially mediated the relationship between peri-event affect and depressive symptoms. Further research, however, is needed to enrich our understanding of intrusive memories in youth depression.

1.5 Cognitive processing and intrusive memories.

Avoidance plays a key role in maintaining intrusive memories in PTSD (discussed below). The literature considered in previous sections has conceptualised rumination in depression as a cognitive avoidance strategy where the direct experience of the event is not focused on. Further support for the idea that rumination is a form of experiential avoidance in depression is derived from a number of studies (Giorgio et al., 2010). For example research has found a direct link between self-reported depressive rumination and experiential avoidance (e.g. Cribb, Moulds & Carter, 2006). Additionally a number of studies have reported a link between rumination and avoidant behaviours including Lyubomirsky, Kasri, Chang and Chung (2006) and Smith et al. (2007). Smith et al. (2007) for example found that high ruminating individuals reported significantly more cutting behaviour than low ruminators, which has often been understood as a way for individuals to get relief from aversive emotional experiences (Linehan, 1993). This avoidance conceptualisation of rumination is consistent with the idea that ruminating about past events may serve to maintain intrusive memories in depression.

The predominant idea for how rumination, as a form of avoidance, might maintain intrusive memories comes from cognitive models of PTSD. Experiential avoidance, a tendency to avoid contact with certain aspects of private experiences, has been linked with many forms of psychopathology (Hayes et al., 1996), but the cognitive PTSD models were some of the first to conceptualise rumination as a form of avoidance.

1.5.1 Cognitive processing and intrusive memories in PTSD. PTSD is an anxiety disorder which occurs after a traumatic event if individuals process the event and/or its sequelae in a way which produces a sense of current threat. The two key processes thought to lead to this sense of current threat are individual differences in the appraisal of the trauma and/or its sequelae, and individual difference in the nature of the memory of the event (Ehlers & Clark, 2000).

As discussed in section 1.4, one of the main symptoms of PTSD is the experience of high frequency, involuntarily triggered intrusive memories involving re-experiencing of the event in a vivid and emotional way. The intrusive memories can involve all sensory modalities and are experienced as if they were happening right now (Ehlers & Clark, 2000). In an attempt to explain the occurrence of these intrusive memories, Ehlers and Clark (2000) propose that in persistent PTSD the trauma memory is poorly elaborated and inadequately integrated into its context in time, place, subsequent and previous information, and other autobiographical memories. This therefore explains a number of aspects of PTSD including problematic intentional recall of the trauma (weak semantic route retrieval), the 'here and now' quality of the trauma memory (no context in time), the absence of links to subsequent information, and the easy triggering of the memory by physically similar cues. These aspects all contribute to a perception of current threat.

When PTSD patients perceive a sense of current threat and the accompanying symptoms, they try to control the threat and symptoms using a range of strategies. The more distressing symptoms like intrusive memories are perceived to be, the more likely the strategies will be used (Steil & Ehlers, 2000). These strategies, however, are maladaptive as they maintain PTSD in three ways; directly producing PTSD symptoms, preventing change in negative appraisals of the trauma and/or its sequelae, and preventing change in the nature of the trauma memory (Ehlers & Clark,

2000). A number of these maladaptive strategies are cognitive avoidance strategies which prevent adequate emotional processing of the traumatic experiences as well as preventing habituation to traumatic memories (Steil & Ehlers, 2000). For example actively trying not to think about the event is a cognitive avoidance strategy which may help the individual feel better in the short term but maintains PTSD and the distress associated with the memory in the long term by preventing individuals from elaborating and contextualising the trauma memory. Ehlers and Clark (2000) propose that another of these cognitive avoidance strategies is rumination.

Rumination in PTSD involves continuous thinking about the trauma and its consequences, for example how the event could have been prevented or why the event happened. Ehlers and Clark (2000) suggest that rumination is a form of cognitive avoidance because it focuses on 'What if…' questions rather than on the experience of the trauma as it actually happened. This is consistent with Borkovec and Inz (1990) who proposed that worry, as a primarily verbal activity, is used to avoid physical and emotional reactions towards distressing images. As mentioned before when considering the transdiagnostic nature of RNT (section 1.3.1), rumination has similar properties to worry.

Santa Maria, Reichert, Hummel and Ehring (2012) suggest that recovery from traumatic or highly stressful experiences, and the reduction of intrusive memories, requires the elaboration and contextualisation of the event memory, and the modification of excessively negative event-related appraisals i.e. the opposite of avoidance. For both processes, the authors suggest a concrete style of processing information is necessary whereas abstract-evaluative thinking can be expected to reinforce and maintain existing negative appraisals and to interfere with emotional processing and problem solving. In their study which used an analogue design, participants completed a short symptom provocation task to trigger intrusive memories about a past experience and then wrote about their negative experience in either an abstract-evaluative or a concrete-experiential way. Intrusive memories were assessed during the session and in the first 36 hours after the session. Participants in the abstract-evaluative condition showed less reduction of intrusive memories during the experimental session than those in the concrete-experiential condition, and showed a slower recovery in the 36 hours following the session. The possibility that

the effects of processing mode on intrusive memories were due to mood induction was ruled out.

1.5.2 Cognitive processing and intrusive memories in depression. Like in PTSD, rumination in depression may be understood as a cognitive avoidance mechanism in that it prevents the processing of emotionally relevant information from being integrated into conceptual memory (Williams & Moulds, 2007b). A number of lines of research support the idea that avoidant strategies may play a key role in mediating the management of intrusive memories in depression (Williams & Moulds, 2007b). For example, suppression of intrusive cognitions is commonly reported as a response strategy by depressed individuals although it is also rated as an ineffective coping response (Reynolds & Brewin, 1998).

If depressed individuals avoid emotionally processing difficult life events (of which depressed people experience more; see section 1.2.4) because they ruminate about them, it might be hypothesised that the distress associated with the event would continue when intrusive memories of the life event occurred. The distress experienced when the intrusions occur may then help maintain the depression. The depression and the intrusive memories may then continue because rumination continues. Rumination may endure for a number of reasons. People may erroneously believe rumination to be an advantageous activity with such beliefs tending to focus on rumination being a strategy useful for coping, finding solutions and/or understanding problems (Wells & Papageorgiou, 2004). Williams and Moulds (2010) also suggest that the operation of an attentional bias makes the process of disengaging from rumination more difficult in depressed individuals, contributing to intrusion maintenance.

The next two sections describe the research supporting the idea that rumination maintains the distressing experience of intrusive memories in adult depression. There is no research concerning the potential role of rumination in maintaining the distressing experience of intrusive memories in youth depression, and it cannot be assumed that findings from depressed adult populations apply to child and adolescent populations. This provides a rationale for experimentally testing the effect of

rumination on the experience of intrusive memories in dysphoric adolescents. The rationale for the current study is explained in full in section 1.5.2.3.

1.5.2.1 Rumination and intrusive memories in depression: cross sectional research. Research supports the idea that rumination may maintain the distressing experience of intrusive memories in depression. Starr & Moulds' (2006) cross sectional, correlational study with undergraduates found that ruminative responses to intrusions were highly correlated with depression. Starr & Moulds suggest that it may be that an individual who ruminates about a distressing memory is less likely to emotionally process the memory and/or challenge the negative meaning assigned to it. Consequently, unprocessed memories continue to intrude and reinforce maladaptive cognitions, contributing to depression maintenance. Williams and Moulds (2007a) also found that a number of cognitive avoidance strategies, including rumination, were endorsed by respondents reporting negative intrusions and each correlated with levels of dysphoria.

Cross sectional research supports the idea that rumination plays a role in maintaining the distressing nature of intrusive memories in adult depression. Experimental studies, however, are required to show causation.

1.5.2.2 Rumination and intrusive memories in depression: experimental research. Williams and Moulds (2007c) were the first to experimentally investigate the influence of ruminative processing on the experience of negative intrusive memories. They aimed to replicate Watkins (2004) but in relation to intrusive memories rather than intrusive thoughts. Watkins (2004) investigated the differential impact of writing about a forced failure experience in a concrete, experiential way in comparison to an abstract, analytical way and found that participants in the abstract, analytical group reported more intrusions about the failure experience than those who wrote in a concrete, experiential mode.

In choosing to investigate the area of intrusive memories, depression and rumination Williams and Moulds (2007c) were also building on the literature that links depression and rumination to non-intrusive autobiographical memories. For example it has been demonstrated that individuals with naturally occurring dysphoria or

induced sad affect recall a greater number of negative or unpleasant autobiographical memories compared to non-dysphoric individuals (Clark & Teasdale, 1982; Snyder & White, 1982). Additionally a series of studies has illustrated that regardless of the nature of the retrieval method (i.e. free recall or prompted), dysphoric individuals induced to ruminate recalled more self-referent negative memories and reported that they experienced more negative than positive life events (Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998).

Williams and Moulds (2007c) experimentally induced intrusions via a film clip and explored the differential impact of an analytical, experiential and distraction induction on the subsequent experience of intrusions concerning the film clip. The result did not support the authors' hypothesis that analytical processing would lead to increased intrusions relative to experiential processing. The authors' provide a number of potential explanations for their null findings including that the intrusions would have been non self-referential in nature. Self-referential material refers to information that is directly linked to one's sense of self and thus conveys important information about one's personal character. It may be that the effects of analytical rumination on intrusions are more toxic if the material is self-referential (Williams & Moulds 2010). Additionally the null findings could have been due to issues of intrusion measurement. As mentioned previously (section 1.4.2) distress caused by intrusions can be independent of their frequency. The focus in Williams and Moulds (2007c) was on intrusion frequency as a marker of unsuccessful processing and this might have prevented detection of changes in the affective impact of intrusive memories following rumination, for example intrusion-related distress.

Building on their 2007c study, Williams and Moulds (2010) sought to experimentally assess the differential effects of analytical, ruminative processing and distraction on the experience, rather than the frequency, of self-referent naturally occurring intrusive memories in a sample of dysphoric participants. They found that inducing an analytical mode of processing resulted in undergraduate participants rating their intrusive memory as more negative, more distressing, and evoking a more negative response compared to inducing distraction. In addition, participants in the analytical rumination condition reported worse (sad) mood relative to those in the distraction condition. These are interesting findings which demonstrate that the emotional

impact of intrusive memories is affected by rumination. Williams and Moulds (2010) suggest it may be that ruminating about negative life events in an analytical manner disrupts successful emotional processing and therefore leads to distressing intrusive memories of such events. The distress associated with the intrusive memories may then contribute to lowering mood, creating a vicious cycle.

Despite the strengths of the Williams and Moulds (2010) study, it is important to note that the authors do not report controlling for mood in their analyses meaning there is the possibility that the memory ratings may have worsened after rumination compared to distraction due to the differential effect of each condition on mood. This is particularly important to consider given the consistent findings that distraction has a positive impact on mood in comparison to rumination. It is also not apparent what it was about rumination that may have affected the emotional impact of the intrusive memories in Williams and Moulds (2010) study, because distraction, rather than concrete thinking, was used as an alternative to rumination.

1.5.2.3 Cognitive processing and intrusive memories in dysphoric young people: rationale for this experimental study. Whilst it has been demonstrated that rumination has a negative impact on dysphoric adults' perceptions of their intrusive memories (Williams & Moulds, 2010), there is no such experimental research with younger people. It cannot be presumed that findings from adult research will apply to children and adolescents as developmental considerations should be taken into account. During adolescence, regions of the brain undergo considerable structural change. These structural changes affect the cognitive abilities that rely on the functioning of particular brain regions where change occurs (Blakemore & Choudhury, 2006). Many of these cognitive abilities are likely to be important in terms of the thinking styles adolescents adopt, for example selective attention, working memory, and problem solving. Therefore it cannot be presumed that rumination will operate in the same way and have the same consequences in adolescents as it is found to do in adults

There are only a few experimental studies with young people which involve the induction of ruminative and alternative styles of thinking. Park et al. (2004) found rumination to worsen depressed mood and to increase over-general memory in

comparison to distraction in adolescents. While Park et al. (2004) were the first to undertake an experimental study to examine the effect of rumination on one cognitive aspect of youth negative thinking (over general memory), they point to the importance of investigating the impact of rumination on other cognitive aspects known to be important in youth depression.

None of the few youth experimental rumination studies have investigated the effect of rumination on intrusive memories. Research has increasingly pointed to the relevance of intrusive memories in adult depression where the memories seem to occur in a similar way to intrusive memories in PTSD. There is minimal research on the experience and nature of intrusive memories in youth depression but the research there is suggests that intrusive memories are relevant in the same way to depressed younger people. Maintenance models of PTSD which implicate intrusive memories have been applied to depression and these have highlighted the potential importance of avoidance mechanisms in the ongoing experience of intrusive memories. It therefore is important to explore the effects of rumination, which has been identified as a potential avoidance strategy, on the experience of intrusive memories in depression. This research has been started in adults but there is no research exploring this with young people.

The study by Williams and Moulds (2010) represented an important contribution to the understanding of the effect of rumination on negative intrusive memories in depression. The question remains, however, about the mechanisms by which rumination was unhelpful in their study given that they compared rumination to distraction, where self-focus and processing style both differed. Their study suggested that self-focus was a relevant mechanism in understanding the impact of rumination on intrusive memories, however, its effect may only be due to the short term impact of different levels of self-focus on mood. The current study will be an important addition as while it will use a research design similar to Williams and Moulds (2010), a concrete experiential thinking style will be induced as an alternative to analytical rumination allowing the processing style, independent of self-focus, to be investigated. This study should thus provide more knowledge about the mechanisms by which rumination produces negative effects on aspects of youth

depression, as well as information on effective alternatives to rumination. Such information could be very useful for the design of new youth depression treatments.

1.6 Summary

Depression is a severe and debilitating disorder which becomes increasingly prevalent in adolescence. Unfortunately research suggests that current treatments for youth depression only produce modest effects which are not consistently maintained (Weisz et al., 2006). New treatments are required. One way to think about designing new treatments for a disorder is to consider targeting maintenance factors of the disorder (Clark, 1999). Thinking styles have been highlighted in depression research as important risk and resilience factors. One known thinking style found to be a maintenance factor in depression is rumination.

Rumination is a passive style of thinking where individuals focus on the causes and consequences of their depression but do nothing to change their circumstances (Nolen-Hoeksema et al., 1993). Rumination has been found to be causally implicated in the onset and maintenance of depression (Nolen-Hoeksema, Wisco & Lyubomirsky, 2008). Experimental studies which have induced distraction (where the individual is encouraged to redirect thoughts away from personal negative content) in comparison to rumination have found that distraction improves mood in the short term in dysphoric adult samples. These studies have implicated self-focus as the mechanism by which rumination has its unhelpful consequences in adult depression. This mechanism, however, only appears to work in the short term. Experimental studies which have compared rumination to concrete thinking (a style of thinking that involves thinking about the same content but in a direct, experiential way) have implicated processing style as the mechanism by which rumination has its longer term consequences in depression.

Rumination, in comparison to concrete thinking, has been found to have a negative impact on many cognitive aspects of depression over and above its effect on mood, in dysphoric adult samples (e.g. Watkins & Moulds, 2005; Watkins & Teasdale, 2001). These cognitive aspects of depression, such as social problem solving and over general memory, are thought to maintain depression in the long term. Concrete

thinking is thought to have a positive effect on the cognitive aspects of depression in comparison to rumination because, unlike rumination and distraction, it does not allow difficult experiences to be avoided.

Rumination induction studies with young people are limited in number but the evidence is increasingly suggesting that rumination is unhelpful in youth depression, as it is in adult depression. As it cannot be presumed that adult research applies to young people there is a need to provide further support for the causal role of rumination in the maintenance of youth depression and also to explore the mechanisms underlying the effects. It is important to understand if processing style affects youth mood and their cognitive aspects of depression in similar ways to adults.

Adults with depression are found to have specific, vivid, intrusive memories of autobiographical events that intrude into consciousness at high frequency (Brewin et al., 1999). Depressed young people also experience negative intrusive memories, however, there is little research exploring the nature and experience of these memories (Meiser-Stedman et al., 2012). Research with adults has suggested that rumination may maintain the distressing occurrence of intrusive memories in PTSD, via rumination functioning as a form of avoidance where the memory is not emotionally processed properly and thus paradoxically occurs at even greater frequency (Ehlers & Clark, 2000). Williams and Moulds (2010) explored the effect of rumination and distraction on the experience of negative intrusive memories (also a cognitive aspect of depression) in a dysphoric adult sample. They found that inducing an analytical mode of processing resulted in undergraduate participants rating their intrusive memory as more negative, more distressing, and evoking a more negative response compared to inducing distraction.

This study seeks to recruit a dysphoric adolescent sample to investigate the role of intrusive memories and cognitive processing in adolescent depression. A high dysphoric sample is important to study as they represent a group at high risk of developing depression (NICE, 2005; e.g. Lewinsohn, Solomon, Seeley & Zeiss, 2000). The study firstly aims to explore the nature of the intrusive memories provided by the dysphoric adolescent sample. It then aims to see if processing style does

impact on the experience of intrusive memories for adolescents by inducing rumination and concrete thinking. This builds on the design of Williams and Moulds (2010) which provided a robust test of causality, but allows the mode of processing to be manipulated (as concrete thinking rather than distraction will be used as an alternative to rumination) which should give more insight into the mechanisms underlying the possible negative effects of rumination on intrusive memories in youth depression.

1.7 Aims and Hypotheses

1.7.1. Aim 1. This study aims to understand the experience and nature of intrusive memories in a dysphoric adolescent sample. This aim is exploratory in nature but the study aims to investigate the frequency, content, qualities, emotional impact, and the intrusion and avoidance characteristics of the intrusive memories.

1.7.2 Aim 2. This study aims to consider the impact of inducing rumination and concrete thinking on the experience of negative intrusive memories in a dysphoric adolescent sample. The hypotheses are as follows;

Hypothesis 1: Participants in the rumination condition will show an increase in how upsetting they rate their intrusive memory pre to post the induction, compared to those in the concrete condition.

Hypothesis 2: Participants in the rumination condition will show an increase in how sad they rate their intrusive memory makes them feel pre to post the induction, compared to those in the concrete condition.

Hypothesis 3: Participants in both conditions will experience a decrease in mood from pre to post induction.

Hypothesis 4: Changes in participant mood will not entirely account for the difference in memory distress (if found) from pre to post induction between conditions.

2. Method

2.1 Design

The current study was part of a larger project investigating cognitive processes in adolescent depression that comprised two experimental studies, one of which is the focus of this thesis.

The effects of different cognitive processing styles on the rating of a negative intrusive memory were compared amongst young people who scored within the upper quartile on a measure of depressive symptoms (Mood and Feelings Questionnaire; see Section 2.4.1.1). A 2 (thinking style: Rumination or Concrete) x 2 (emotional response to memory: pre and post induction rating) mixed experimental design was used.

2.2 Ethical approval

Ethical approval for the study was granted from the King's College London Psychiatry, Nursing and Midwifery Research Ethics Sub-committee on 6th November 2012 (see Appendix 1). The most salient ethical issues are detailed below.

2.2.1 Consent.
Information sheets were provided for parents and young people at both the screening and experimental stages of the research (see Appendix 2). Opt in consent from the young people and opt out consent from the parents (if students were aged 16 and under) was sought for eligible students at both stages (see Appendix 3 for consent forms). Parent information sheets and consent forms were sent by post to maximise the chances that parents would receive and read them.

The opt-out consent procedure was adopted because previous experience suggests that the response rate from parents for studies in schools is very low. Additionally, Anderman et al. (1995) highlight that school-based studies that adopt a parental opt-in strategy are vulnerable to bias because parents of adolescents from more socially advantaged backgrounds are more likely to consent to participation.

2.2.2 Managing risk. If, during the screening stage, participants scored in the clinical range on the MFQ and ticked the risk item the researchers passed the participants' names to the member of school staff responsible for safeguarding. Before completing the questionnaire participants were informed this would happen should they tick an item which made the researchers concerned about their safety.

During the experimental stage, if participants ticked the risk item on the MFQ the researcher undertook a preliminary risk assessment. If this raised any concerns participants had their name passed to the head of safeguarding. At the start of the experimental procedure participants were informed that if they indicated they were at risk of harm at any point during the procedure the head of safeguarding would be notified, in line with the school's safeguarding procedures.

2.2.3 Debriefing. At the end of the experimental procedure the purpose of the study was explained to all participants. Regardless of the condition they had been allocated to, all participants were trained in the principles of concrete thinking and informed about the potential benefits of concrete thinking on mood in comparison to rumination. Participants were offered the opportunity to ask questions. At the end of the experiment the researcher engaged in benign conversation with participants until they reported being ready to return to class.

2.2.4 Access to interventions. In line with school policy, participants were asked about what support was available to them when feeling low. With the participants who agreed they would like someone else to talk to, and were happy for the school to organise this, the researcher passed on their details to the head of safeguarding. Participants who did not want the school informed were advised to visit their GP. A system was agreed with the school whereby young people experiencing depression who were identified during the research could visit their GP and receive an expedited referral to a local CAMHS mood disorder clinic.

2.3 Participants

2.3.1 Power analysis. Sample size calculation was based on data from an experimental study comparing ratings of intrusive memories after a rumination or

distraction induction with a dysphoric adult population (Williams & Moulds, 2010). Williams and Moulds (2010) reported a difference of 7.91 and a pooled SD of 2.61 (Rumination: M=48.86, SD=2.57, Distraction: M=40.95, SD=2.68) which corresponds to an effect size of d=3.0. Using the reported effect size of Cohen's d=3.0, this study, using a power level of 80% and a significance level of 0.05 would need four participants per group to detect a similar effect size using an independent t-test. The same sample size is needed if a repeated measurement ANOVA is used (to control for potential baseline difference) to detect an interaction between time (pre and post induction) and condition (rumination and concrete) assuming no baseline differences (and a correlation between pre and post measures of r=0.5). Given that this study is undertaken with adolescents rather than adults, such a large effect size might not be expected. We therefore aimed for 20 participants per group (total sample = 40) which would provide 80% power to detect an effect size of d=0.92.

2.3.2 Inclusion/exclusion criteria. The inclusion and exclusion criteria for the two different stages of the study are described below.

2.3.2.1 Inclusion/exclusion criteria at the screening stage. Pupils from a large comprehensive secondary school and sixth-form in South East London (academic years 7-13) were included in the screening stage. Young people with an identified Learning Disability, pronounced reading and/or comprehension difficulties were excluded due to the reading requirements of the study.

2.3.2.2 Inclusion/exclusion criteria at the experimental stage. Participants who completed the MFQ during the screening stage and obtained a score within the upper quartile for their year group were included in the experimental stage of the research. Quartile cuts offs were calculated for each separate year group given developmental differences in MFQ scores (Cooper & Goodyer, 1993).

The MFQ was re-administered at the beginning of the experimental study. The mean duration between screening and completion of the experimental study was 3.71 weeks (SD = 1.87). Participants were excluded if their MFQ score during the experimental study no longer fell within the original upper quartile calculated for

their year group at the time of screening. Additionally if participants were unable to engage in the allocated processing style (see Section 2.4.2.4) they were excluded.

2.3.3 Recruitment. Participants were recruited from a South London secondary school. The most recent Ofsted report (2009) for the school states that the number of students eligible for free school meals is above average. 65% of students are of Black Caribbean or African background, and nearly a third speak English as an additional language.

Participants for this study were initially recruited together with participants for another experimental study. Three to four tutor groups from each of the year groups in the school were selected to take part in the screening phase. Prior to screening, the project was explained to tutor groups as a whole. Young people completed the MFQ if their parents had not opted-out, if they were present in class at the time of screening, and if they completed a consent form.

Two thirds of the young people who scored in the upper quartile were allocated to this study via sequential allocation (with the remaining third allocated to the other study) and invited to take part. Opt in and opt out consent was sought from these young people and their parents respectively.

As greater numbers were needed for this study after the first round of screening and experimenting, a further round of screening was conducted. All those who scored in the upper quartile at this stage were invited to take part in this study.

Overall a total of 858 young people were eligible to complete the screening questionnaire. Of these 68 were opted out by their parents and 264 opted out themselves (by opting out in the classroom or due to absence) (see Figure 1). A total of 526 completed the screening questionnaire (57.4% male, 42.6% female). Young peoples' ages ranged from 11 to 19 years with a mean age of 14.07 (SD=1.96).

96 young people scored within the upper quartile and were invited to participate in this experimental study. Of these, 5 were opted out of the experimental procedure by their parents and 14 opted out themselves, therefore a total of 77 participants

completed the experimental procedure. Participants were alternately allocated to either the rumination or concrete condition when they arrived to complete the experimental procedure. Analysis revealed that young people who opted out did not differ significantly from those who did not opt out with regard to MFQ scores (t=0.04, p=0.97) (see Table 1).

Table 1

Comparison of participants who opted in and out of experimental procedure

Status	N	Mean MFQ score
Opted out	19	26.5
Opted in	77	26.4

Students identified to be screened = 858	Screening stage non completion Parental opt out N = 68 (7.92%) Student opt out N = 264 (30.77%)
Total number of students screened = 526	
Total number of students falling in the upper quartile who were allocated to this study = 96	Experimental study non completion Parental opt out N = 5 (5.21%) Student opt out N = 14 (14.58%)
Total number of students screened = 526	

Figure 1: Recruitment pathway

2.3.3.1 Exclusion of young people following completion of experimental tasks. Of the 77 young people, 24 young people were excluded as their scores no

longer fell in the upper quartile when they completed the MFQ again at the start of the experimental session. 16 young people from the Rumination condition and eight from the Concrete condition were excluded on this basis. The number of young people excluded for this reason across the year groups is shown in Table 2.

Table 2

MFQ inclusion criteria and number of young people excluded across year groups

Year Group	Upper quartile lower boundary	Total completed	Final N	Excluded (%)
7	14	13	7	6 (46)
8	13	17	12	5 (29)
9	15	12	10	2 (17)
10	19	15	11	4 (27)
11	16	8	4	4 (50)
12	21	9	7	2 (22)
13	18	3	2	1 (33)
Total:		77	53	24(31)

A further 16 young people were excluded as they reported engaging in the allocated processing style less than 50% of the time (six from the Rumination condition, 10 from the Concrete condition). Analysis suggests no significant differences in the proportion of participants excluded on this basis from each condition (Fisher's exact test: p=0.156).

After all exclusions, the final number of participants in this study was 41.

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                    ┌──────────────────────┐
                    │ Allocated to study = 77 │
                    └──────────┬───────────┘
          ┌────────────────────┴────────────────────┐
┌─────────────────────────────┐    ┌─────────────────────────────┐
│ Rumination   N=43           │    │ Concrete thinking    N=34   │
│                             │    │                             │
│ Excluded due to change in   │    │ Excluded due to change in   │
│ MFQ   N=16                  │    │ MFQ   N=8                   │
│                             │    │                             │
│ Excluded due to failing     │    │ Excluded due to failing     │
│ manipulation checks  N= 6   │    │ manipulation checks  N= 10  │
└─────────────────────────────┘    └─────────────────────────────┘
                    ┌──────────────────────┐
                    │ Total    N = 41      │
                    │                      │
                    │ Rumination   N =23   │
                    │                      │
                    │ Concrete     N = 18  │
                    └──────────────────────┘
```
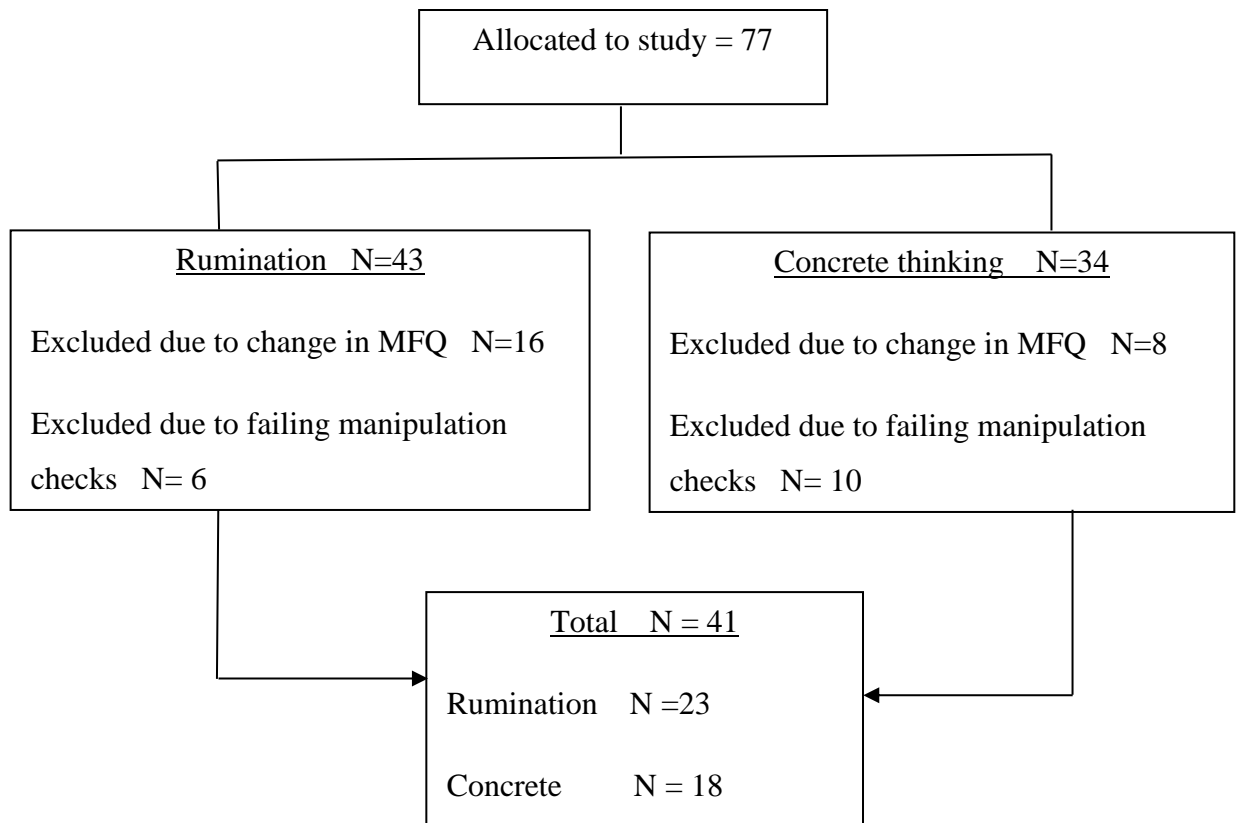
Figure 2: Exclusion of young people following experimental tasks

Overall there were no significant differences between the number of young people excluded from the rumination condition (n=20 [47%]) and the number of young people excluded from the concrete condition (n=16 [47%]) (Fisher's exact test: p=1.00).

There were no significant age differences between the young people who were excluded and those who were not excluded according to either exclusion criteria (due to scoring under 50% on either of the manipulation checks *(t[75]=1.45, p=0.15)*, or not having a MFQ score in the upper quartile at two time points *(t[75]=-0.50, p=0.62))*.

2.4 Materials and measures

   2.4.1 Self-report Questionnaires. The self-report questionnaires used are detailed below.

2.4.1.1 Mood and Feelings Questionnaire (MFQ; Costello & Angold, 1988).
The MFQ is a 33-item questionnaire developed to assess symptoms of depression
present over a two week time period in young people aged 8 – 18 years. It consists of
33 items covering DSM-IV criteria for depression and additional symptoms such as
feeling unloved, lonely or ugly. Respondents rate the frequency of depressive
symptoms using a three-point Likert scale ranging from 0 (*not true*) to 2 (*often true*)
giving a total score of 0-64, with higher scores indicating greater frequency of
depressive symptoms. A threshold score of 29 was used for the MFQ, based on a
large clinic and non clinic sample undertaken in the US (Daviss et al, 2006).

The MFQ has been show to demonstrate good internal consistency and adequate test
− retest reliability (Cronbach's alpha = 0.78) (Costello & Angold, 1988; Wood, Kroll,
Moore, & Harrington, 1995). Kent, Vostanis & Feehan (1997) report that MFQ items
which discriminated between depressed and not depressed are reflected in various
DSM-III and DSM IV criteria for depression. Cronbach's alpha for the administration
of this scale was excellent for the screening sample at 0.92 and good for the
experimental sample at 0.70.

2.4.1.2 The Child Revised Impact of Events Scale (CRIES-8) (Appendix 4).
The CRIES-8 (Yule, 1997) is adapted from the Impact of Events Scale (IES) for
adults (Horowitz, Wilner, & Alvarez, 1979). It is designed to screen children at risk
of PTSD. The CRIES-8 correlated well with the original IES (r=0.95, p<0.01) and
with the number of DSM PTSD symptoms present in a sample of traumatised
adolescents (r=0.69, p<0.01) (Yule, 1997).

The CRIES-8 consists of eight items, four which constitute an intrusion subscale and
four which constitute an avoidance subscale. The intrusion subscale assesses the
frequency and range of intrusions associated with the event and the avoidance
subscale assesses efforts to suppress thoughts and memories of the event.

Participants can tick '*not at all', 'rarely' 'sometimes'* or '*often*' for each item of the
CRIES-8 and a score of 0, 1, 3 or 5 is applied accordingly, with larger scores for each
subscale indicating a greater presence of intrusion and/or avoidance.

Williams and Moulds (2010) modified the IES for their study so that responses were anchored specifically to the intrusive memory identified by the participant. This study followed the same process with the CRIES-8. Participants are asked to check each item on the table indicating how frequently the comments were true for them regarding their identified memory in the last week or so.

Cronbach's alpha for the administration of this scale was acceptable at 0.62.

2.4.1.3 Children's Response Styles Questionnaire (C-RSQ; Abela, Brozina, & Haigh, 2002).

The C-RSQ is a 25-item self-report questionnaire that assesses the extent to which young people respond to feelings of sadness with rumination. The measure presents a series of reactions to depressive symptoms which map onto three subscales: Ruminative Response Subscale, Distractive Response Subscale, and Problem-Solving Response Subscale.

The Ruminative Response subscale includes 13 items describing responses to depressed mood that are self–focused (e.g., *"Think about how alone you feel"*). The Distracting Response subscale includes seven items describing responses to depressed mood that divert the individual's attention from his or her sad mood (e.g., *"Watch TV or play video games so you don't think about how sad you are"*). Finally, the Problem-Solving subscale includes five items describing strategies to overcome a depressed mood (e.g., *"Ask a friend/parent/teacher to help you solve your problem"*) (Abela et al, 2002). For each item, children are asked to indicate how often they respond in this way when they are feeling sad (*almost never* = 0, *sometimes* = 1, *often* = 2, or *almost always* = 3). Higher scores on each subscale indicate a greater tendency to engage in that particular response style.

Moderate internal consistency is reported for the CRSQ (Abela, et al. 2002). Abela, Vanderbilt, & Rochon, 2004, whose samples consisted of 3rd and 7th graders (average ages; 8 years 3 months and 12 years, 4 months respectively) report test-retest reliability over a four week interval for the three subscales; Rumination (r=0.55, p < .001), Distraction (r =0.67, p < .001) and Problem-Solving (r =0.61, p < .001). The

CRSQ has also been shown to positively correlate with depressive symptoms experienced by young people (Abela et al., 2004).

Cronbach's alpha for the administration of the rumination subscale of the CRSQ was good at 0.71.

2.4.2 Experimental materials and measures. The experimental materials and measures used are detailed below.

2.4.2.1 Pilot. Piloting was conducted prior to the start of the initial screening phase.

Four non-clinical adults were initially recruited and consented to undertake the experimental protocol to assess preliminary feasibility. No changes to the procedure were made on the basis of this stage of piloting.

12 young people from the range of academic year groups were recruited from the school used in the main study to pilot the procedure and ensure it was developmentally appropriate. As in the main study, consent was obtained from both parents and young people. Pilot participants were asked to identify a recent, negative intrusive memory before being trained to engage in a ruminative or concrete thinking style (using the induction procedures from Taylor et al, in prep). This heavy focus on negative personal experiences (identification of a negative intrusive memory and focus on a current personal problem in the induction procedure) appeared to elicit an unnecessary level of distress for some participants. Therefore, while Taylor et al used two imaginary scenarios and one personal situation as part of the induction procedure, this study wrote one more imaginary scenario and substituted this for the personal situation.

The new scenario used the same format as the other two imaginary scenarios in terms of length, structure, and style, and similarly focused on a negative situation that was difficult to resolve. When the new scenario was used with pilot participants, ratings of their ability to imagine the three scenarios did not differ. Their scores on the VAS

mood and manipulation check measures administered after each scenario also did not significantly differ between scenarios.

Because a number of the measures had been designed for use with adults, piloting also aimed to evaluate how developmentally appropriate they were. The adaptations made are outlined below.

Instructions for the intrusive memory interview (Williams & Moulds, 2010) were adapted to simplify the language. For example, more examples of intrusive memories were provided, and words like 'negative' were replaced with phrases like 'not particularly nice for you'. The adapted instructions were tested on the pilot participants and feedback from participants indicated that they understood the instructions.

Feedback from pilot participants also suggested that the wording used alongside the visual analogue scales to evaluate the identified negative intrusive memory in Williams and Moulds (2010) was confusing. Thus during the main study when participants provided memory ratings they were asked to mark on a VAS scale *'how upsetting they rated their memory'* and *'how sad the memory made them feel'*. Participants were additionally asked to mark on visual analogue scales how angry, afraid, guilty, numb and helpless their memory currently made them feel, both before and after the induction. A number of the pilot participants asked for a definition of 'numb' and explained that they were not familiar with the concept. The scale measuring 'numb' was thus removed from the main study.

Piloting also highlighted difficulties for some young people in generating an intrusive memory that had occurred in the last seven days, but could think of one that had occurred within the last few weeks. Therefore in the main study participants were asked to identify their most recent memory without giving a time frame, but they were asked to specify when it had occurred.

2.4.2.2 Processing style inductions. Experimental processing style inductions were based on those used by Taylor et al (in prep); adapted from Watkins, Moberly and Moulds (2008). Amendments were based on pilot feedback as noted above. The

experimental script used to induce the thinking styles can be seen in Appendix 5. The rumination induction involved young people focusing on 'Why' questions in relation to three scenarios, whereas the Concrete condition involved a focus on 'How' questions.

Once allocated to either the ruminative or concrete condition, participants were introduced to their allocated style of thinking. Their allocated thinking style was defined and examples of questions that might be asked in that mode of mind were provided. Participants were then given instructions for the procedure. Young people were asked to listen to three scenarios and after each one to spend two minutes thinking about the scenario with the questions provided on a prompt card in mind. Young people were then asked to complete a number of visual analogue scales before being reminded of the task instructions, and read the next scenario. The same procedure was repeated for each of the three scenarios.

The three scenarios involved the young person imagining themselves in situations that could not easily be resolved. The scenarios included the young person imagining that they were unable to get to an important social event, that they had lost a borrowed item, and that they had forgotten a piece of homework. The scenarios were the same in both thinking style induction procedures.

In the analytic ruminative condition, participants were asked to focus on seven 'why' type questions outlined on a prompt card in relation to the scenario provided immediately before. 'Why' type questions focused on the causes, meanings and consequences of the scenario.

In the concrete condition, the prompt cards contained seven 'how' type questions in relation to the scenario provided immediately before. 'How' questions focused on concrete and sensory details of the scenario. Examples of the questions used in the inductions for the different processing modes can be seen in table 3.

Table 3

Type of questions used in inductions for the different processing modes

Concrete 'how' questions	Analytic ruminative 'why' questions
How did this happen?	Why did this happen to me?
What did I notice?	What are the consequences of this?
What is the sequence of events leading up to this point?	What will happen because of this?
How can I understand this?	What will others think of me?
How can I fix this?	What does this mean about me?
What is the first step toward solving this problem?	What have I done to deserve this?
How can I decide what to do next?	Why do things like this keep happening to me?

2.4.2.3 Visual analogue scales – mood ratings. Ratings of current mood were collected at six time points: at the start of the experimental procedure; once an intrusive memory had been provided; after each training scenario during the processing mode induction; after completion of the experimental procedure. Ratings were obtained using Visual Analogue Scales (VAS) that were 10cm in length and labelled '*not at all sad*' and '*very sad*' at the end points. Participants indicated their current mood level by placing a mark on each VAS. To quantify the measure, the location of the mark was measured in centimetres, yielding ratings ranging from 0 – 10 with higher scores indicating higher levels of sadness. Anxiety ratings were obtained in a similar way following each training scenario, with the 10cm VAS scale end points labelled '*not at all anxious*' and '*very anxious*'.

2.4.2.4 Visual analogue scales – processing mode induction checks. In order to assess participants' ability to engage in the designated processing style, and as a measure of compliance with task demands, participants were asked to rate '*how able they were to think about the situation for two minutes?*', and '*how much of the time they were using the questions on the card?*', following each induction scenario during

the processing mode induction period. These questions counted as the processing mode induction checks.

To obtain further information about the processing style during the induction, participants were asked *'were you always thinking about that specific situation or thinking about similar situations in the past?'* and *'were you thinking in words or images?'*. Participants were asked to indicate their answers by making a mark on a visual analogue scale. End points of the scales were labelled respectively *'not at all able, very able', 'not at all, all of the time', 'always thinking of a past similar situation, always thinking of this situation',* and *'always thinking in words, always thinking in images'.* To quantify the measure, the location of the mark was measured in centimetres, yielding ratings ranging from 0 to 10. See Appendix 6 for the VAS given in the processing mode induction period following each scenario. If young people scored below five on either of the processing mode induction checks they were excluded.

2.4.2.5 The Intrusive Memory Interview (Appendix 7). The version of the intrusive memory used in this study was based on Williams and Moulds (2010) which was in turn based on the original designed by Hackmann, Ehlers, Specken and Clark (2004).

The intrusive memory interview is a semi-structured interview used to elicit participants' subjective experience of a spontaneous negative memory. Adaptations were made as outlined in the pilot section (Section 2.4.2.1). The main adaptations involved making the language more developmentally appropriate and allowing a 'recent' memory rather than one that occurred in the last seven days.

In the interview, participants are asked to provide a very brief description of their own recent intrusive memory, and to provide temporal and frequency information about the memory and the event the memory is based on. On visual analogue scales, participants are then asked to provide information related to memory quality and experience (e.g. *'How vivid was the memory?'*). To quantify the measure, the location of the mark was measured in centimetres, yielding ratings ranging from 0 to 10.

Participant's brief memory descriptions were coded according to labels derived from Brewin, Hunter, Carroll, and Tata (1996). Brewin et al., (1996) classified spontaneous intrusive memories obtained from their depressed adult sample into four major categories; illness or death, work / finance, abuse / assault, and relationships / family. To make these categories developmentally appropriate for an adolescent sample the work / finance category was changed to academic / school. There were no memories reported that would fit in to the category of abuse / assault so this was left out. To provide more detail, the illness / death category was split into self and others. Table 4 lists the codes and definitions used to code the memories in this study. The first and second researcher coded the memory descriptions separately. Out of 41 memories, the researchers disagreed on the coding of one memory. After discussion a consensus was reached.

Table 4

Definitions of memory coding labels

Coding label	Definition
1. Illness / injury to self	Concerned with threat of, or actual, illness, injury or death to self
2. Illness / injury / death to others	Concerned with threat of, or actual, illness, injury or death to a significant other
3. Interpersonal	Concerned with relationship, peer, or family problems
4. Academic / school	Concerned with academic or school problems

2.4.2.6 Visual analogue scales – memory ratings (Appendix 8). Participants were asked to rate how sad the memory made them feel and how upsetting they would rate the memory. Participants made these evaluations before and after the induction procedure using visual analogue scales. Participants were also asked to mark on visual analogue scales how angry, afraid, guilty, and helpless their memory currently made them feel, both before and after the induction.

The end points of all the memory rating visual analogue scales ranged from *'not at all'* to *'very much'*. To quantify the measure, the location of the mark was measured in centimetres, yielding ratings ranging from 0 to 10.

The time between pre and post ratings was approximately 25 minutes.

2.5 Procedure

The experimental session took roughly 45 – 50 minutes and is illustrated in Figure 3.

Following a verbal explanation of the study, participants were invited to ask any questions and if willing to take part to sign the consent form. Participants then re-completed the MFQ. Next, participants provided an initial mood rating on a VAS and completed the intrusive memory interview with the researcher. Participants then completed the CRIES in relation to the memory they had identified in the intrusive memory interview. Initial memory ratings were made using VAS. Participants also provided mood ratings using VAS at this stage.

Depending on what condition the participant had been randomly assigned to, participants were then trained in either the analytical rumination processing style or the concrete processing style. Following each of the three scenarios and subsequent induction periods, participants completed visual analogue scales rating their mood, anxiety and ability to engage in the processing style induction. The induction procedure lasted approximately 15 minutes.

After the induction procedure was complete participants were asked to recall the memory they had identified during the intrusive memory interview and to think about it for ten seconds. Participants then provided final memory and mood ratings using VAS. Participants completed the CRSQ individually and were fully de-briefed at the end of the session.

Verbal explanation of study, opportunity for questions, and signing of consent form

MFQ

VAS of sadness

Intrusive memory interview

CRIES

Pre induction memory ratings

VAS of sadness and happiness

Introduction of allocated processing style

Imaginary situation 1, VAS of induction check, sadness & anxiety

Imaginary situation 2, VAS of induction check, sadness & anxiety

Imaginary situation 3, VAS of induction check, sadness & anxiety

Post induction memory ratings
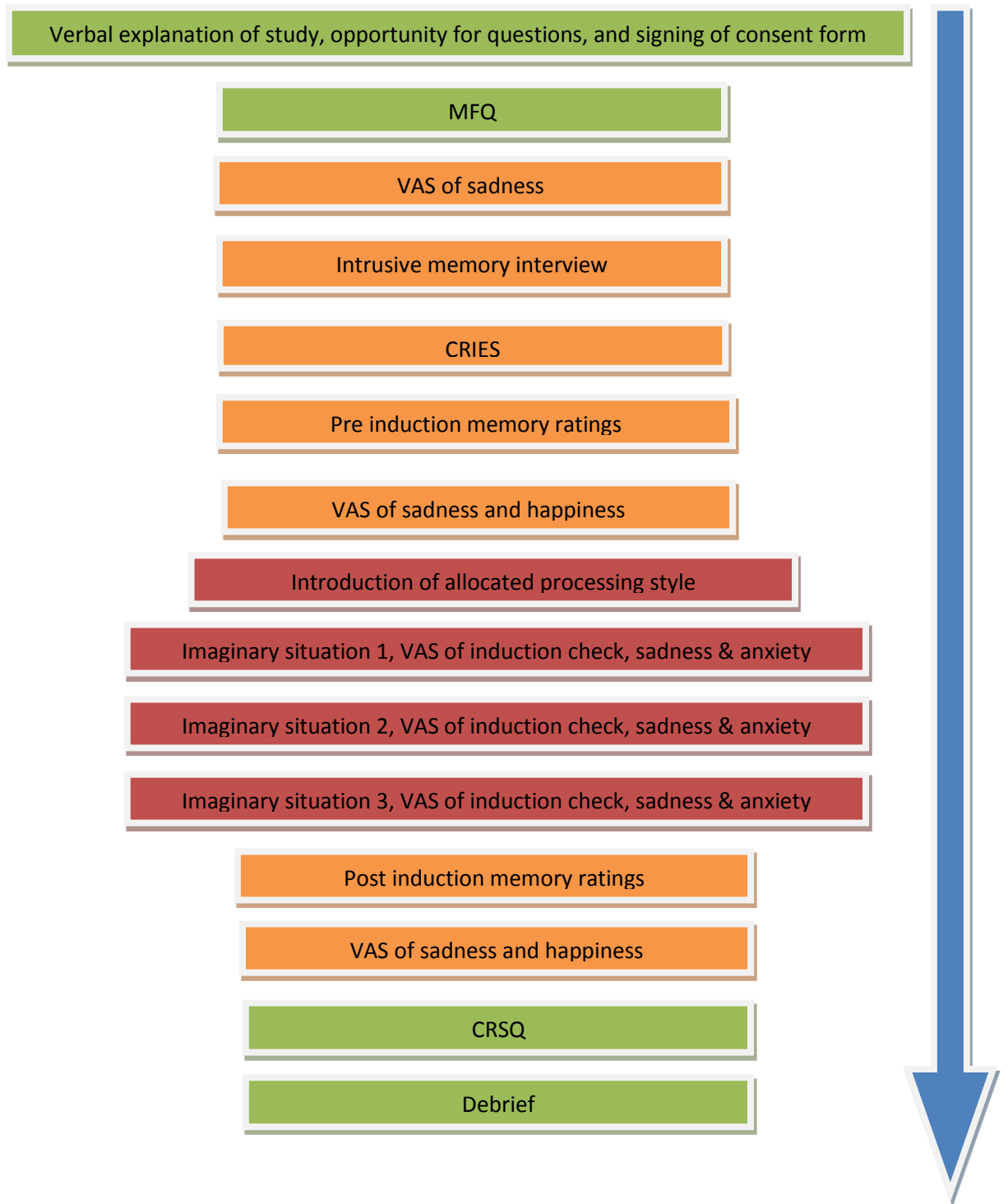
VAS of sadness and happiness

CRSQ

Debrief

Figure 3: Procedure

2.6 Data handling and analysis

      2.61 Data protection. Hard copies of participant data were anonymised and stored in a locked filing cabinet in the Institute of Psychiatry. All electronic data bases were password protected.

      2.62 Data cleaning. The main dependent variables analysed using ANOVAs (pre and post for each) were assessed for normality and homogeneity of variances using QQ plots, histograms and box plots. No serious violations were detected. All were slightly skewed but not seriously and the standard deviations were almost identical.

      2.63 Treatment of missing data. There were a number of cases were participants had missed one or two items on the MFQ (screening/experimental stage) or the CRSQ questionnaire measures. As there were no cases where there was more than 10% of data missing, missing data on the MFQ was replaced with the average score for each present item and missing data on the CRSQ was replaced with the average score for the present data of that particular subscale.

      2.64 Statistical Analysis. Repeated Measures Analysis of Variance (RM ANOVA) was used to compare pre and post induction values of mood and memory ratings while controlling for baseline differences. Pearson correlations were used to look for associations between two variables during exploratory analysis.

      2.65 Significance levels and effect sizes. For the main hypotheses a significance level of $p<0.05$ was adopted. For more exploratory analyses such as correlations an alpha level of 0.01 was adopted to reduce the risk of obtaining false positives. However, due to the small sample size (n=41) results will still be reported where $0.01 \leq p \leq 0.05$, but will be reported as trends and should be considered with caution. This study, with a sample size of 41, has 80% power to detect correlations of 0.43 or larger at an alpha level of 0.05, and correlations of 0.5 or larger at an alpha level of 0.01. Therefore this study only has the power to detect large effects.

3. Results

3.1 Inspection of data.

Visual inspection of QQ plots and histograms showed that the main dependent variables were slightly skewed but the skew was in the same direction and the standard deviations were not very different suggesting the variables should be robust against violations (Howell, 2002).

3.2. Participant demographics.

The mean average age of participants was 14.39 years (SD = 1.77), ranging from 12 to 18 years. Comparable numbers of males and females completed the experimental tasks (21 males, 20 females). The mean MFQ score was 24.29 (SD = 6.88) and the mean score on the rumination subscale of the RSQ was 20.44 (SD = 6.04).

Table 5

Participant demographics

	Mean	SD	Range
Age	14.39	1.77	6 (12-18)
MFQ score	24.29	6.88	27 (14-41)
Baseline sadness[1]	3.65	2.30	8.5 (0-8.5)
CRSQ Rumination subscale score	20.44	6.04	24 (8-32)

Note. [1]0=not at all sad, 10=very sad.

3.3 Correlational relationships between age, depression symptoms and rumination.

Pearson r correlations were examined between age and the main variables of depression, rumination, memory upset and memory sadness (table 6)[2]. This study found that depressive symptoms (MFQ score) was significantly correlated with participants' age (in years) *(r=0.53, p<0.01),* with older adolescents rating their mood as worse. A positive trend was found between trait rumination (as measured by

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[2] The role of age was examined in all other analyses but no significant effect was found

the rumination subscale on the CRSQ) and age *(r=0.37, p<0.05).* A positive trend also emerged between trait rumination and depressive symptoms *(r=0.39, p<0.05),* with a significant correlation being found between rumination and participant self-rated mood (baseline sadness) *(r=0.51, p<0.01).*

Table 6

Age and main variables correlation matrix

	Age Pearson's r : p value
MFQ score	0.53 : **0.00****
Baseline sadness	0.51 : **0.00****
CRSQ rumination subscale	0.37 : **0.02***
Memory sadness	0.03 : 0.86
Memory upset	0.19 : 0.91

Note. * significant at the 0.05 level, ** significant at the 0.01 level.

3.4 Experience and nature of the dysphoric adolescents' memories.

3.4.1 Intrusive memory experience. 73% of participants were able to identify a negative intrusive memory that they had experienced in the last week. A further 25% could identify a negative intrusive memory that they had experienced within the last month. 2% (n=1) identified a memory they had experienced about three months ago. On average participants had experienced their identified memory 4.49 times in the past few weeks (SD: 4.57; Range: 0-20), thus an estimate of weekly occurrence was 1.5.

3.4.2 Memory content. The majority of memories (83%) were coded in the categories of either 'Illness / injury / death to others' or 'Interpersonal'. Table 7 shows the number of participants whose memories were coded according to each of the four categories.

Table 7

Number of memories coded into each category

Category	Frequency	Percentage
Illness / injury / death to self	4	9.8
Illness / injury / death to others	17	41.5
Interpersonal	17	41.5
Academic /school	3	7.3
Total:	**41**	**100**

Examples of the memory descriptions provided by the adolescent sample can be seen in table 8. The examples are organised within the coding categories.

Table 8

Examples of adolescent negative intrusive memories

	Illness / injury / death to self	Illness / injury / death to others	Interpersonal	Academic /school
Example 1	"Brother pushed me down the stairs"	"Finding Dad dead"	"Mum and Dad arguing which led to Dad leaving for four days"	"Getting my AS results"
Example 2	"Having an adverse reaction and then a panic attack when taking my first migraine tablet "	"Sister being injured after a car crash"	"Three weeks after breaking up with my boyfriend, my friends left me alone in school"	"Mum saying I couldn't go the secondary school I wanted to"

3.4.3 Emotional impact of memory. Asking participants to think about and briefly describe and rate a negative intrusive memory caused them on average to rate their mood as significantly lower compared to before they had provided the memory. The mean rating of sad mood was 3.65 (SD=2.30) prior to providing the memory and 5.01 (SD=2.36) after providing the memory.

When providing their pre-induction memory ratings, participants were asked how they felt about their memory when they thought about it in relation to a number of different emotions. The strongest emotions participants reported experiencing about their identified memory were sadness and anger. Table 9 demonstrates how much of the particular emotions participants felt on average in relation to their memory.

Table 9

Memory Emotions

Emotion	Mean	SD	Range
Sad	6.28	2.63	9.5 (0-9.5)
Anger	5.55	3.18	10 (0-10)
Afraid	4.76	3.10	9.5 (0-9.5)
Guilt	4.09	3.47	10 (0-10)
Helpless	4.91	3.35	9.5 (0-9.5)

Note. 0 = not at all, 10 = very much.

3.4.4 Memory qualities. Participants were asked about the qualities of their negative intrusive memory the last time they experienced it. The vividness, distress, and reliving ratings can be seen in Table 10.

Table 10

Memory Qualities

Characteristic	Mean	SD	Range
Vividness*	7.13	1.92	7.5 (2.5-10)
Distress**	6.66	2.28	8.5 (1.5-10)
Reliving***	4.73	3.57	10 (0-10)

*Note. *0=not at all vivid, 10=very vivid. **0=not at all distressing, 10=very much. ***0=clear it was just a memory from the past, 10=felt like it was happening again.*

3.4.5 Memory intrusion and avoidance. Correlations amongst participant mood, participant trait rumination, and the CRIES subscales were investigated. Analysis indicated that participant mood was not significantly correlated with the CRIES intrusion *(r=0.04, p=0.79)* or avoidance *(r=0.02, p=0.89)* subscales. This

suggests that the amount of intrusions participants experienced in relation to the particular memory they identified, and the extent to which they tried to avoid intrusions of their identified memory, was not significantly related to their mood.

The CRIES avoidance subscale also did not correlate significantly with the CRSQ rumination subscale *(r=0.17, p=0.28)*, however, correlational analysis suggests a positive trend between the CRIES intrusion subscale and the CRSQ rumination subscale *(r=0.34, p<0.05)*. This could indicate that the more participants had a tendency to ruminate in everyday life, the greater their level of memory intrusiveness, or the greater level of memory intrusiveness, the more likely participants were to ruminate. In this sample, however, having a general tendency to ruminate and participants' avoidance of their intrusive memories did not appear to be related.

Memory intrusiveness (as measured on the CRIES intrusion subscale) was additionally significantly correlated with how sad the participants felt about their memory *(r=0.59, p<0.01)*. How sad the participants felt about their memory was significantly correlated with trait rumination *(r=0.41, p<0.01)*.

3.5 The impact of inducing rumination and concrete thinking on the experience of an intrusive memory.

Sections 3.5.1 – 3.5.3 consider the characteristics of the two condition groups to ensure no other group differences could account for any significant findings when the hypotheses for this study are tested in section 3.5.5. Section 3.5.4 considers the effect of the induction procedure on the two groups.

3.5.1 Participant characteristics. An independent sample t-test was conducted to determine if there were significant differences in participant age between the experimental conditions. The t test revealed no significant difference *(t[39]=-0.70, p=0.49)*.

Chi square analysis was conducted to determine if there was a significant difference in gender between the conditions. Again no significant difference was found

(Fisher's exact test: p=0.76). Table 11 summarises participant's age and gender characteristics across condition.

Table 11

Age (years) and gender distribution of participants across conditions

		Condition			
		Rumination	Concrete	Test Statistic	p
Age	Mean (SD)	14.22 (1.45)	14.61 (2.15)	-0.70	0.49
Gender	Male:Female n (%)	11(27):12(29)	10 (24):8(20)		0.76

3.5.2 Memory characteristics. Statistical tests were run to determine whether memory characteristics (including memory content, memory qualities, and effect of memory on mood) differed significantly across conditions.

3.5.2.1 Memory content across conditions. An Exact Chi square test was conducted which is a permutation of the Chi square test and which does not hold the assumption that no cells have frequencies lower than 5. The analysis indicates that the two condition groups do differ significantly in terms of memory content *(Fisher's exact test: p=0.009).* Table 12 demonstrates the distribution of the memory content categories between the two groups.

Table 12

Memory content between conditions

Coding category:	Rumination		Concrete	
	n	%	n	%
Illness / injury / death to self	0	0	4	22.2
Illness / injury / death to others	11	47.8	6	33.3
Interpersonal	12	52.2	5	27.8
School / academic	0	0	3	16.7
Total:	**23**	**100**	**18**	**100**

3.5.2.2 Memory qualities across conditions. Independent t tests were conducted to determine whether there were any significant differences between the conditions in terms of the memory qualities. Table 13 demonstrates that the t tests revealed no significant differences in memory qualities across the conditions.

Table 13

Distribution of participant's memory qualities across conditions

	Condition			
	Rumination	Concrete	Test	p
	Mean (SD)	Mean (SD)	Statistic [1]	
CRIES Total score	16.82 (3.66)	15.11 (4.71)	1.31	0.20
Memory frequency*	5.30 (5.64)	3.44 (2.43)	1.30	0.20
Memory time**	14.70 (30.78)	7.28 (7.51)	1.00	0.33
Event time***	48.15 (50.53)	32.83 (27.62)	1.16	0.26
Vividness****	7.04 (2.01)	7.25 (1.85)	-0.34	0.74
Reliving level*****	4.77 (3.57)	4.69 (3.68)	0.06	0.95

Note. [1] df for all t tests = 39. *number of times experienced memory in past few weeks. **last time experienced the memory (in days). ***how long ago the event the memory was based on occurred (in months). ****0=not at all vivid, 10=very vivid. *****0=clear it was just a memory from the past, 10=felt like it was happening again.

3.5.2.3 Effect of memory on mood across conditions. Asking participants to think about and briefly describe and rate a negative intrusive memory caused them on average to rate their mood as significantly lower compared to before they had provided the memory. Independent t tests revealed that there were no significant differences between participants assigned to the rumination condition and participants assigned to the concrete condition at either of these mood rating time points *(t[39]=-0.73, p=0.47; t[39]=-0.77, p=0.45).*

3.5.3 Depression status and trait rumination. In order to investigate differences between the participants allocated to the two experimental conditions on factors that could influence performance on the experimental tasks (baseline mood and natural tendency to ruminate) independent t-tests were conducted on MFQ, baseline level of sadness, and CRSQ rumination subscale scores. Table 14 demonstrates the distribution of participant's scores on these measures and the results of the t tests. No significant differences between the conditions on these measures were found.

Table 14

Distribution of participant's baseline mood and natural tendency to ruminate across conditions

	Condition			
	Rumination	Concrete	Test Statistic [1]	p
	Mean (SD)	Mean (SD)		
MFQ score	23.22 (6.69)	25.67 (7.06)	-1.14	0.26
Baseline level of self-rated sadness*	3.41 (2.25)	3.94 (2.39)	-0.73	0.47
CRSQ Rumination subscale score	20.22 (5.88)	20.72 (6.40)	-0.26	0.79

Note. [1] df for all t tests = 39. *0=not at all sad, 10=very sad

3.5.4 Induction procedure. To investigate the differential effect of the induction conditions on the participants, independent t-tests were conducted on the average score across the three scenarios for each of the induction VAS ratings provided in the induction training period. Table 15 demonstrates participants mean scores per VAS scale across condition and the results of the t tests. The scores which

are significantly different between conditions are as would be expected (see section 4.5.5).

Table 15

Mean VAS ratings during the induction training period across conditions

	Condition			
	Rumination	Concrete	Test Statistic[1]	p
	Mean (SD)	Mean (SD)		
Sadness rating*	5.31 (1.71)	4.49 (2.17)	1.36	0.18
Anxiety rating**	6.30 (1.88)	5.89 (2.23)	0.65	0.52
How able to think***	7.47 (1.34)	7.07 (1.17)	0.99	0.33
Question use****	7.10 (1.22)	6.24 (0.90)	2.51	**0.02**
Specific vs past*****	4.60 (1.09)	5.57 (1.29)	-2.62	**0.01**
Words vs images******	6.99 (1.78)	7.57 (1.81)	-1.03	0.31

Note.[1] df for all t tests = 39. *0=not at all sad, 10=very sad. **0=not at all anxious, 10=very anxious. ***0=not at all able to think of the situation for 2 minutes, 10=very able. ****0=thinking about the situation using the questions none of the time, 10=all of the time. *****0=always thinking about similar past situation, 10=always thinking about this situation. ******0=always thinking in words, 10=always thinking in images.

3.5.4.1 Mood ratings across conditions. Although the mean VAS sadness ratings were higher in the rumination condition compared to the concrete condition during the induction training period, this difference did not reach significance *(t[39]=1.36, p=0.18)*. Participant's anxiety ratings were also not significantly different across conditions during the induction training period *(t[39]=0.65, p=0.52)*.

3.5.4.2 Participant's ratings on the processing mode VASs across conditions. There was no significant difference across conditions on the first processing mode induction check in terms of how able participants were to think about the situation for two minutes *(t[39]=0.99, p=0.33)*. There was a trend towards a significant difference between conditions on the second processing mode induction check, as participants in the rumination condition used the questions on the card for more time than participants in the concrete condition *(t[39]=2.51,p<0.05)*.

Participants in the rumination condition were also significantly more likely to think about a similar situation in the past rather than the specific situation provided in the induction training period, compared to participant's in the concrete condition *(t[39]=-2.62, p≤ 0.01)*.

Participants in the concrete condition were more likely to think in images rather than words compared to those in the rumination condition, however, this difference did not reach significance *(t[39]=-1.03, p=0.31)*

3.5.5 Testing the hypotheses in relation to the impact of rumination on the experience of intrusive memories.

3.5.5.1 Hypothesis 1. It was hypothesised that participants in the rumination condition would show an increase in how upsetting they rated their intrusive memory pre and post the induction compared to those in the concrete condition. A 2 x 2 repeated measures ANOVA with condition (concrete, rumination) as a between subjects variable and time (pre, post) as a within subjects variable was conducted to determine if there were significant differences in upset memory ratings. The main effect for time *(F [1,39] = 5.45, p<0.05)* was significant. The main effect for condition *(F [1,39] = 0.08, p = 0.77)* was not significant. The time x condition interaction was not significant *(F [1,39] = 0.01, p = 0.92).* These results suggest that while participants in both conditions felt significantly more upset by their memory after the induction compared to before, the condition the participants were in did not make a difference. The mean upset memory ratings are shown in table16. Figure 4 graphically demonstrates the results of the ANOVA.

Table 16

Mean upset memory ratings pre and post induction between conditions

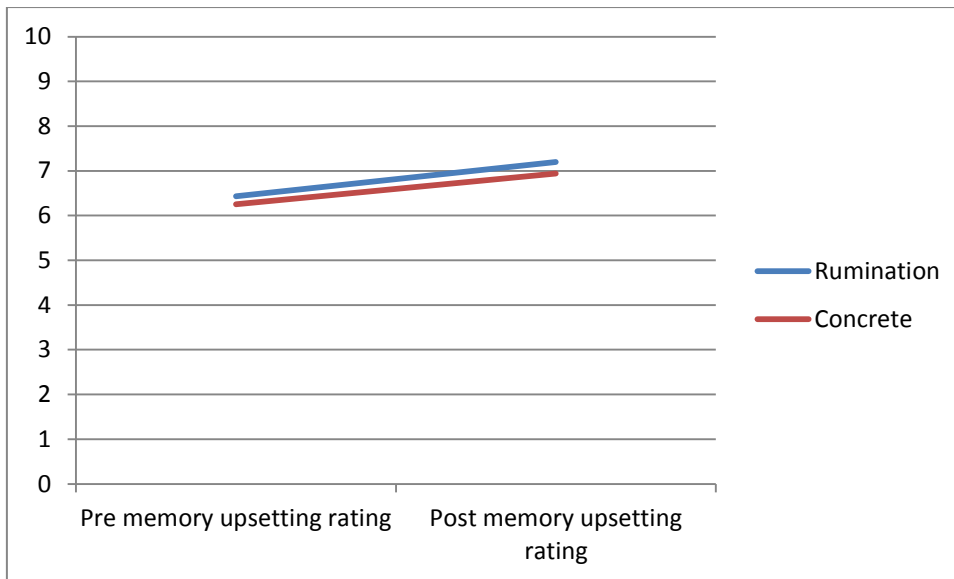| Condition	Time point	Mean (SD)
Rumination	Pre	6.43 (2.66)
	Post	7.20 (2.22)
Concrete	Pre	6.25 (3.30)
	Post	6.94 (2.07)

Figure 4. Memory upsetting rating change over time between conditions. This line graph demonstrates the non-significant interaction between time and condition on participant's memory upsetting ratings pre and post induction.

3.5.5.2 Hypothesis 2. It was hypothesised that participants in the rumination condition would show an increase in how sad their intrusive memory made them feel pre and post the induction compared to those in the concrete condition. A 2 x 2 repeated measures ANOVA with condition (concrete, rumination) as a between subjects variable and time (pre, post) as a within subjects variable was conducted to determine if there were significant differences in sadness memory ratings. The main effects for time *(F [1,39] = 0.24, p = 0.63)* and condition *(F [1,39] = 0.38, p = 0.54)* were not significant. The time x condition interaction was not also significant *(F [1,39] = 0.98, p = 0.33).* Table 17 shows the mean sadness memory ratings before and after the inductions between conditions. Although there was no significant difference between the conditions regarding how sad participants rated their memory making them feel, the rumination mean scores increased and the concrete mean scores decreased which are the directions which were hypothesised. Figure 5 graphically demonstrates the results of the ANOVA.

Table 17

Mean sadness memory ratings pre and post induction between conditions.

Condition	Time point	Mean (SD)
Rumination	Pre	5.98 (2.54)
	Post	6.30 (2.29)
Concrete	Pre	6.67 (2.78)
	Post	6.56 (2.52)

Figure 5. Memory sadness rating change over time between conditions. This line graph demonstrates the non-significant interaction between time and condition on participant's memory sadness ratings pre and post induction.

Age was entered as a covariate in this repeated measures ANOVA to investigate possible developmental aspects but this revealed no significant effect *(F [1,38]=0.96, p=0.33).*

 3.5.5.3 Hypothesis 3. It was hypothesised that participant mood would get worse from pre to post induction in both conditions. A 2 x 2 repeated measures ANOVA with condition (concrete, rumination) as a between subjects variable and time (pre, post) as a within subjects variable was conducted to determine if there were significant differences in sadness mood ratings. The main effect for time was

not significant *(F [1,39] = 1.52, p = 0.40)* suggesting that participants, regardless of their condition, did not experience a decrease in their mood over time. The main effect for condition was not significant *(F [1,39] = 0.64, p = 0.43)* and nor was the time x condition interaction *(F [1,39] = 0.03, p = 0.87).* The results of the ANOVA are graphically demonstrated in figure 6. Table 18 shows the mean mood ratings in each condition pre and post induction.

Table 18

Mean mood rating pre and post induction between conditions.

Condition	Time point	Mean (SD)
Rumination	Pre	4.76 (2.29)
	Post	5.17 (2.61)
Concrete	Pre	5.33 (2.59)
	Post	4.47 (3.04)

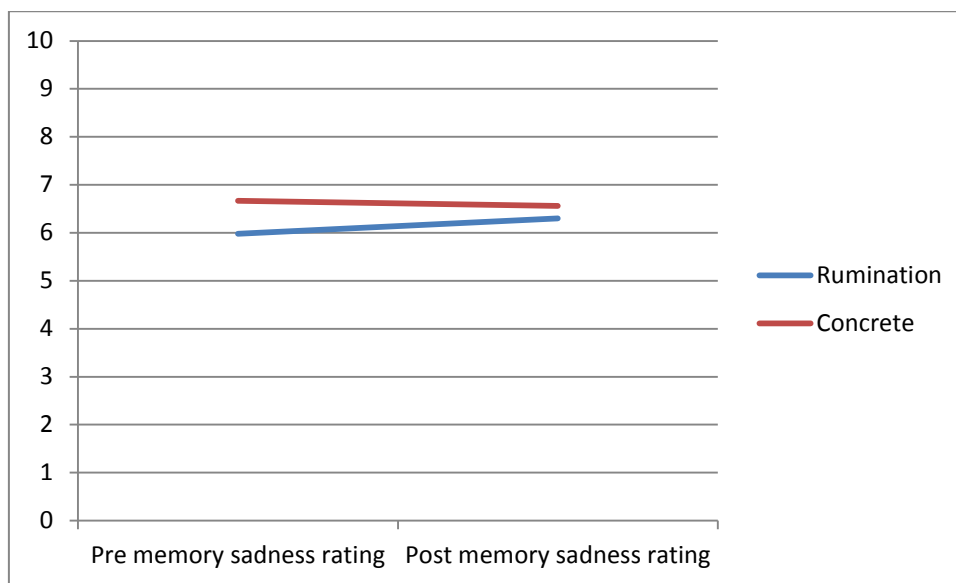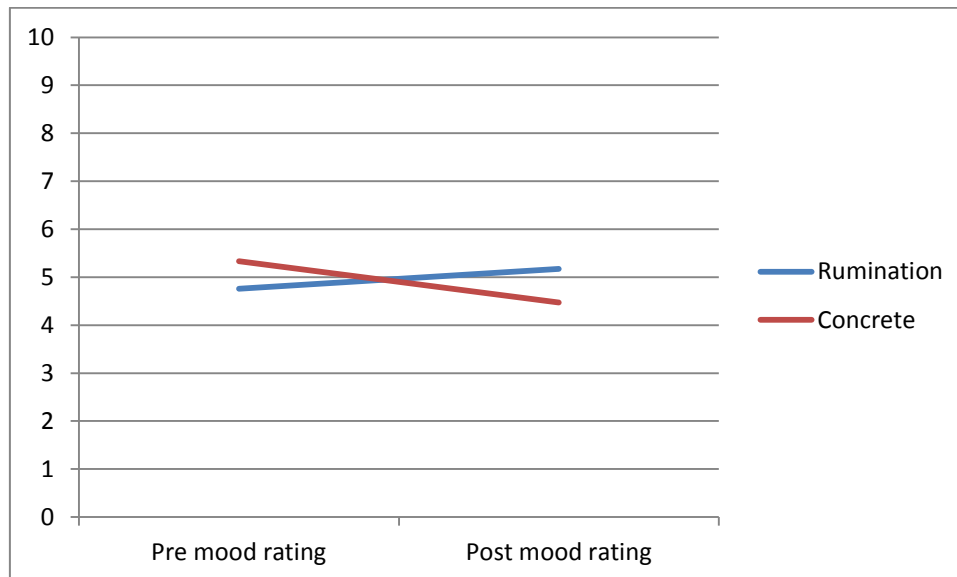*Figure 6. Mood change over time between conditions. This line graph demonstrates the non-significant interaction between time and condition on participant's sad mood pre and post induction ratings.*

3.5.5.4 Hypothesis 4. If there were significant differences in participant memory ratings pre to post induction between the two conditions, it was hypothesised

that this effect would not be entirely accounted for by the effect of the inductions on participant mood. As there were no significant differences in terms of memory ratings pre to post induction for the different conditions, however, there is no need to control for mood in the analysis.

4. Discussion

4.1 Overview of the chapter

This study increases our understanding of the experience of intrusive memories in adolescent depression, and considers the impact of cognitive processing styles on this experience. This chapter discusses relevant methodological issues, summarises the findings and considers these in the context of other research, suggests potential clinical implications, and outlines ideas for future research in the area.

4.2. Summary of current study

This study aimed to recruit dysphoric adolescents to gain insight into the experience and nature of intrusive memories in adolescent depression, and to determine the extent to which processing style affected this experience. This was done by selecting students from a London secondary school and sixth form who scored in the upper quartile on a measure of depressive symptoms for their year group. All participants were asked about a recent negative intrusive memory they had experienced and were asked to provide details about the nature and quality of their memory. Experimental inductions were then used to compare the effect of two different processing styles (rumination vs concrete thinking) on how participants emotionally evaluated their memory. Additional information from VAS scales and self-report questionnaires was also obtained. A between subjects, repeated measures design was used and RM ANOVAs were conducted to determine any significant effects of processing style on intrusive memory experience.

4.3 Overview of the findings

This study was one of very few to explore the experience of negative intrusive memories in adolescent depression. Analysis of the responses provided by the dysphoric adolescent participants to the Intrusive Memory Interview revealed that they were able to generate a recent, negative, intrusive memory. The majority of participants had experienced such a memory within the last week and had experienced this memory a number of times over the past few weeks. The memories

they described mainly concerned threat of, or actual, death, injury or illness to a close other, or interpersonal problems. The memories were experienced as vivid and distressing and with a relatively high sense of reliving. The emotions participants most experienced in relation to their memories were sadness and anger.

Correlational analysis of sample characteristics revealed that the older the adolescent, the worse their mood. There were positive trends between trait rumination and both participant mood and age. It is particularly relevant to this study that a trend was found between the extent to which participants experienced intrusions of their memories (as measured by the CRIES intrusion subscale) and participant trait rumination.

In the final stage of the study, it was hypothesised that participants induced to think in a ruminative style would experience their intrusive memory as more distressing compared to engaging in a concrete thinking style, over and above any changes in mood.

Analysis revealed that after completing the induction procedure participants rated their memory as more upsetting than prior to the induction, however, there was no difference between the rumination or concrete groups. In terms of participants rating how sad they felt in response to the memory, there was no significant difference in these ratings over time (pre to post induction) or between conditions. There was also no significant difference in participants' mood over time or between conditions suggesting the inductions did not have an effect on mood.

4.4. Methodological limitations and considerations

4.4.1 Sample size and characteristics.
Statistical calculations based on findings from Williams and Moulds (2010) suggested that only 4 participants per group were required to give sufficient power to find a significant effect. This was due to the very big effect size obtained by Williams and Moulds (2010). Given that our study, however, was the first of its kind with young people a more conservative target of 20 participants per group was aimed for. It should be noted, however, that whilst employing a similar design there were differences between Williams and Moulds

(2010) and our study in terms of the participant population and the specific inductions used. It therefore remains a possibility that our study could have been underpowered to detect an effect and a type 2 error may have occurred.

36 participants were excluded after the experimental stage of this study due to either scoring too low on the induction manipulation checks or due to instability of MFQ scores across the two completion times. While this was a significant loss of numbers, the stringent exclusion criteria benefited the study as data from participants was only used if the participant demonstrated dysphoria over a period of time and did engage properly with the induction material.

The conclusions drawn from this study may be limited by the presence of sampling biases. At the screening stage participants with an ID were excluded due to the skills needed to complete the experimental procedure independently. This, however, makes the sample less representative of the general adolescent population and also means a group of people who are actually more likely to experience depression were excluded (e.g. Linna et al., 1999). The screening stage was also only completed by those adolescents who were present in registration on the mornings screening took place. This means the sample may have been biased towards adolescents who attended school and were on time. Given that education attendance is negatively associated with depression, and school attendance is associated with other correlates of depression such as family structure and income (Fletcher, 2008), exclusion of this group is a limitation.

In addition to the nonattendance which was counted as students opting out, there were also student and parent opt outs at each stage. Although there is no way of knowing the reasoning behind these opt outs, there was no significant difference in MFQ score between those who did and did not opt to participate at the experimental stage suggesting the presence of particularly low mood or depression was not a reason.

An advantage of this study in comparison to many other school based studies is that an opt-out procedure was used. When opt-in procedures are used, parents who provide written consent tend to represent a more socially advantaged group

(Anderman et al., 1995). Therefore the use of the opt out procedure in this study may have increased the representativeness of the sample.

This study used a broad age range of young people (12 – 18 years) in order to research the period of adolescence where there is a significant increase in the incidence of depression. There is the possibility this could have influenced engagement and therefore exclusion. For example, given that rumination appears to become more habitual throughout adolescence, induction procedures which are sufficient for older adolescents may not be for younger adolescents. If this had been the case age effects would have been expected when analysing the data from the likert scales administered during the induction, but this was not the case. It could also have been that younger adolescents found it harder to concentrate but again this was not indicated on the induction likert scales.

4.4.2 Use of an analogue sample. This study aimed to explore the experience and nature of intrusive memories in adolescent depression as well as investigating the impact of a ruminative thinking style on the experience of intrusive memories in adolescent depression. A clinically depressed sample, however, was not used meaning it is important to consider to what extent our findings can be generalised to a depressed sample. Participants who did not score in the upper quartile at two time points were excluded meaning the sample is more likely to represent adolescents with persistent sub threshold depressive symptoms rather than adolescents with temporary low mood. Given that increasing levels of depressive symptoms are associated with an increasing incidence of major depression (e.g. Lewinsohn, Solomon, Seeley & Zeiss, 2000) a high dysphoric sample are appropriate and important to study given their risk of developing depression.

4.4.3 Ethical issues associated with using a dysphoric sample. This study required some important ethical issues to be considered. While this study did not use a clinical sample, many of the young people scored above the suggested threshold for likely depression on the MFQ. This therefore raises issues about the acceptability of asking the participants to partake in exercises that have the potential to lower mood (either by asking about an intrusive memory, or inducing a ruminative processing mode). Participants were notified before providing consent that they would be

required to think about sad or upsetting topics, and there was no obligation for them to take part. When conducting research with children under the age of 16 it is also important to gain parental consent. While our opt out procedure meant there was the possibility parents might not read the information sheet and thus unintentionally give consent by not replying, this possibility was minimised by posting information sheets to the parents' home addresses. At the end of the experimental procedure participants were fully debriefed. During debriefing participants were all exposed to the concrete processing style and informed about the potential positive effects of concrete thinking on mood. Participants were not released back to class until they felt ready and the researcher engaged them in general conversation to facilitate this. A positive mood induction may have been the most appropriate technique to use at this stage and should perhaps be used in any future similar research. Participants who were identified as low in mood or at risk during the experimental procedure were offered extra help via the school or a local CAMHS service. It is likely a number of these young people would not have been identified for extra support had they not taken part in this study.

4.4.4 Use of an upper quartile. This study only recruited participants for the experimental stage who fell in the upper quartile for their year group in terms of their MFQ score. This means that the data exploring the experience and nature of the intrusive memories is limited insofar as it is unclear how this data would compare to a non-dysphoric sample. It may be for example that significant correlations would have been found between mood and certain memory characteristics if participants with a range of dysphoria levels had been used, rather than only those participants who all scored high on a measure of depressive symptoms. It would be interesting for future studies to replicate this study with an upper and lower quartile group.

4.4.5 Measurement of intrusive memories and their characteristics. The intrusive memory for each participant was identified using the intrusive memory interview. As found during piloting, the adolescent participants all appeared to understand the concept of an intrusive memory well when read the intrusive memory interview instructions, and the majority of participants easily identified an example. Although a small number of participants expressed reluctance to give many details about the content of their memory, all were happy to provide ratings about the nature

and experience of the memory. It is therefore likely that the intrusive memory data provided by participants is representative of their experience.

The use of a repeated measures design where participants rated the emotional impact of their memory at two time points could have been problematic as it may be that participants remembered their previous answer and re-provided that rather than truly thinking about how the memory was making them feel at the post time point. The use of VAS scales only with end points (rather than number markers all the way along) aimed to reduce the likelihood of this as it seems probable that participants would be more likely to remember an exact number than a point on a line. There is also the possibility that demand effects occurred whereby participants provided scores on the basis of what they expected the experimenter wanted. Debriefing at the end of the procedure, however, indicated that participants were not aware of the experimental hypotheses.

4.4.6 Effectiveness of experimental processing style induction. The effectiveness of the inductions was measured using two VAS manipulation checks as described in the methodology. Participants who scored less that 50% on either manipulation check were excluded making the study methodologically rigorous. There is the possibility, however, that demand effects occurred and participants believed they should say they had been using the questions on the card or had been thinking about the scenario for a high proportion of time, despite not having done so. This, however, was not identified in debriefing, and a relatively large proportion of participants were excluded due to scoring below 50% on at least one of the manipulation checks suggesting participants were not concerned about providing low ratings on these measures. Four other VAS ratings were taken alongside the manipulation checks to help gain insight into the effect the induction was having on the way participants were thinking and feeling.

To help track the effect of the inductions on participant mood two of the VASs measured the self -reported effects of each induction on sad mood and anxiety. The fact that no significant difference was found between the two conditions in terms of mean mood or anxiety ratings is consistent with past studies suggesting concrete thinking does not improve mood in relation to rumination in the short term (e.g.

Rimes & Watkins, 2005; Watkins & Moulds, 2005; Moberly & Watkins, 2006). However, previous studies using similar methodologies to this study with adolescents (Taylor et al, in prep; Leigh et al, in prep b) found sad mood in both conditions to worsen following the inductions. These studies both used hypothetical and personal scenarios during the induction procedure whereas this study only used hypothetical scenarios. It is possible that it was the focus on personally relevant material that resulted in mood deterioration in the previous studies. On the other hand the mood findings from studies using hypothetical scenarios to aid induction of thinking styles have been mixed. Using hypothetical scenarios to induce concrete and analytical thinking, Watkins, Moberly and Moulds (2008) did find an increase in despondency over time whereas Moberly and Watkins (2006) found no difference in positive affect and a reduction in negative affect over time (with no difference between conditions).

To determine how well participants were engaging in the induction procedure they were asked to complete a VAS indicating how much time they spent thinking about the scenarios (manipulation check 1). There were no significant differences between the concrete and rumination conditions on this VAS suggesting participants in both conditions equally attempted to think about the scenarios and engage with the task.

To assess how well participants were able to engage in the processing style allocated, a VAS was employed for participants to indicate how much time they were using the questions on the card (manipulation check 2). The fact that there was a trend towards participants in the concrete condition spending less time using the questions on the card is consistent with the idea that people may find it harder to engage in a thinking style which is not naturally their own. For our dysphoric sample, many of whom scored high in trait rumination (see section 4.5.1), it would be expected that it would be hard to keep thinking about a situation in a concrete way.

A further VAS was employed to determine whether participants were more likely to think about the exact situation provided by the scenario or a similar situation from their past. Compared to participants in the concrete condition, participants in the rumination condition were significantly more likely to think about similar past situations rather than the exact situation provided. This is consistent with the idea that

rumination involves people using past negative experiences to think about their current experience.

Another VAS was used to assess whether participants were more likely to use images or words when thinking about the scenarios in the induction procedure. Surprisingly there was not a significant different between conditions in terms of which participants were more likely to think in images. Participants in the concrete condition being more likely to think in images would be consistent with the idea that reduced concreteness when worrying allows avoidance of aversive imagery (Stöber, Tepperwien & Staak, 2000; Borkovec, 1994).

Overall the VAS induction findings suggest that participants in both conditions were able to engage adequately in the induction procedure and that the induction procedure was supporting participants to engage in either a ruminative or concrete way as intended. It is surprising, however, that the participants did not think more in images when induced to think in a concrete way compared to a ruminative way. Despite having rigorous manipulation checks our procedure could perhaps benefit from further manipulation checks which assess the extent to which participants say they thought in an abstract or concrete way. For example many of the adult rumination induction studies have used procedures similar to Williams and Moulds (2010) who asked participants to rate how focused they were on themselves and how much they were thinking in an abstract way, on VAS scales, when using a distraction vs rumination design. Rating if they are thinking in an abstract or concrete way, however, may be difficult for adolescents who are unlikely to have a clear understanding of these concepts.

A further limitation of the induction procedure is that while engagement with the allocated thinking style was measured during the induction procedure, it was not measured while the post memory ratings were being provided. There is the possibility that participants stopped thinking in their allocated style while being asked to think about and re-rate their memory and reverted back to their usual style of processing. It would, however, have been practically difficult to include assessment of processing style while the post memory ratings were being provided. One potential way to judge the processing style at the time of the post ratings could have been to ask participants

to record, retrospectively, their type of thinking (concrete vs abstract) on another manipulation check. Alternatively it might have been better to ask participants to directly ruminate or concrete think about their memory rather than relying on the induced processing mode to persist. The rationale for not doing this is outlined in section 4.5.3.3.5.

4.5 Discussion of the results

Information gained from self-report questionnaires concerning participants' depressive symptoms, trait rumination and intrusive memories is considered. Each research aim is then discussed in turn in the context of the relevant hypotheses.

4.5.1 Self report questionnaire data concerning depressive symptoms, rumination and intrusive memories. There was a significant relationship between age and self-reported depressive symptoms in this study with older children experiencing more depressive symptoms than younger children. This is consistent with Meiser-Stedman et al. (2012) who found a trend towards a significant relationship between age group and depressive symptoms (as measured using the Birleson Depression Self-Rating Scale) in a school sample aged 11 to 18 years. Our study also found a trend between trait rumination and age with older children being more likely to have a trait ruminative style compared to younger children. This is consistent with Leigh et al. (in prep a) who found trait rumination as measured by the CRSQ to increase with age in a school sample aged 11 to 15 years.

The elevated levels of trait rumination in our sample (mean age = 14.39) is demonstrated by a mean of 20.44 on the CRSQ rumination subscale which is considerably higher than for non-clinical adolescent samples using the same measure (e.g. McLaughlin & Nolen-Hoeksema (2011) and Verstraeten, Vasey, Raes & Bijttebier (2009)). Leigh et al. (in prep a) found a mean rumination subscale score on the CRSQ of 8.54 in a non-clinical sample with an average age of 13.3 years. Their average score increased to 15.3 for those scoring 21-28 on the MFQ, and to 21.5 for those scoring above 29 on the MFQ. The average MFQ score in our study was 24.29 meaning our results are relatively consistent with Leigh et al. (in prep a) whose

participants were slightly younger. Rumination thus appears to be a response style elevated in dysphoric adolescent samples.

This study found a positive trend between depressive symptoms and trait rumination. This is consistent with the growing cross sectional and longitudinal questionnaire evidence pointing to a tendency to ruminate being a vulnerability and maintenance factor in depression (see section 1.3.3).

Despite being unable to determine causation, the significant correlations and trends found between the CRIES intrusion subscale score, the CRSQ rumination subscale score, and how sad the memories were rated is consistent with the idea that rumination is an unsuccessful emotion regulation strategy. As in PTSD (see section 1.5.1), depressed individuals may avoid processing emotionally difficult events by ruminating about them but then the distress associated with the event will continue when intrusive memories of the life event occur, and this may maintain depression. These correlations would need to be tested with a larger sample size and regression analyses in future studies for any firm conclusions to be drawn.

4.5.2 The experience and nature of intrusive memories in a dysphoric adolescent sample. Exploratory in nature, the first aim of this study was to investigate the frequency, content, qualities, emotional impact, and the intrusion and avoidance characteristics of the intrusive memories provided the by the dysphoric adolescent sample.

4.5.2.1 Occurrence and frequency of intrusive memories. Our findings reveal that the dysphoric adolescents in our sample were all able to generate a negative intrusive memory and the vast majority (73%) could identify one that had occurred in the last week. This is in line with Meiser-Stedman et al. (2012) who found that in an adolescent school sample intrusive memories were a relatively common phenomena. It is also consistent with the adult literature. Starr and Moulds (2006) found that 83% of their undergraduate participants reported an intrusive memory of an unpleasant event within the last seven days, and Williams and Moulds (2007a) found 60% of their undergraduate sample reported a negative unpleasant memory within the last week. Reynolds and Brewin (1999) compared how many

people reported a negative intrusive memory in the last week in a depressed and PTSD adult sample. 73% of their depressed sample and 98% of the PTSD sample could report such a negative intrusive memory.

The specific memory identified by participants in our study occurred on average 1.5 times in one week. In their study with undergraduates Starr and Moulds (2006) found a mean frequency of 1.28 and in their depressed group, Reynolds and Brewin (1999) found an average of 1.1. In their adolescent sample Meiser-Stedman et al. (2012) found a mean of 1.15. This suggests frequency is relatively consistent across the different samples used in the different studies.

Taking our findings on the occurrence and frequency of negative intrusive memories together with similar studies with different populations, including depressed and non-depressed samples of different ages, intrusive memories appear to be a common experience for the majority of adolescents and adults. Although there is some inconsistency in the literature (e.g. Meiser-Steadman et al., 2012), our finding that the occurrence/frequency of intrusive memories is not related to depressive symptoms is consistent with a number of other studies (e.g. Williams and Moulds, 2007a, Brewin et al.1996). Newby and Moulds (2011b) found a large proportion of individuals to report a negative intrusive memory regardless of their depression status (currently depressed, recovered depressed and never depressed), and found no significant difference in memory frequency between the three groups. Similarly Brewin et al. (1998) found that after controlling for baseline depression, intrusions did not predict depression symptoms at follow up. These findings support the idea that intrusive memories are a general feature of human memory rather than a symptom of particular psychological disorders (Bywaters, Andrade & Turpin, 2004). Looking to the PTSD literature, studies have suggested that presence and frequency of intrusive memories are poor predictors of PTSD symptoms prospectively (Newby & Moulds, 2011a). In both PTSD and depression there has been a move towards the idea that other memory characteristics rather than frequency may predict condition severity.

4.5.2.2 Content of intrusive memories. The reported content of the memories provided by our dysphoric adolescent sample is very similar to the content of intrusive memories found in depressed adult research. Reynolds and Brewin (1999)

found that a depressed group of adult participants were more likely to report intrusive memories consisting of death, illness or injury to family members (40%), or interpersonal problems (35%), whereas participants with PTSD were more likely to report memories consisting of personal illness or injury (36%), or personal assault (36%). This is consistent with our findings where the majority of memories were either coded in the 'illness/ injury/death to others' (41.5%) or 'interpersonal problems' (41.5%) categories. No memories could be classified as personal assault or abuse in this study and thus the category was not used. This suggests that while PTSD intrusive memories tend to be focused on an event which indicated danger to the self, intrusive memories in depression are more relational in content.

Intrusive memories are considered a common reaction to negative events (see Brewin, Dalgleish, & Joseph, 1996) and the finding that interpersonal problems are one of the most common memory content in this study is consistent with the research on interpersonal negative life events as risk factors for depression (Hammen, 1991). Chronic, severe stressors that affect relationships are some of the most important risk factors for depression (Thapar et al., 2012) and resiliency findings particularly highlight the protective effects of good quality interpersonal relationships.

On the other hand, Williams and Moulds (2007a; 2007b; 2010) who used undergraduate, non-clinical samples, found memories of interpersonal problems to be by far the most common suggesting intrusive memories in general are most likely to consist of interpersonal problems. In two studies which report memory content for depressed samples (Reynolds & Brewin, 1999; Patel et al. 2007) memories of illness/injury/death to another, along with interpersonal problems, were the most common, whereas they occurred much less in the undergraduate samples. One potential explanation for this is that memories concerning death/illness/injury to another may be more likely to be experienced by people who are/become depressed because environmental risk factors for depression include experiencing stressful life events of this kind (Birmaher et al. 1996). Interpersonal problems may be a more universal problem, differing via extent/impact rather than occurrence in depressed and non-depressed samples.

4.5.2.3 Intrusive memory qualities. If occurrence, frequency and content of intrusive memories can all be relatively similar between non depressed and depressed samples this suggests there may be something else about these memories that makes them significant in depression. More recent research has suggested this may be concerned with certain qualities of the memories (e.g. Williams and Moulds, 2007a).

Previous adult research has found that PTSD and depressed patients both commonly report intrusive memories as being vivid, distressing, and as being accompanied by a sense of reliving the original experience (e.g. Reynolds & Brewin, 1999). This study found that the dysphoric adolescent participants gave an average vividness rating for their intrusive memory of 7.13 on the VAS rating scale where 0=not at all vivid and 10=very vivid. On similar scales, Patel et al. (2007) found a vividness mean of 8.2 in their sample of depressed adult patients and Williams and Moulds (2007a) found a mean of 6.9 in their undergraduate sample. The adolescent dysphoric participants in this study provided an average memory distress rating of 6.66 on a VAS scale where 0=not at all distressing and 10=very distressing. In a similar pattern to the vividness ratings, other studies that have measured memory distress in a similar way and which have used depressed adult samples, found higher mean ratings; Reynolds and Brewin (1999) (7.9) and Patel et al. (2007) (7.9), whereas with an undergraduate sample Williams and Moulds (2007a) found a lower mean rating of 5.7. In terms of feeling like they were reliving the memory the dysphoric adolescent participants in this study gave a mean rating of 4.73 on a VAS where 0=clear it was just a memory from the past and 10=felt like it was happening again. Using a similar method Patel et al. (2007) found a mean rating for nowness (conceptually similar to reliving in this study) of 5.7 with their depressed sample and Williams and Moulds (2007a) found a mean rating of 4.7 with their undergraduate sample.

Assuming a linear relationship between memory qualities and depressive symptoms it would make sense that the memory ratings of vividness, distress and reliving of our dysphoric sample fall somewhere between the two other types of samples (depressed and not depressed) which have provided ratings in other studies. Our study, when considered in the context of other research, does indicate that the greater these memory qualities the more depressive symptoms people experience. This is also supported by the fact that Newby and Moulds (2011b) found levels of distress and

vividness to be two memory qualities which distinguished their depressed, recovered and never depressed groups (with the depressed group recording the highest ratings and the non-depressed group the lowest ratings).

Williams and Moulds (2007a) and Williams and Moulds (2007b) found significant correlations between dysphoria and intrusion related distress, and Williams and Moulds (2007a) found a significant correlation between dysphoria and nowness (independent of intrusion frequency). This study, however, did not find any significant correlations between ratings of memory vividness, distress, or reliving, and depressive symptoms. Williams and Moulds (2007a) and Williams and Moulds (2007b) both used undergraduate samples displaying a range of levels of dysphoria and thus it could be that a significant correlation would have been found between mood and memory qualities in our study had our sample not been confined to those scoring high on a measure of depressive symptoms. There is also the possibility that a medium or small correlation was present but our study did not have the power to detect it.

Our study, like Meiser-Stedman et al. (2012), highlights the importance of memory qualities for adolescents experiencing intrusive memories. They found that intrusive memory frequency and memory quality (e.g. sensory based quality, fragmented structure) contributed to the on-going experience for young people of intrusive memories of a negative life event. Intrusive memory frequency and memory quality in their study also partially mediated the relationship between peri-event affect and depressive symptoms.

4.5.2.4 Emotional impact of intrusive memories. Patel et al. (2007) found that the two main emotions associated with intrusions in their study, involving moderately to severely depressed adult patients, were anger and sadness. This study replicated these findings with dysphoric adolescents where sadness and anger were the strongest emotions associated with the intrusive negative memories provided. The average sadness memory rating score in this study was 6.28 and for anger was 5.55. Again these scores fall between the mean scores gained by Patel et al. (2007) whose depressed adult sample gave a mean memory sadness score of 8.7 and a mean memory anger score of 7.4, and Williams and Moulds (2007a) whose undergraduate

sample gave a mean memory sadness score of 5.2 and a mean memory anger score of 3.5.

Williams and Moulds (2007a) also considered memory emotion scores for a high dysphoric subsample in their study and they found that the memory emotions of sadness, helplessness, guilt and anger were all higher in the dysphoric subsample compared to the overall sample. The mean memory sadness score for the dysphoric subsample was 6.5 which is more consistent with the score found with the dysphoric sample in this study (6.28). Scores for helplessness (4.91 vs 5.5) and guilt (4.09 vs 4.2) were relatively similar for our sample and Williams and Moulds (2007a) dysphoric subsample, although anger was higher in our sample (5.55 vs 3.8). Further supporting the idea that negative memory emotions may be stronger the more a person is experiencing depressive symptoms, Newby and Moulds (2011b) found that depressed participants reported higher ratings of negative emotions (specifically sadness and helplessness, and a trend for anger) for their intrusive memory compared with the never depressed group.

Combined with other studies, this study suggests that on average the more strongly certain emotions are experienced in response to negative intrusive memories, the more depressive symptoms people experience. This study did not find any significant correlations between depressive symptoms and the strength of the different emotions experienced in relation to the intrusive memories but reasons for this may include lack of power and/or a lack of dysphoria range in participants.

4.5.2.5 Summary of intrusive memory experience. In summary our findings, combined with results from other studies on negative intrusive memories, support the idea that intrusive memories are a common experience for all adolescents and adults and that intrusion occurrence, frequency, or content does not distinguish depressed, recovered, dysphoric and non-depressed samples, or adult and adolescent samples. Memory qualities and associated emotions may be the characteristics that help distinguish intrusive memories in general and intrusive memories associated with dysphoria and depression (in a similar way to PTSD) in both adults and adolescents.

4.5.3 Effect of processing style on participant mood and memory ratings.
The second aim of this study was to consider the impact of inducing rumination and concrete thinking on the experience of negative intrusive memories in a dysphoric adolescent sample.

To explore the second aim it was important to consider whether the two groups (rumination and concrete), to which participants were allocated, differed in any characteristics which could have affected the outcome of the experimental procedure. Analysis showed that the two groups did not differ on a range of key variables. A significant difference was found for the memory content where the concrete group had examples of all four content categories whereas the rumination participants only reported memories from two of the categories. There is a possibility that different types of memories could respond differently to the cognitive processing styles. There is, however, no evidence to support this idea from other studies.

4.5.3.1 Summary of hypotheses and findings. Listed below are summaries of each hypothesis and the relevant findings.

4.5.3.1.1 Hypothesis one. The first hypothesis was that participants in the rumination condition would show an increase in how upsetting they rated their intrusive memory pre to post the induction, compared to those in the concrete condition. This study found that while participants rated their memory as more upsetting after completing the inductions compared to before, there was no significant difference between participants allocated to the rumination or concrete condition.

4.5.3.1.2 Hypothesis two. The second hypothesis was that participants in the rumination condition would show an increase in how sad they felt about their memory pre to post the induction, compared to the concrete condition. This study found that participants did not rate feeling sadder about their memory from pre to post induction in either the rumination or concrete condition.

4.5.3.1.3 Hypothesis three. The third hypothesis was that participants in both conditions would experience a decrease in mood from pre to post induction. This

study found that sad mood did not significantly change from pre to post induction in either the rumination or concrete condition. This non-significant effect over time is not consistent with the hypothesis. This finding suggests that the inductions did not have a significant effect on participant mood.

4.5.3.1.4 Hypothesis four. The fourth hypothesis was that any difference in memory distress from pre to post induction between conditions would not be due to changes in mood alone. Given that no significant difference was found between conditions in terms of how upsetting or how sad participants rated their memories to be pre to post induction, there is no need to control for mood to determine if any effects are over and above any effect of condition on mood.

4.5.3.2 Discussion of effects over time. The fact that participants in both conditions rated their memory as significantly more upsetting after compared to before the inductions suggests that thinking about difficult hypothetical scenarios in general resulted in participants thinking their negative intrusive memory was more upsetting than previously. It might be expected that this was due to the inductions making participants generally feel sadder thus being more likely to negatively evaluate their memory. This study, however, found that sad mood did not change significantly over time for the participants.

A different explanation may be a methodological one. After rating their memories participants were asked to think about a range of hypothetical scenarios including forgetting a piece of homework and losing a friend's ipod, during the induction procedure. It might have been that when asked to return to and re-rate their memories (often consisting of very difficult content such as family members dying), they seemed comparably more upsetting. Interestingly there was no change in how sad participants rated their memory making them feel. This might be a product of the wording used demonstrating a difference between how participants objectively rated their memories and how they actually felt about them following comparisons.

As mentioned, this study found that participant mood did not worsen from pre to post induction. Reasons for this are discussed in section 4.4.5.

4.5.3.3. Discussion of effects between conditions. The fact that participants in the rumination condition did not rate their negative intrusive memory as more upsetting, or feel sadder about their memory, after the inductions compared to those in an alternative condition is in contrast to Williams and Mould's (2010) findings with undergraduates. Potential explanations for our results not being consistent with the hypotheses or Williams and Moulds (2010) study are considered below.

4.5.3.3.1 Effect of mood. Williams and Moulds (2010) compared rumination to a distraction condition whereas this study compared rumination to a concrete condition. Williams and Moulds (2010) found a large effect of their inductions on mood which is unsurprising given that non-self-focus (as in distraction) is the mechanism found to increase mood in the short term in dysphoric samples (Watkins & Teasdale, 2001). Williams and Moulds (2010), however, do not report controlling for mood in their analyses. It might therefore be that participants rated their memories as less distressing after induction in the distraction condition compared to the rumination condition because they felt generally happier. One reason our study failed to replicate the findings of Williams and Moulds (2010) could thus be because the use of a concrete condition rather than a distraction condition meant the inductions had no significant effect on mood.

4.5.3.3.2 Differential effect of rumination on depression symptoms. While exploring the nature of trauma related rumination, Ehring, Szeimies, and Schaffrick, (2009) asked 83 healthy university students to watch a distressing video and then read through a thought transcript in either a ruminative, distraction, or concrete condition. Their study revealed no significant effects of condition on distress ratings of intrusive memories, in response to reminders of the video, after the manipulations. This was the case even though they did find participants in the distraction and concrete conditions to experience a significant decrease in negative mood pre to post manipulation, compared to the analytical thinking group whose mood ratings did not change significantly over time. The authors suggest it is possible that abstract ruminative thinking has different effects on different types of PTSD symptoms, in that it affects mood, but not intrusive memories. In line with the conclusion from this study, it is possible that our study has demonstrated that rumination does not affect

the emotional experience of intrusive memories in adolescent depression (even if it does affect other aspects of depression; see section 1.3.5 & 1.3.6).

4.5.3.3.3 Insufficient power. The above explanations presume that processing style does not have a direct effect on the experience of negative intrusive memories in dysphoric samples. On the other hand it may be that there is an effect but this study did not detect it. As discussed in section 4.4.1 this study may have been underpowered. This study did, however, considerably increase the sample size required from the power calculation to account for this so lack of power is unlikely to be the only explanation.

4.5.3.3.4 Developmental considerations. There is the possibility that William and Moulds' (2010) effects would have remained had mood been controlled before. In this case it is important to consider why their study may have found an effect of condition on memory distress when this study did not. Williams and Moulds (2010) used an adult sample so it may be that that the impact of rumination on intrusive memories is different in adolescents.

As mentioned in section 1.5.2.3, during adolescence regions of the brain undergo considerable structural change. These structural changes affect cognitive abilities such as working memory, selective attention, and problem solving, that rely on the functioning of particular brain regions where change occurs (Blakemore & Choudhury, 2006). Many of these cognitive abilities are likely to be important in terms of the thinking styles adolescents adopt (e.g. Wilkinson & Goodyer, 2006). Therefore it cannot be assumed that rumination will operate in the same way and have the same consequences in adolescents as it is found to do in adults. Given this study's results regarding the characteristics of intrusive memories in a dysphoric adolescent sample, it is clear that adolescents do experience intrusive memories at a similar rate and in a similar way to dysphoric adults. Furthermore, the rumination questionnaire data demonstrates that adolescents do ruminate and that rumination is a vulnerability and maintaining factor in adolescent depression, in the same way it is in adult depression. One possibility is that the link between rumination and intrusive memories is in some way different in a developing adolescent compared to an adult. A developmental explanation, however, is unlikely given that Williams and Moulds

(2010) used undergraduates (average age 19.57 years) who were not much older than our adolescent sample, especially our participants in the sixth form classes. Age was entered as a covariate in the repeated measures ANOVA for memory sadness ratings but no significant effect was found.

4.5.3.3.5 Nature of induced processing styles. If processing style does affect the experience of negative intrusive memories then another possible reason Williams and Moulds (2010) found a significant effect and this study did not is due to the persistence of the different thinking styles used in the two studies. The effect of induced distraction lasted long enough in Williams and Moulds (2010) for participants to rate their memories as less negative, distressing and sad at the post memory rating point compared to the pre memory rating point. One potential explanation, yet to be tested, is that it is harder to keep a concrete processing mode persisting and thus participants in our study had reverted back to their trait thinking style by the time they rated their memories at the post time point.

Alternatively, it may be that participants required longer than the ten seconds they had to think about the memory after the inductions for the concrete processing mode to have a positive effect on the emotional evaluation of the memory. One hypothesis is that distraction may have more of an immediate effect and be easier to engage in, compared to concrete thinking which may require more practice and take more time to have an effect. One way to overcome the issue that applying concrete thinking successfully to the memory may take time would be to get participants to concrete think / ruminate about the memory directly at the end of the inductions. However, by not doing this we were keeping the study as ecologically valid as possible by encouraging a particular thinking style, eliciting an intrusive memory, and then looking at the effect of that particular thinking style on the memory. We were not making the assumption that just because people ruminate, they automatically ruminate about their intrusive memories.

4.5.3.4 Summary of discussion on experimental findings. It is unclear why our results were inconsistent with our first two hypotheses that participants would rate a negative intrusive memory as more upsetting, and feel sadder about their memory, once they were induced to think in a ruminative way in comparison to a

concrete way. One potential explanation is that Williams and Moulds (2010) found significant effects due to the effect of the inductions on mood and actually a ruminative processing style does not affect participants' experiences of intrusive memories. On the other hand the methodology of this study may not have been effective enough to detect any effects. For example participants may not have been thinking in the way they were induced to at the time they re-rated their memory. Further research is required to clarify such issues.

4.6 Clinical implications

This study is one of the first to consider the nature and experience of intrusive memories in adolescent depression. When considered alongside other research on intrusive memories, the findings from this study support the idea that the more these qualities are associated with intrusive memories, the more depressive symptomatology the person may experience. This provides a rationale for focusing on intrusive memories when assessing and treating depression in young people.

Therapeutic techniques aimed at facilitating the processing of trauma memories have been successfully implemented in PTSD treatments. Hackmann et al., (2004) for example found that therapy for 22 patients with PTSD enabled the frequency, vividness, distress and nowness of intrusive memories to fade gradually. The cognitive therapy for PTSD used in this study involved elaborating the trauma memory via a combination of cognitive therapy techniques and imaginal reliving (Foa & Rothbaum, 1998). Cognitive therapy methods (e.g. socratic questioning and behavioural experiments) were used to change problematic appraisals. Imaginal reliving and the writing of a narrative were used to reconstruct the traumatic event and to identify its worst moments. For each of these moments information that updates its meaning was identified and incorporated into the memory via verbal or imagery techniques. The updating information was either information that became available at a later time point or new conclusions that resulted from cognitive restructuring.

The effective components of PTSD treatment are unclear, with some studies suggesting repeated exposure to the memory is just as effective at reducing symptoms

as exposure with a form of cognitive restructuring (e.g. Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998; Foa et al. 2005). Despite the lack of consensus, research suggests that treatments involving some kind of memory exposure work are on average more effective than other interventions without such a component, for example relaxation training (e.g. Marks et al. 1998; Taylor et al. 2003)

Given the similarity of intrusive memory qualities in PTSD and depression it follows that helping patients successfully emotionally process negative intrusive memories in depression may be beneficial. Preliminary work with adults has suggested this may be the case. Kandris and Moulds (2008) report one case study of a man who met criteria for MDE and where five 90 minute sessions of imaginal exposure (IE) was used to target intrusive memories of a negative life event as a treatment for his depression. IE encourages engagement with the emotions and distress elicited by a memory, thereby providing an adaptive response that is counter to avoidant mechanisms (Williams & Moulds, 2010). The participant reported reduced frequency of intrusive memories at post-treatment and a low frequency of intrusive memories and intrusion-related distress six months later. He did not meet criteria for MDE at follow up. Furthermore, Wheatley et al. (2007) describe the initial successful application of imagery rescripting to the treatment of two adult patients with a primary diagnosis of major depression who reported intrusive memories. The two case studies reported by Wheatley et al. (2007) indicate that imagery rescripting was associated with a significant reduction in distressing intrusive memories. Relatively rapid and long-lasting symptom reduction was achieved in patients with histories of severe and recurrent depression, consistent with the idea that regular intrusive memories are a maintaining factor for depression (Brewin et al. 1999).

Similarly to PTSD treatments, the mechanisms by which treatments for depression focused on negative intrusive memories may be most effective are still unclear. For example it may be the reduction in avoidance of the memory, the change in cognitive appraisals, or the ability to recall a more positive representation instead of the negative memory. It is likely all lead to successful emotional processing of the memory in different ways. More research is clearly required to test these treatments on greater numbers of dysphoric and depressed people in case series and controlled trials. These may also give insight into the mechanisms by which the treatments

might work and thus identify the most important elements of this kind of treatment. Despite the need for further research, a focus on processing negative intrusive memories when treating depression provides an exciting avenue which can hopefully lead to the improvement of depression treatments in both adults and young people.

This study was unable to provide clear information on the effect of thinking styles on the experience of negative intrusive memories in adolescent depression. The experimental condition (rumination or concrete thinking) did not have a significant effect on the emotional evaluation of intrusive memories but there are various reasons why this may be other than suggesting thinking styles are not important.

With the trend found between memory intrusiveness and trait rumination we might tentatively suggest that a ruminative thinking style negatively affects the extent of memory intrusiveness, or that memory intrusiveness maintains a ruminative thinking style. In support of a relationship between memory intrusiveness and rumination, Kandris and Moulds (2008) found that while the aim of IE was to reduce intrusive memories and associated distress, it also reduced trait rumination in their case study.

Given the similar nature of rumination to worry, the reduced concreteness theory of worry (see section 1.3.5) is consistent with the idea that people may try to avoid vivid and distressing intrusive memories by ruminating when depressed. This, however, does not allow the memory to be emotionally processed and thus the intrusive experience and the distressing nature of the memory remains. Treatments which focus on increasing concreteness when experiencing intrusive memories could thus reduce particular qualities of the memories such as vividness and sense of reliving by allowing the memory to be adequately emotionally processed. IE itself is likely to increase concrete thinking by encouraging a direct focus on intrusive memories. This could explain why Kandris and Moulds (2008) found rumination to reduce following imagined exposure.

The relationship between rumination and memory intrusiveness, combined with other adolescent rumination studies which show the negative impact of rumination on different aspects of depression, such as social problem solving and negative future

thinking (e.g. Leigh et al, in prep b, Taylor et al, in prep), suggest a focus on thinking styles in treatments for youth depression could be beneficial.

4.7 Recommendations for future research

Replicating this study with young people scoring low on a measure of depressive symptoms might provide more information on what distinguishes the intrusive memories of dysphoric and depressed samples from non-dysphoric samples. It would help confirm the conclusion generated from combining the findings of this study with findings from other studies that people who have intrusive memories high in particular qualities (e.g. vividness, associated distress, sense of reliving and associated sadness and anger), the more depressive symptoms they may experience.

Expanding the age range of the participants to include younger children would allow exploration of whether intrusive memories occur in similar ways in depressed children at an earlier developmental stage. Given that rumination increased with age in our study it would be interesting to identify at what age children begin to experience ruminative thoughts and how this interacts with aspects of depression, including intrusive memories, which themselves may only start to occur at a certain developmental stage.

When thinking about the effect of thinking styles on the experience of negative intrusive memories it would be good to replicate this study with more numbers to see if this study missed detecting significant effects due to a lack of power. If an effect of rumination on intrusive memory experience was still not found it would be important to consider some of the methodology criticisms to ensure the study design can effectively measure the impact of ruminative and concrete thinking on the experience of an intrusive memory. Repeating the study with rumination, concrete and distraction groups could provide more insight into the mechanisms by which thinking styles may have an effect of the experience of negative intrusive memories.

It should be considered the findings reported for this study only apply to the one specific memory identified in the intrusive memory interview. This study does not provide information regarding the occurrence, frequency and nature of other intrusive

memories the young people may also have been experiencing. Participants in this study are likely to have chosen their most prominent intrusive memory. To make this study more ecologically valid it would be interesting for future research to explore young people's overall experience of intrusive memories. It could be that there are differences between dysphoric and non-dysphoric samples not only in terms of their most prominent memory but also in terms of less prominent intrusive memories. It would also be interesting to observe the effects of different cognitive processing styles on these less prominent intrusive memories.

The most exciting opportunity for future research would appear to involve exploring the effects of interventions aimed to alter the experience and nature of intrusive memories and the resulting effect this could have on rumination and depression levels. This research is in the preliminary stages with adults and is yet to be started with young people.

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Appendices

Appendix 1: Ethics letter

Dr Patrick Smith
Department of Psychology
Institute of Psychiatry
De Crespigny Park
London SE5 8AF

06 November 2012

Dear Dr Smith

PNM/12/13-9 Rumination in adolescent depression: the impact on cognitive processes.

Review Outcome: Full Approval

Thank you for sending in the amendments/clarifications requested to the above project. I am pleased to inform you that these meet the requirements of the PNM RESC and therefore that full approval is now granted with the following provisos:

1. All Information Sheets: Please insert the correct wording for the 'No fault compensation scheme:' 'If this study has harmed you in any way you can contact King's College London using the details below for further advice and information' followed by your name, departmental and email address.
2. All Consent Forms: In the first bullet point include the date up to which participants can withdraw their date i.e. 30 June 2013.

Note that you do not need to submit a response to the above provisos, however it is a condition of the approval granted by the PNM RESC that the provisos are carried out prior to the study commencing. If the provisos are not adhered to, the approval granted by the PNM RESC would no longer be valid. Should you have any queries on this please do not hesitate to contact the Research Ethics Office.

Please ensure that you follow all relevant guidance as laid out in the King's College London Guidelines on Good Practice in Academic Research (http://www.kcl.ac.uk/college/policyzone/index.php?id=247).

For your information ethical approval is granted until **06 November 2014**. If you need approval beyond this point you will need to apply for an extension to approval at least two weeks prior to this explaining why the extension is needed, (please note however that a full re-application will not be necessary unless the protocol has changed). You should also note that if your approval is for one year, you will not be sent a reminder when it is due to lapse.

Ethical approval is required to cover the duration of the research study, up to the conclusion of the research. The conclusion of the research is defined as the final date or event detailed in the study description section of your approved application form (usually the end of data collection when all work with human participants will have been completed), not the completion of data analysis or publication of the results. For projects that only involve the further analysis of pre-existing data, approval must cover any period during which the researcher will be accessing or evaluating individual sensitive and/or un-

anonymised records. Note that after the point at which ethical approval for your study is no longer required due to the study being complete (as per the above definitions), you will still need to ensure all research data/records management and storage procedures agreed to as part of your application are adhered to and carried out accordingly.

If you do not start the project within three months of this letter please contact the Research Ethics Office.

Should you wish to make a modification to the project or request an extension to approval you will need approval for this and should follow the guidance relating to modifying approved applications: http://www.kcl.ac.uk/innovation/research/support/ethics/applications/modifications.aspx
The circumstances where modification requests are required include the addition/removal of participant groups, additions/removal/changes to research methods, asking for additional data from participants, extensions to the ethical approval period. Any proposed modifications should only be carried out once full approval for the modification request has been granted.

Any unforeseen ethical problems arising during the course of the project should be reported to the approving committee/panel. In the event of an untoward event or an adverse reaction a full report must be made to the Chair of the approving committee/review panel within one week of the incident.

Please would you also note that we may, for the purposes of audit, contact you from time to time to ascertain the status of your research.

If you have any query about any aspect of this ethical approval, please contact your panel/committee administrator in the first instance (http://www.kcl.ac.uk/innovation/research/support/ethics/contact.aspx). We wish you every success with this work.

With best wishes

Yours sincerely

Catherine Fieulleteau
Senior Research Ethics Officer

Appendix 2: Information sheets

INFORMATION SHEET FOR PARTICIPANTS

This information sheet is for <u>parents and carers</u>

REC Reference Number: PNM/12/13-9

KING'S College LONDON

<u>Rumination in adolescent depression: the impact on cognitive processes</u>

We would like to invite your child to participate in this original research project during school time. You should only allow your child to participate if you want to; choosing not to let your child take part will not disadvantage them in any way. Before you decide whether you let your child take part, it is important for you to understand why the research is being done and what their participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

- **Aims**

There are many pressures on young people today inside and outside of school and life can be difficult at times. When difficulties mount up they can affect how your child may feel. They might make them feel moody or really low, which may stop enjoying things as much as they used to and can affect sleep, appetite, and concentration. It can also stop them getting on with friends and family.

We want to investigate the relationship between mood and the ways in which young people think. We also want to investigate how thinking in certain ways influences how children experience past memories, and how much information they can hold in mind.

- **Who are we asking to take part?**

Firstly, we are inviting all pupils to take part by filling out a questionnaire about their mood (unless they have trouble reading English). We are then inviting pupils whose scores on the questionnaire fall within a particular range to take part in some further tasks.

- **What will happen if I agree that my child can take part?**

We will also be seeking consent directly from your child to take part in the study. If your child agrees, and you do not opt out, your child will be asked to complete a questionnaire related to their feelings. This questionnaire will take approximately 5 minutes to complete. There are no right or wrong answers to any of the questions. Your child will complete the questionnaire in their classroom during tutor time. The questionnaire is private and will be handed back to us and it will not be seen by any other pupils or by teachers.

Your child does not have to take part. It is up to you and your child to decide whether they will take part or not. If you decide that your child may take part, they are still free to withdraw at any time and without giving a reason. A decision not to take part, or a decision to withdraw at any time, will not affect the standard of education or care that you or your child receives.

If you <u>do not wish</u> your child to take part, please return the attached form in the enclosed pre-paid enveloped within two weeks, or contact Dr Patrick Smith, Damien Rushe or Jennifer Scott using the contact details at the end of this information sheet. <u>If we do not hear back from you within two weeks, we will assume that you are happy for your child to fill out the questionnaire.</u>

If your child's score on the questionnaire falls within a particular range, he or she will be invited to participate in some further tasks. These tasks will involve either talking about a past memory, or examining working memory capacity. Again, there are no right or wrong answers to any of the tasks involved, and all responses are kept strictly confidential. Sessions will be done at school and scheduled in liaison with a member of school staff in order to minimise disruption to your child's school day. The session will be conducted in private, but there will

always be someone there to help if needed. To help in our work, we will ask your child if we can record the tasks using an audio recorder.

If your child is eligible to complete these tasks, we will contact you again to let you know and to ask you to inform us if you do not wish your child to take part.

It is up to you to decide whether your child will take part or not. If you decide to let your child take part, you are free to withdraw them at any time and without giving a reason. A decision not to take part, or a decision to withdraw at any time, will not affect the standard of education or care that your child receives.

- **Are there any risks?**
It is unlikely that there are any risks. Sometimes, thinking about low mood can be upsetting, but there will always be someone there to help if your child needs it. All the information your child tells us is private and confidential. However, if we are told something that suggests that your child is at risk of harm (for example if someone is threatening them, or if they want to hurt themselves), then we would have to make an exception to this confidentiality. We would discuss this with them first and then inform you. We will help your child to access services that can help them if they are in this situation. If you are worried about your child's wellbeing at any stage, you can also contact your GP for further advice.

- **Are there any benefits?**
The main benefit is that by participating in the study any young people with difficulties with their mood will be identified and we can assist them in accessing services which can help them.

- **Arrangements for ensuring confidentiality.**
We will keep the original paper copies of the questionnaire that your child fills out. These will be locked away securely and only the study team will have access to them. All data will be entered into a computer database so that we can analyse the results. Data stored on the computer will be anonymised (it will not have young people's names on it). You can withdraw your child's data at any time before we begin writing the final project (until June 30th 2013). All data will be securely stored at King's College London after completion of the study for a set period of time.

- **Name and contact details of the researchers**
If this study has harmed your child in any way you can contact King's College London using the details below for further advice and information:

Dr Patrick Smith
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Damien Rushe / Jennifer Scott
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Tel: 0207 848 0033
Email: patrick.smith@kcl.ac.uk

Tel: 0207 848 0033
Email: damien.rushe@kcl.ac.uk
         jennifer.scott@kcl.ac.uk

This study has been approved by the Psychiatry, Nursing and Midwifery Research Ethics Subcommittee at King's College London (PNM/12/13-9)

INFORMATION SHEET FOR PARTICIPANTS

This information sheet is for <u>parents and carers</u>

REC Reference Number: PNM/12/13-9

<u>**Rumination in adolescent depression: the impact on cognitive processes**</u>

We would like to invite your child to participate in the next part of this research project. Before you decide whether you want your child to take part, it is important for you to understand why the research is being done and what their participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

- **Aims**

There are many pressures on young people today inside and outside of school and life can be difficult at times. When difficulties mount up they can affect how your child may feel. They might make them feel moody or really low, which may stop enjoying things as much as they used to and can affect sleep, appetite, and concentration. It can also stop them getting on with friends and family.

We want to investigate the relationship between mood and the ways in which young people think. We also want to investigate how thinking in certain ways influences how children experience past memories, and how much information they can hold in mind.

- **Who are we asking to take part?**

Your child kindly already completed a questionnaire about their mood for us – thank you very much for agreeing for your child to be involved. Now we are inviting pupils whose scores on this questionnaire fall within a particular range to take part in some further tasks.

- **What will happen if I agree that my child can take part?**

Your child has already completed a questionnaire about their feelings.

We are now inviting your child to take part some further tasks. These will involve either talking about a past memory or examining working memory capacity. Again, there are no right or wrong answers to any of the tasks involved. Sessions will be done at school and scheduled in liaison with a member of school staff in order to minimise disruption to your child's school day. The session will be conducted in private, but there will always be someone there to help if needed. To help in our work, we will ask your child if we can record the tasks using an audio recorder.

It is up to you to decide whether your child will take part or not. We will also be seeking consent directly from your child to take part in this part of the study. If you decide to let your child take part, you are still free to withdraw your child at any time and without giving a reason. A decision not to take part, or a decision to withdraw, will not affect the standard of education or care that you or your child receives.

If you <u>do not wish</u> your child to take part in the next phase of the study, please return the attached form in the enclosed pre-paid enveloped within two weeks, or contact any of the researchers using the contact details at the end of this information sheet. <u>If we do not hear back from you within two weeks, we will assume that you are happy for your child to take part in the next phase of the research.</u>

- **Are there any risks?**

It is unlikely that there are any risks. Sometimes, thinking about low mood can be upsetting, but there will always be someone there to help if your child needs it. All the information your child tells us is private and confidential. However, if we are told something that suggests that your child is at risk of harm (for example if someone is threatening them, or if they want to hurt themselves), then we would have to make an exception to this confidentiality. We would discuss this with them first and then inform you. We will help your child to access services that can help them if they are in this situation. If you are worried about your child's wellbeing at any stage, you can also contact your GP for further advice.

- **Are there any benefits?**

The main benefit is that by participating in the study any young people with difficulties with their mood will be identified and we can assist them in accessing services which can help them.

- **Arrangements for ensuring confidentiality.**

We will keep the original paper copies of the questionnaires that your child filled out. These will be locked away securely and only the study team will have access to them. All data will be entered into a computer database so that we can analyse the results. Data stored on the computer will be anonymised (it will not have young peoples' names on it). You can withdraw your child's data at any time before we begin writing the final project (until June 30th 2013). All data will be securely stored at King's College London after completion of the study for a set period of time.

- **Name and contact details of the researchers**

  If this study has harmed your child in any way you can contact King's College London using the details below for further advice and information:

Dr Patrick Smith
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Tel: 0207 848 0033
Email: patrick.smith@kcl.ac.uk

Damien Rushe / Jennifer Scott
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Tel: 0207 848 0033
Email: damien.rushe@kcl.ac.uk
        jennifer.scott@kcl.ac.uk

This study has been approved by the Psychiatry, Nursing and Midwifery Research Ethics Subcommittee at King's College London (PNM/12/13-9).

INFORMATION SHEET FOR PARTICIPANTS

This information sheet is for <u>young people</u>

REC Reference Number: PNM/12/13-9

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

<u>Rumination in adolescent depression: the impact on cognitive processes</u>

We are asking you to take part in a research project. If you decide not to take part, nothing bad will happen to you. You should only take part if you want to. Before you decide if you want to or not, we would like you to understand why we are doing this project and what will happen if you do take part. Please read the following information carefully and talk to other people about it if you want. Please ask us if there is anything that you're not sure about.

- **Why are we doing this project?**

Young people are expected to do lots of difficult things these days (such as exams) and sometimes they can get stressed. When you get very stressed, this can affect how you feel. It might make you feel moody or low. You may stop enjoying things as much as you used to. It can also affect how well you sleep, how much you eat, or being able to concentrate. It can even stop you getting on with friends and family.

We want to look at the ways in which young people think and how this affects the way they feel. We also want to look at how thinking in certain ways affects how you feel about things that happened in the past, or how good your memory is.

- **Who are we asking to take part?**

Firstly, we are asking all pupils to take part by filling out a form with some questions about how they are feeling (unless they have trouble reading English). We will then ask pupils who get a certain score on the questionnaire to do some further tasks.

If you decide to take part, you will be asked to sign a consent form. If you sign the consent form, this means that you understand the project, and you want to take part. It is up to you to decide whether to take part or not and you do not have to take part. If you decide to take part you are still free to pull out at any time and without saying why. If you decide not to take part, or to pull out at any time, no one will be angry with you and nothing bad will happen to you. If you have any questions about this project and what you are being asked to do, please ask the researcher before you decide whether to join in.

If you are under 16 years old, we will also ask your parent/carer if you can take part. If you are over 16 years old, we will be sending your parent/carer an information sheet about the study, so they are aware that you might choose to take part.

- **What will happen if I agree to take part?**

If you (and your parent/carer if you are under 16) agree to take part, you will be asked to fill in a form with some questions about how you feel. This will take about 5 minutes. It is not a test and there are no right or wrong answers. You will complete the questions in your classroom during class time. Your answers to the questions are private. They will be handed back to us and will not be seen by any other pupils or by your teachers.

If you get a certain score on the questionnaire, you will be asked to do some tasks involving different ways of thinking. These tasks will be in the form of stories and questionnaires and will involve both speaking and using pen and paper. You will be asked to fill out some forms with questions about how you are feeling and what you think about if you feel sad. You will also be asked to talk about some sad things that might have happened in the past or to do a short task to test your memory. This will take about 50 minutes. There are no right or wrong answers to the tasks. Some of your answers will be recorded, if this is OK with you. Recordings of your answers will be deleted once the research team has written them down.

- **Could anything bad happen to me if I take part?**

It is unlikely that anything bad will happen to you if you take part in this project. Sometimes, answering questions about how you feel can be upsetting, but there will always be someone there to help if you need it. All the information you tell us is private. If you tell us something that means that you are at risk of harm (for example if someone is hurting you, or if you want to harm yourself), then we would need to talk to your parents about it, or to other people who can help you. We would always talk to you about this first.

- **What are the good things about taking part?**

One good thing is that if you are feeling very low and you take part in the study we can help to find people who can help you with these feelings.

- **Who will see the forms that I fill out?**

We will keep any forms that you fill out. These will be locked away safely and only the project team will be able to look at them. All the information will be entered into a computer database so that we can look at the results. Information stored on the computer will not have your name on it. You can ask us to take any information about you out of the project any time before we start writing it (until June 30th 2013). All information will be kept safely at King's College London for a few years after the project is finished.

- **Name and contact details of the researchers**

If this study has harmed you in any way you can contact King's College London using the details below for further advice and information:

Dr Patrick Smith
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Tel: 0207 848 0033
Email: patrick.smith@kcl.ac.uk

Damien Rushe / Jennifer Scott
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Email: damien.rushe@kcl.ac.uk
jennifer.scott@kcl.ac.uk

This study has been approved by the Psychiatry, Nursing and Midwifery Research Ethics Subcommittee at King's College London (PNM/12/13-9).

INFORMATION SHEET FOR PARTICIPANTS

This information sheet is for <u>young people</u>

King's College Research Ethics Committee Reference*:* PNM/12/13-9

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

<u>**Rumination in adolescent depression: the impact on cognitive processes**</u>

We are asking you to take part in a research project. If you decide not to take part, nothing bad will happen to you. You should only take part if you want to. Before you decide if you want to or not, we would like you to understand why we are doing this project and what will happen if you do take part. Please read the following information carefully and talk to other people about it if you want. Please ask us if there is anything that you're not sure about.

- **Why are we doing this project?**
Young people are expected to do lots of difficult things these days (such as exams) and sometimes they can get stressed. When you get very stressed, this can affect how you feel. It might make you feel moody or low. You may stop enjoying things as much as you used to. It can also affect how well you sleep, how much you eat, or being able to concentrate. It can even stop you getting on with friends and family.

We want to look at the ways in which young people think and how this affects the way they feel. We also want to look at how thinking in certain ways affects how you feel about things that happened in the past, or how good your memory is.

- **Who are we asking to take part?**
Firstly, we asked all pupils to take part by filling out a form with some questions about how they were feeling. Now we are asking pupils who got a certain score on the questionnaire to do some more tasks.

If you decide to take part, you will be asked to sign a consent form. If you sign the consent form, this means that you understand the project, and you want to take part. It is up to you to decide whether to take part or not and you do not have to take part. If you decide to take part you are still free to pull out at any time and without saying why. If you decide not to take part, or to pull out at any time, no one will be angry with you and nothing bad will happen to you. If you have any questions about this project and what you are being asked to do, please ask the researcher before you decide whether to join in.

If you are under 16 years old, we will also ask your parent or carer if you can take part.

- **What will happen if I agree to take part?**
You already filled out a questionnaire about how you feel – thank you very much for doing this. Because of your score on these questions, we are asking you to do some more things as part of our research.

If you (and your parent/carer if you are under 16) agree to take part, the tasks we ask you to do will involve you trying different ways of thinking. These tasks will be in the form of stories and questionnaires and will involve both speaking and using pen and paper. You will be asked to fill out some forms with questions about how you are feeling and what you think about if you feel sad. You will also be asked to talk about some things that might have happened in the past or to do a short task to test your memory. This will take about 50 minutes. There are no right or wrong answers to the tasks. Some of your answers will be recorded if this is OK with you. Recordings of your answers will be deleted once the research team has written them down.

- **Could anything bad happen to me if I take part?**
It is unlikely that anything bad will happen to you if you take part in this project. Sometimes, answering questions about how you feel can be upsetting, but there will always be someone there to help if you need it. All the information you tell us is private. If you tell us something that means that you are at risk of harm (for example if

someone is hurting you, or if you want to harm yourself), then we would need to talk to your parents about it, or to other people who can help you. We would always talk to you about this first.

- **What are the good things about taking part?**

One good thing is that if you are feeling very low and you take part in the study we can help to find people who can help you to deal with these feelings.

- **Who will see the forms that I fill out?**

We will keep any forms that you fill out. These will be locked away safely and only the project team will be able to look at them. All the information will be entered into a computer database so that we can look at the results. Information stored on the computer will not have your name on it. You can ask us to take any information about you out of the project any time before we start writing it (until June 30th 2013). All information will be kept safely at King's College London for a few years after the project is finished.

- **Name and contact details of the researchers**

If this study has harmed you in any way you can contact King's College London using the details below for further advice and information:

Dr Patrick Smith
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Tel: 0207 848 0033
Email: patrick.smith@kcl.ac.uk

Damien Rushe / Jennifer Scott
Department of Psychology, Box PO77,
Institute of Psychiatry,
De Crespigny Park,
London SE5 8AF

Tel: 0207 848 0033
Email: damien.rushe@kcl.ac.uk
          jennifer.scott@kcl.ac.uk

This study has been approved by the Psychiatry, Nursing and Midwifery Research Ethics Subcommittee at King's College London (PNM/12/13-9).

Appendix 3: Consent forms

KING'S College LONDON

OPT OUT FORM FOR PARTICIPANTS IN RESEARCH STUDIES

This OPT OUT OF RESEARCH PARTICIPATION form is for <u>parents and carers</u>

King's College Research Ethics Committee Ref: PNM/12/13-9

Thank you for considering allowing your child to take part in the research.

Please only complete and return this form <u>if you do NOT wish</u> your child to participate in this research project.

Please complete this form after you have read the Information Sheet. If you have any questions arising from the Information Sheet, please contact the researcher to discuss these (using the contact details provided on the Information Sheet) before you complete this form.

Child's name: _____

- **I have read the information sheet about the above study.**

- **I <u>DO NOT</u> want my child to take part in the study.**

- **I understand that this decision will not affect the standard of education or care that my child or I receive**

Parent or carer's name   _____

Parent or carer's signature   _____

Date   _____

CONSENT FORM FOR PARTICIPANTS IN RESEARCH STUDIES

King's College LONDON

This consent form is for <u>young people</u>

King's College Research Ethics Committee Reference: PNM/12/13-9

Thank you for considering taking part in this research.

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research. If you have any questions about this project and what you are being invited to take part in, please ask the researcher before completing this form.

Please tick or initial

- **I understand that if I decide at any time during the research that I no longer wish to participate in this project, I can notify the researchers involved and withdraw from it immediately without giving any reason. Furthermore, I understand that I will be able to withdraw my data until the project write-up begins (30th June 2013).**

- **I consent to the processing of my personal information for the purposes explained to me. I understand that such information will be handled in accordance with the terms of the Data Protection Act 1998.**

Participant's Statement:

Name: _____

Class: _____

Date of Birth: _____

I agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Information Sheet about the project, and understand what the research study involves.

Signed   **Date**

....

Investigator's Statement:

I _____

confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the participant.

Signed   **Date**

King's College LONDON

This consent form is for <u>young people</u>

King's College Research Ethics Committee Reference: PNM/12/13-9

Thank you for considering taking part in this research.

Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research. If you have any questions about this project and what you are being invited to take part in, please ask the researcher before completing this form.

Please tick or initial

- **I understand that if I decide at any time during the research that I no longer wish to participate in this project, I can notify the researchers involved and withdraw from it immediately without giving any reason. Furthermore, I understand that I will be able to withdraw my data at any point until the project write-up begins (30th June 2013).**

- **I consent to my participation being audio-recorded for use by the researcher team.**

- **I consent to the processing of my personal information for the purposes explained to me. I understand that such information will be handled in accordance with the terms of the Data Protection Act 1998.**

Participant's Statement:

I _____

agree that the research project named above has been explained to me to my satisfaction and I agree to take part in the study. I have read both the notes written above and the Information Sheet about the project, and understand what the research study involves.

Signed   **Date**

Investigator's Statement:

I _____

Confirm that I have carefully explained the nature, demands and any foreseeable risks (where applicable) of the proposed research to the participant.

Signed   **Date**

Appendix 4: CRIES

Please can you now check each item on this table indicating how frequently these comments were true for you regarding your memory during the past seven days.

	Not at all	Rarely	Sometimes	Often
1. I thought about it when I didn't mean to				
2. I tried to remove it from my memory				
3. I had waves of strong feelings about it				
4. I stayed away from reminders of it (e.g. places or situations)				
5. I tried not to talk about it				
6. Pictures about it popped into my mind				
7. Other things kept making me think about it.				
8. I tried not to think about it				

<u>**Appendix 5: Induction scripts**</u>

<u>Rumination induction script</u>

Now we are going to do something different. This task involves thinking about problems in a particular way. Sometimes when we are thinking about problems we might think

- **Why did this happen to me?**
- **What will this mean?**
- **What will happen because of this?**
- **What will others think of me?**
- **What does this mean about me?**
- **What have I done to deserve this?**
- **Why do things like this keep happening?**

I am going to give you three imaginary situations and what I would like you to do is spend 2 minutes imaging yourself in the situation and answering the questions on the card in your mind. I won't be asking you to tell me what you thought of for each but it is important that you to try to answer all of the questions and give roughly equal time to each question. If you find your mind wandering, gently bring your attention back to the situation I give you and the questions. If you find it hard to fill the time, I'd like you to replay the thoughts, like they're on a tape loop, until I tell you to stop.

So, I will give you a situation and you will spend 2 minutes thinking about the situation answering the questions on the card. Does that make sense?

Practice Situation One:
Imagine yourself in this situation -you have been invited to **a party** at a bowling alley for your best friend's birthday. Your friend has been planning it for ages and is really excited about it. Your friend is a little bit nervous that people won't turn up and you have promised to meet them at the bowling alley early before the party.

You have been talking about the party all week and you're really looking forward to it. The party is at a bowling alley you have never been to, so you arrange to call your best friend when you get off the bus for directions from the bus stop.

I'd like you to imagine that it is the day of the party, you're ready and really excited and you get the bus. You are playing with your phone on the bus and listening to music and thinking about who will be at the party. Can you imagine yourself in that situation? Picture what you can see around you in as much detail as possible?

The bus pulls up to the stop you need to get off at and you get off the bus. You reach your phone and go to find your friends number to find out where you need to go. As you press the dial button your phone turns off. You try to turn it on again and it won't work. You realise that you forgot to charge it before you left the house and the battery has died.

Try to imagine that in as much detail as possible. Notice any feelings in your body. Notice how you feel and what you think. Try to hold on to that feeling. Your friend is relying on you to be at the party but because you haven't charged your phone you don't know how to get there and can't get in touch to explain.

Now think about the situation using the questions on this card. **(Card 1)**

- On a scale of 0-10 where 0 is not at all sad and 10 is very sad, how sad do you feel at this moment?
- On a scale of 0-10 where 0 is not at all anxious and 10 is very anxious, how anxious do you feel at this moment?
- On a scale of 0-10 where 0 is not at all and 10 is very much, how able were you to think about that situation for 2 minutes?
- On a scale of 0-10 where 0 is none of the time and 10 is all of the time, how much of the time were you thinking about the situation using the questions on the card?
- On this scale, can you mark whether you were thinking about just this situation or a similar event that has happened to you in the past
- On this scale, can you mark whether you were thinking in words or images?

Practice Situation Two:

We're going to do the same thing with a different situation. Remember if you find your mind wandering, bring your attention back to the situation and these questions. Replay the thoughts, like they're on a tape loop, until I tell you to stop.

Imagine yourself in this situation – You are chatting to your friend at school about your favourite band and they tell you that they have just downloaded the band's new album onto their **ipod**. You really want to listen to the album and ask your friend if you can borrow their ipod. Your friend agrees that you can have it over the weekend.

At the weekend you are getting the bus home from the shops and are enjoying listening to the album on your friend's ipod. Suddenly you notice your phone ringing and put the ipod down on the seat next to you to answer the phone.

You get off at the next bus stop and when you go to use the ipod again you realise you have left it on the seat on the bus.

Notice any feelings in your body. Notice how you feel and what you think. Try to hold onto that feeling. Your friend really loves their ipod and you have just left it on the bus which has already driven away.

Now think about the situation using the questions on this card. **(Card 2)**

- On a scale of 0-10 where 0 is not at all sad and 10 is very sad, how sad do you feel at this moment?
- On a scale of 0-10 where 0 is not at all anxious and 10 is very anxious, how anxious do you feel at this moment?
- On a scale of 0-10 where 0 is not at all and 10 is very much, how able were you to think about that situation for 2 minutes?
- On a scale of 0-10 where 0 is none of the time and 10 is all of the time, how much of the time were you thinking about the situation using the questions on the card?
- On this scale, can you mark whether you were thinking about just this situation or a similar event that has happened to you in the past
- On this scale, can you mark whether you were thinking in words or images?

Practice Situation Three:

We're going to do the same thing with another imaginary situation. Remember if you find your mind wandering, bring your attention back to the situation and these questions. Replay the thoughts, like they're on a tape loop, until I tell you to stop.

I'd like you to imagine yourself in this **situation at school**. You have been working really hard on an important piece of homework/assignment. The teacher for that lesson is really strict and you have tried really hard to get the work right. It's taken you a long time to finish it and you're really pleased with it.

On the morning you are due to hand it in you are running late and you have to rush to school. I would like you to imagine that in as much detail as possible. Imagine rushing around the house, hurrying to get to school.

You rush to form just on time and sit down at a desk. You open your bag to get your homework to hand in for the next lesson and realise that you have forgotten it. Notice any feelings in your body. Notice how you feel and what you think. Try to hold on to that feeling, this is a really important piece of homework and the teacher is very strict.

Now think about the situation using the questions on this card. **(Card 3)**

> - On a scale of 0-10 where 0 is very sad and 10 is not at all sad, how sad do you feel at this moment?
> - On a scale of 0-10 where 0 is very anxious and 10 is not at all, how anxious do you feel at this moment?
> - On a scale of 0-10 where 0 is not at all and 10 is very much, how able were you to think about that situation for 2 minutes?
> - On a scale of 0-10 where 0 is none of the time and 10 is all of the time, how much of the time were you thinking about the situation using the questions on the card?
> - On this scale, can you mark whether you were thinking about just this situation or a similar event that has happened to you in the past
> - On this scale, can you mark whether you were thinking in words or images?

CARD ONE

Why didn't I charge my phone?

What are the consequences of this?

What will happen because I can't phone my friend?

What will my friend think of me?

What does it mean about me?

What have I done to deserve this?

Why do things like this keep happening to me?

CARD TWO

Why didn't I put the ipod somewhere safe when my phone rang?

Why didn't I pick up the ipod when I got off the bus?

What are the consequences of this?

What will my friend think of me?

What does this mean about me?

What have I done to deserve this?

Why do things like this keep happening to me?

CARD THREE

Why did I rush today of all days?

Why didn't I pack the homework?

What are the consequences of this?

What will my teacher think of me?

What does it mean about me?

What have I done to deserve this?

Why do things like this keep happening to me?

<u>Concrete thinking induction script</u>

Now we are going to do something different. This task involves thinking about problems in a particular way. Sometimes when we are thinking about a situation that has upset us we might think about how it happened and what led up to the problem happening.

We might imagine the situation re-playing in our mind really vividly, like we are watching a movie of how it happened, at the same time remembering how it made us feel in our body and what we could see and hear at the time. We might picture it through our own eyes, as if we are looking out on the situation and watching it happen. We might think about the situation as if it were happening again right now. We might think about

- **How did this happen?**
- **What did I notice?**
- **What is the sequence of events leading up to this point?**
- **How can I understand this?**
- **How can I fix it?**
- **What is the first step to solve this problem?**
- **How can I decide what to do next?**

I am going to give you an imaginary situation. What I would like you to do is spend 2 minutes imaging yourself in the situation and answering the questions on the card in your mind. I won't be asking you to tell me what you thought of for each but it is important that you to try to answer all of the questions and give roughly equal time to each question.

I would like you to imagine the situation as if it is happening right now. Focusing on how it happened and what has led up to it happening. Imagine it in your mind as vividly as possible, like a movie from the beginning to the end. Try to see it through your own eyes, as if you are looking out on it happening.

If you find your mind wandering, gently bring your attention back to the situation and these questions. If you find it hard to fill the time, I'd like you to replay the thoughts, like they're on a tape loop, until I tell you to stop.

So, I will give you a situation and you will spend 2 minutes thinking about the situation, imagining it like a movie in your mind and answering the questions on the card. Does that make sense?

Practice Situation One:

Imagine yourself in this situation -you have been invited to **a party** at a bowling alley for your best friend's birthday. Your friend has been planning it for ages and is really excited about it. Your friend is a little bit nervous that people won't turn up and you have promised to meet them at the bowling alley early before the party.

You have been talking about the party all week and you're really looking forward to it. The party is at a bowling alley you have never been to, so you arrange to call your best friend when you get off the bus for directions from the bus stop.

I'd like you to imagine that it is the day of the party, you're ready and really excited and you get the bus. You are playing with your phone on the bus and listening to music and thinking about who will be at the party. Can you imagine yourself in that situation? Picture what you can see around you in as much detail as possible?

The bus pulls up to the stop you need to get off at and you get off the bus. You reach your phone and go to find your friends number to find out where you need to go. As you press the dial button your phone turns off. You try to turn it on again and it won't work. You realise that you forgot to charge it before you left the house and the battery has died.

Try to imagine that in as much detail as possible. Notice any feelings in your body. Notice how you feel and what you think. Try to hold on to that feeling. Your friend is relying on you to be at the party but because you haven't charged your phone you don't know how to get there and can't get in touch to explain.

Now think about the situation using the questions on this card. **(Card 4)**

- On a scale of 0-10 where 0 is very sad and 10 is not at all sad, how sad do you feel at this moment?
- On a scale of 0-10 where 0 is very anxious and 10 is not at all, how anxious do you feel at this moment?
- On a scale of 0-10 where 0 is not at all and 10 is very much, how able were you to think about that situation for 2 minutes?
- On a scale of 0-10 where 0 is none of the time and 10 is all of the time, how much of the time were you thinking about the situation using the questions on the card?
- On this scale, can you mark whether you were thinking about just this situation or a similar event that has happened to you in the past
- On this scale, can you mark whether you were thinking in words or images?

Practice Situation Two:

We're going to do the same thing with a different situation. Remember if you find your mind wandering, bring your attention back to the situation and these questions. Replay the thoughts, like they're on a tape loop, until I tell you to stop.

Imagine yourself in this situation – You are chatting to your friend at school about your favourite band and they tell you that they have just downloaded the band's new album onto their **ipod**. You really want to listen to the album and ask your friend if you can borrow their ipod. Your friend agrees that you can have it over the weekend.

At the weekend you are getting the bus home from the shops and are enjoying listening to the album on your friend's ipod. Suddenly you notice your phone ringing and put the ipod down on the seat next to you to answer the phone.

You get off at the next bus stop and when you go to use the ipod again you realise you have left it on the seat on the bus.

Notice any feelings in your body. Notice how you feel and what you think. Try to hold onto that feeling. Your friend really loves their ipod and you have just left it on the bus which has already driven away.

Now think about the situation using the questions on this card. **(Card 5)**

- On a scale of 0-10 where 0 is not at all sad and 10 is very sad, how sad do you feel at this moment?
- On a scale of 0-10 where 0 is not at all anxious and 10 is very anxious, how anxious do you feel at this moment?
- On a scale of 0-10 where 0 is not at all and 10 is very much, how able were you to think about that situation for 2 minutes?
- On a scale of 0-10 where 0 is none of the time and 10 is all of the time, how much of the time were you thinking about the situation using the questions on the card?
- On this scale, can you mark whether you were thinking about just this situation or a similar event that has happened to you in the past
- On this scale, can you mark whether you were thinking in words or images?

Practice Situation Three:

I'd like you to imagine yourself in this **situation at school**. You have been working really hard on an important piece of homework/assignment. The teacher for that lesson is really strict and you have tried really hard to get the work right. It's taken you a long time to finish it and you're really pleased with it.

On the morning you are due to hand it in you are running late and you have to rush to school. I would like you to imagine that in as much detail as possible. Imagine rushing around the house, hurrying to get to school.

You rush to form just on time and sit down at a desk. You open your bag to get your homework to hand in for the next lesson and realise that you have forgotten it. Notice any feelings in your body. Notice how you feel and what you think. Try to hold on to that feeling, this is a really important piece of homework and the teacher is very strict.

Now imagine yourself in that situation, picturing it like a movie from the beginning to the end and answering the questions on this card. **(Card 6)**

- On a scale of 0-10 where 0 is very sad and 10 is not at all sad, how sad do you feel at this moment?
- On a scale of 0-10 where 0 is very anxious and 10 is not at all, how anxious do you feel at this moment?
- On a scale of 0-10 where 0 is not at all and 10 is very much, how able were you to think about that situation for 2 minutes?
- On a scale of 0-10 where 0 is none of the time and 10 is all of the time, how much of the time were you thinking about the situation using the questions on the card?
- On this scale, can you mark whether you were thinking about just this situation or a similar event that has happened to you in the past
- On this scale, can you mark whether you were thinking in words or images?

CARD FOUR

How did this happen?

What did I notice when my phone turned off?

What is the sequence of events leading up to this point?

How can I understand this?

How can I fix it?

What is the first step to solve this problem?

How can I decide what to do next?

CARD FIVE

How did this happen?

What did I notice when I realised I had left the ipod on the bus?

What is the sequence of events leading up to this point?

How can I understand this?

How can I fix it?

What is the first step to solve this problem?

How can I decide what to do next?

CARD SIX

How did this happen?

What did I notice when my homework wasn't in my bag?

What is the sequence of events leading up to this point?

How can I understand this?

How can I fix it?

What is the first step to solve this problem?

How can I decide what to do next?

Appendix 6: Visual analogue scales used in induction period after each scenario

Scenario1/2/3:

How sad do you feel now?

0	10
Not at all sad	Very sad

How anxious do you feel now?

0	10
Not at all anxious	Very anxious

How able were you to think of the situation for the 2 minutes?

0	10
Not at all able	Very able

How much of the time were you thinking about the situation using the questions on the card?

0	10
None of the time	All of the time

Were you always thinking about that specific situation or thinking about similar situations in the past?

0	10
Always thinking of a similar situation in the past	**Always thinking of this situation**

Were you thinking in words or images?

0	10
Always thinking in words	Always thinking in images

Appendix 7: Intrusive Memory Interview

Sometimes memories just pop into our minds; we remember things without trying to. Sometimes memories we don't want happen following an event. For example a friend saying something horrible to you might make you remember a time when someone else said something mean to you. Or the smell of hospitals might cause you to get a memory about a time when you or a family member was ill in hospital, even though you didn't want the memory.

What I'd like you to do is tell me about a memory like this that you have had in the last week.

The memory should be one you didn't mean to think about. It should be a memory that just popped into your mind even though you didn't want it to.

The memory should be of an event or situation which wasn't particularly nice for you. The event the memory is about must have happened at least a few weeks ago but it could have happened years ago when you were much younger.

Please could you just tell me briefly what your memory is about? You don't need to give me lots of detail, just a short description.

How long ago did you experience this memory?

Approximately how many times within the past few weeks have you experienced this memory?

How long ago did the actual event that your memory is based on occur?

Please mark on the scales:
- **How vivid was the memory?**
- **How distressing did you find this memory?**
- **How much did it feel like it was happening now compared to something that happened in the past? For example, did you feel like you were reliving the experience at all?**

Appendix 8: Visual analogue scales – Memory ratings

Please could you rate on the scale below how upsetting you rate this memory?

0   10
Not at all   Very much

Please also rate how this memory makes you feel right now.

How sad do you feel?

0   10
Not at all   Very much

How angry do you feel?

0   10
Not at all   Very much

How afraid do you feel?

0   10
Not at all   Very much

How guilty do you feel?

0   10
Not at all   Very much

How helpless do you feel?

0   10
Not at all   Very much

The Evaluation of a Ward-based Mindfulness Group: Considering Feasibility and Effectiveness

Jennifer Anne Scott

Supervised by: Dr Susanna Payne

Contents

List of Figures

List of Tables

Abstract

This project aimed to evaluate a ward-based mindfulness based stress reduction (MBSR) group for staff at an adolescent psychiatric unit. Staff completed pre and post self-report measures. Participants were also interviewed about their experience and completed a feedback questionnaire. Analysis of results suggests a staff MBSR group in a ward environment is a feasible and acceptable option. Although participants enjoyed the group and were motivated to attend, attendance appeared more feasible for members of the MDT compared to nurses and HCAs. Participants reported having learnt a number of mindfulness skills including increased observation, awareness, and ability to treat thoughts and feelings non-judgementally. Only the Observe subscale on the Five Facet Mindfulness questionnaire had significant differences between pre and post scores. Significant increases in self-compassion and decreases in staff burnout were not found. Potential explanations for these non-significant results include low numbers due to significant drop out rates resulting in low power, questions over the sensitivity of the questionnaires, and lack of home practice. Results and recommendations were fed back to ward staff.

1. Introduction

1.1 Literature Review

1.1.1 Stress in health care professionals working in mental health settings.
Stress is a prevalent issue for staff working in mental health settings. Sorgaard et al., (2007) found that while staff in community mental health teams experienced more organisational problems, higher work demands and less contact with colleagues, ward staff reported a worse social environment and a lack of control.

Demands experienced by nurses, specifically in mental health settings, include the intense nature of nurse-patient interactions (Cronin-Stubbs & Brophy, 1985) and the confrontation of difficult and challenging behaviours on a regular basis (Sullivan, 1993). Jenkins and Elliot (2004) write that previous studies of mental health nurses have identified a variety of stressors in the work environment. These include administrative and organisational issues such as the volume of paperwork and lack of consultation over work-related changes (Dawkins, Depp & Selzer, 1985), inadequate staffing (Carson, Leary, De Villiers, Fagin, & Radmall, 1995), dealing with potentially violent and/or suicidal patients (Sullivan, 1993) and conflict between staff (Trygstad, 1986).

Shapiro, Astin, Bishop and Cordova (2005) report that stress in health care professionals can lead to increased depression, decreased job satisfaction, disrupted personal relationships, psychological distress, and even suicide. Shapiro et al. (2005) also note that stress may harm professional effectiveness as it decreases attention, reduces concentration, impinges on decision making skills, and reduces providers' abilities to establish strong relationships with patients.

Unsurprisingly it has been shown that stress can lead to increased staff burnout (Spickard, Gabbe & Christensen, 2002) which is defined as a syndrome of depersonalization, emotional exhaustion, and a sense of low personal accomplishment. Jenkins and Elliot outline that burn-out in mental health nursing has been associated with a number of stressors, for example Sullivan (1993) found

positive correlations between the level of emotional exhaustion and various aspects of patient care (violent incidents and continuous one to one observation) and the workload environment (staffing, administrative duties and workload).

Shanafelt, Bradley, Wipf and Back (2002) additionally found that burnout was significantly associated with suboptimal self-reported patient care. The well-being of mental health professionals can therefore be considered an appropriate target for intervention in inpatient mental health settings.

1.1.2 Mindfulness training. Mindfulness has been conceptualized as a state in which one is highly aware of the present moment, acknowledging and accepting it, without getting caught up in thoughts about the present experience or in emotional reactions to it (Bishop, Lau, Shapiro, Anderson, Carlson, Segal et al., 2004).

The concept of mindfulness originates from eastern spiritual traditions and refers to a form of attentional control developed through meditative practices (Baer, 2003). Kabat-Zinn (2000) recognised the potential usefulness of mindfulness practices to people in Western society and clinicians now teach the skills independent of the religious and cultural traditions of their origins. Training in mindfulness attempts to increase awareness of thoughts, emotions, and maladaptive ways of responding to stress, thereby helping participants learn to cope with stress in healthier, more effective ways (Bishop et al., 2004).

Research demonstrates that mindfulness interventions can effectively reduce stress, anxiety, and depression in both clinical and nonclinical populations (Miller, Fletcher & Kabat-Zinn, 1995; Shapiro, Schwartz & Bonner, 1998). Different forms of mindfulness programmes exist, the most common of which include mindfulness based stress reduction (MBSR), mindfulness based cognitive therapy (MBCT), and mindfulness within dialectical behaviour therapy (DBT).

MBSR was developed by Kabat-Zinn (1982) in a behavioural medicine setting for people with a range of chronic pain and stress related disorders. In the 8-10 week course, two hour weekly sessions are held for instruction and practice in mindfulness meditation skills, together with discussion of stress, coping, and homework

assignments. In mindfulness practices participants are encouraged to focus attention on the target of observation (for example the breath). Participants are instructed to non-judgmentally notice their thoughts and feelings but not to become absorbed in their content.

MBCT was developed by Segal, Williams and Teasdale (2002), who suggested that individuals who have experienced major depressive episodes are vulnerable to recurrences whenever mild dysphoric states are encountered, because these states may reactivate the depressive thinking patterns present during the previous episode/s, thus precipitating a new episode (Baer, 2003). MBCT is an 8 week group intervention based on the MBSR programme but incorporating elements of cognitive therapy that facilitate a detached view of one's thoughts. MBCT is designed to prevent depressive relapse by teaching formerly depressed individuals to observe their thoughts and feelings nonjudgmentally. This attitude helps prevent the escalation of negative thoughts into ruminative patterns (Teasdale Segal, & Williams, 1995).

DBT (Linehan 1993a, 1993b) is a treatment approach for borderline personality disorder (BPD) where the focus is on both acceptance and change. Mindfulness skills are taught in DBT within the context of synthesizing acceptance and change. DBT clients learn mindfulness skills in a year-long weekly skills group. Although the skills taught are similar to those targeted in MBSR, including nonjudgmental observation of thoughts, emotions, sensations, and environmental stimuli, the concepts are organized differently (Baer, 2003).

Studies of mindfulness training with health care professionals usually involve MBSR group interventions. Working in clinical settings can involve managing some very difficult and distressing situations, and given that the aim of mindfulness interventions in these contexts is usually to help reduce staff stress rather than treat recurrent depression or BPD, a stress reduction programme would seem most appropriate.

1.1.3 Mindfulness interventions with health care professionals. Shapiro et al. (1998) examined the short term effects of an 8 week mediation-based stress

reduction intervention on premedical and medical students, and found that participation in the intervention could effectively reduce self-reported state and trait anxiety, reduce reports of overall psychological distress, increase scores on overall empathy levels, and increase scores on a measure of spiritual experiences assessed at termination of intervention.

Specifically in terms of health care professionals currently involved in clinical work, Shapiro et al. (2005) examined the effects of an eight week mindfulness-based stress reduction intervention which consisted of eight two hour sessions per week.

Participants were either assigned to the intervention group or a wait list control group. Only 10 participants completed the mindfulness intervention as there was a 44% drop out rate. Those who participated in the intervention reported decreased perceived stress and greater self-compassion when compared with controls. Reported psychological distress, satisfaction with life, and job burnout (as measured by the Maslach Burnout Inventory) were decreased; however, the differences between experimental and control groups along these dimensions were not significant. The authors suggest this may be understandable given the small numbers in the study and the likelihood that the study was therefore insufficiently powered. Responses to open ended questions, which were administered at the end of the intervention, suggested further benefits to the mindfulness intervention and that it had a positive impact on participant's lives. The authors do acknowledge that the significant drop out rate is a cause for concern and suggest that it indicates that adding a two hour intervention plus daily home practice to an already demanding schedule may not be feasible for a substantial number of health care professionals.

Galantino, Baime and Maguire et al. (2005) have also provided support for the beneficial impact of mindfulness in relation to mood and emotional exhaustion in health care professionals. 84 employees, who were all in administrative and direct patient care capacities, were recruited from a university hospital to complete a mindfulness meditation programme. The 8 week mindfulness meditation programme was based on MBSR (Kabat-Zinn, 1990, 1994) and cognitive therapy (Teasdale, 1995). Significant improvements in mood (as measured by the Profile of Mood States – Short Form (POMS-SF) questionnaire) and a decline in emotional exhaustion (as

measured by the MBI) were found following completion of the programme. The authors conclude that mindfulness meditation may have helped participants manage stress in the health care and personal environments.

Further evidence of the effectiveness of mindfulness training for health care professionals was provided by Singh et al. (2006) who found that the addition of mindfulness training to behavioural training considerably enhanced the ability of group home staff to effectively manage the aggressive behaviour and learning of individuals. Following the mindfulness training there was reduced staff interventions for aggressive behaviour, increased patient activity, and increased reported staff satisfaction.

Building on the recommendation of Shapiro et al. (2005) to explore ways to offer mindfulness programs that do not require large time commitments, Moore (2008) piloted a voluntary mindfulness skills course for trainee psychologists, which consisted of 14 session of 10 minute structured practices over 4 weeks. A repeated measures design was used where pre and post self-report measures were administered, as well as participants being asked for their feedback of their experiences of undertaking the course. The course was found to facilitate the development of mindfulness skills (as measured by the Kentucky Inventory of Mindfulness Skills) however a hypothesised reduction in perceived stress was not found using the Perceived Stress Scale. Participants however did comment on the use of mindfulness practices as a stress coping strategy in the qualitative feedback.

The evidence base in this area is still quite limited. The current study aimed to further explore the feasibility and effectiveness of mindfulness-based staff interventions. Staff at a National and Specialist adolescent inpatient unit in South London had identified a need for a skills-based well-being group. Mindfulness was practised clinically on the ward so it was felt important to build in a resource for the self-practice of staff using it with young people. It was therefore felt that an MBSR intervention with sound theoretical underpinnings and a growing evidence base was a good choice for the unit. Due to the high drop out in similar situations (Shapiro et al., 2005), some adaptations were made to the structure whilst aiming to stay true to the key elements of the original programme. These adaptations were primarily to

minimise clinical time used attending the programme, to make examples relevant to the setting, and where possible to think about applications for staff use (for example in work with young people and challenging situations). This study aimed to focus on feasibility as well as an initial evaluation of the impact of the programme with the aim of continuing the audit cycle with adaptations for continued improvement.

1.2 Aims

1. To examine the feasibility of a ward-based staff mindfulness group.
2. To evaluate the effectiveness of a ward-based staff mindfulness group in reducing staff stress.

2. Methodology

2.1 Overview

The thirty clinical ward staff at the Bethlem Adolescent Unit (BAU) were offered the opportunity to attend a ward based mindfulness group for an hour each week. Staff were asked to try and attend at least 3 of the 8 sessions offered which was the criteria for qualifying as a participant. This is because shift patterns meant that it was difficult for staff to commit to attending 8 consecutive weekly sessions.

Before the group commenced staff were asked to complete a set of self-report measures. Once the group had finished, those who had attended for the specified number of sessions were asked to complete the measures again. The primary outcome measure was the Maslach Burnout Inventory. The Five Facet Mindfulness Questionnaire and the Self Compassion Scale were administered as process measures. The staff who qualified as participants were also interviewed to gain qualitative information regarding their experience of the group. The qualitative interview involved the researcher asking a number of pre set, open questions. Alongside the interview participants were asked to complete a feedback questionnaire.

Quantitative results were repeated measures of standardised questionnaires, analysed primarily using Wilcoxon signed rank tests (as the data were non parametric), and a tailored post-group evaluation questionnaire. Qualitative results were structured interviews, analysed using thematic analysis. Results were fed back to staff at the BAU.

2.2 Participants

All clinical staff at the BAU were invited to attend the mindfulness group and to take part in the research. Staff on the BAU consist of Nurses, Health Care Assistants (HCAs), and a Multi-disciplinary Team (MDT) which includes Doctors, a Social worker, an Occupational Therapist, a Clinical Psychologist, and an Advocate.

2.3 Materials

2.3.1 Information sheet and consent form. The information sheet and consent form which were placed in the envelopes with the pre questionnaires can be seen in Appendix 1.

2.3.2 Measures. The measures administered to participants are described below.

2.3.2.1 The Maslach Burnout Inventory (MBI). The MBI (Appendix 2) is a scale designed to assess various aspects of the burnout syndrome. It consists of 22 items and participants give a score of between 0 and 6 (where 0 equates to *'never'* and 6 to *'everyday'*) depending on how often they feel the way described in the item.

The MBI addresses three general scales:
1. Emotional exhaustion, which measures feelings of being emotionally overextended and exhausted by one's work
2. Depersonalization, which measures an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction
3. Personal accomplishment, which measures feelings of competence and successful achievement in one's work

Maslach and Jackson (1981) reported high reliability for the MBI including reliability coefficients of 0.83 for the whole scale and 0.89 for the Emotional Exhaustion subscale, 0.74 for the Personal Accomplishment subscale and 0.77 for the Depersonalisation subscale.

Maslach and Jackson (1981) also reported high validity for the MBI. They demonstrated convergent validity in several ways; individual's MBI scores were correlated with behavioural ratings made independently by a person who knew the individual well, MBI scores were correlated with the presence of certain job characteristics that were expected to contribute to burnout, and MBI scores were correlated with measures of various outcomes that had been hypothesised to be

related to burnout. Maslach and Jackson (1981) also provided evidence of discriminate validity for the MBI.

2.3.2.2 The Five Facet Mindfulness Questionnaire (FFMQ). The Five Facet Mindfulness Questionnaire (Appendix 3) is based on a factor analytic study (Baer et al., 2006) of five independently developed mindfulness questionnaires. The analysis yielded five factors that appear to represent elements of mindfulness as it is currently conceptualized. The five facets, which are the names of the subscales for the FFMQ, are observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience.

When using the FFMQ items are rated on a 5-point Likert-type scale ranging from 1 (*never* or *very rarely true*) to 5 (*very often* or *always true*).

The five facets have been shown to be internally consistent and correlated in expected directions with numerous other constructs in several samples. They are also significantly correlated with the original mindfulness instruments from which they were derived. Regression, mediation, and confirmatory factor analyses have supported the validity of the FFMQ (Baer et al., 2006; 2008).

2.3.2.3 The Self Compassion Scale (SCS). The Self Compassion Scale (Neff, 2003) (Appendix 4), using a scale of one (*almost never*) to five (*almost always*) asks participants to rate on 26 items how they typically act toward themselves at difficult times. The questionnaire contains six subscales including self-kindness, self-judgement, common humanity (perceiving failure as part of the experience of being human), feelings of isolation at times of failure, mindfulness, and over-identification with thoughts leading to rumination and catastrophising.

The SCS has shown internal consistency of .92; test-retest reliability of .93 during a 3-week interval; significant positive correlations with social connectedness, emotional intelligence, and life satisfaction; and significant negative correlations with self-criticism, perfectionism, depression, and anxiety (Neff, 2003).

2.3.2.4 Interview Schedule. The interview schedule (Appendix 5) was designed by the researcher and asked questions about participant's experience of the group, the feasibility of the group, home practice, and participant's use of mindfulness outside of the group.

2.3.2.5 Feedback Questionnaire. The feedback questionnaire (Appendix 6) was designed by the researcher and primarily uses tick boxes and visual analogue scales for participants to rate their opinion of mindfulness groups following participation, the impact the group had on them, and their desired way to attend future mindfulness groups on the ward.

2.4 Intervention

The mindfulness group took place on Tuesdays at 2-3pm in the group room on the ward. The group was based on Kabat-Zinn's (1982) mindfulness based stress reduction program. It involved eight weekly hour sessions and was adapted for the ward staff participants by the facilitator using patient management and stress management examples. The group involved experiential exercises and enquiry. The group was interactive and all attendees participated. At the end of each session participants were given summary sheets and home practice tasks.

2.5 Procedure

The mindfulness group was advertised a number of weeks before it was due to start using posters displayed around the ward. Information about the group and the research was also emailed to staff, and presented in a group planning meeting. The mindfulness group was also a rolling agenda item on the weekly staff meeting in the weeks leading up to the start of the group.

A week before the group began participants were left a pack in their pigeon holes containing the information sheet, consent form, and pre measures. These envelopes were numbered and unsealed. For the purpose of confidentiality the researcher was the only person who knew which member of staff had been allocated which number. Participants needed to be identified by matched name and number so pre and post

questionnaire scores could be compared and the researcher could keep track of which staff had attended what number of sessions. Staff were asked to complete the consent form and measures, seal them in the envelope, and leave the envelope in a box in the nursing office for the researcher to collect.

Staff attended the group over the eight weeks. Once the group had finished staff who had attended at least three sessions were given another pack which contained an information sheet and post measures. Again participant's envelopes were numbered and they were asked to leave their post measures sealed in the envelope for collection by the researcher.

Participants who had attended at least three sessions were also invited to attend an interview. This structured interview was recorded and involved the researcher asking a number of pre-set open questions about the participant's experience of the group. At the end of the interview participants were also asked to complete a short feedback questionnaire.

2.6 Analysis

2.6.1 Quantitative data. The scores on the three questionnaire measures were calculated and pre and post scores for each participant were matched. Data was entered into SPSS and Wilcoxon Signed Rank tests were performed.

2.6.2 Qualitative data. The interviews were transcribed by the main researcher and they were then coded using thematic analysis via the procedure outlined by Braun and Clark (2006). Braun and Clark (2006) define a theme as capturing "something important about the data in relation to the research question and represent some level of patterned response or meaning within the data set" (p10). They identify six phases needed to conduct a thematic analysis. The current analysis was conducted in the following way, using the phases as a guide:

Step 1: Data set was read a number of times so the researcher was familiar with the data.

Step 2: Initial codes were generated by identifying features that appeared interesting and relevant to the research question. The relevant parts of the transcripts were marked with coding labels. If a very similar response occurred at other points in the data set, the same coding labels were applied.

Step 3: All codes were listed and then organised into topic areas (experience of the group, feasibility, skills learnt, incorporating mindfulness into personal and professional life, and suggestions for group improvement).

Step 4: The codes were organised into themes within their topic areas by finding titles that would incorporate groups of codes.

Step 5: The theme titles were refined to make sure each represented a distinct group of related codes and that one title did not incorporate too many divergent topics.

The facilitator of the intervention analysed approximately 30% of the qualitative data set and the level of agreement between coders was 71.4% demonstrating a satisfactory level of interrater reliability.

2.7 Feeding back results

Results were fed back to staff at the BAU during a weekly team meeting to help inform the decision on whether a staff mindfulness group or mindfulness practices will become a routine intervention on the unit, and what modifications needed to be made to the content of the intervention and structure of the programme.

3. Results

3.1 Quantitative data

3.1.1 Attendance. All clinical staff at the BAU were offered the chance to attend the MBSR group. Figure 1 demonstrates how many staff attended sessions:
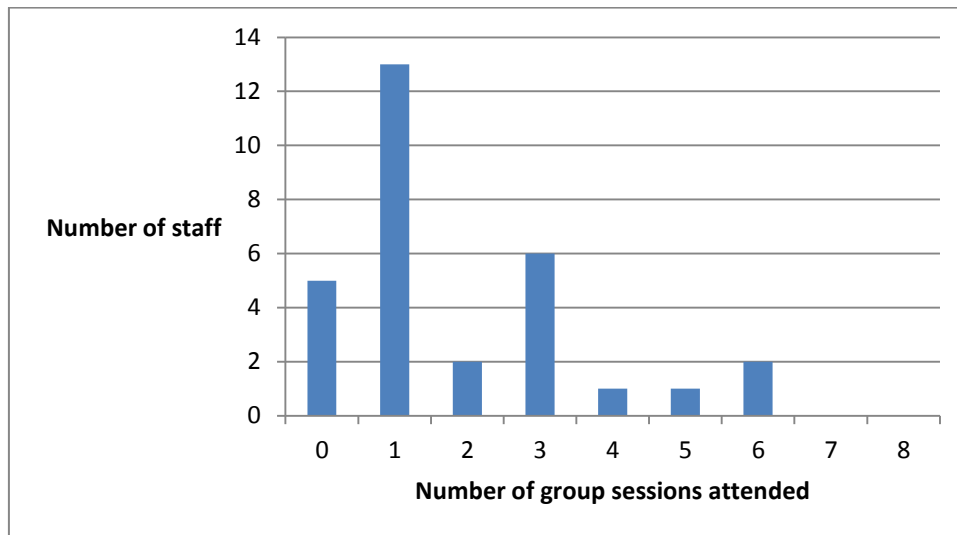

Figure 1. Staff attendance at the group sessions.

Some non-attendance appeared to be due to practical issues, for example there were four staff who attended one group who were only working on the ward for the duration of one week so could only have attended one group. One of the staff who attended two groups was also only available for two groups due to extended leave.

Staff were not formally questioned if they did not wish to attend the groups, however, two of the five staff who did not attend any groups offered the following reasons for their non-attendance; being at work and accessing thoughts and feelings was not something desirable to engage in as it could then be hard to go back to work, and the manager might find out the answers given on the questionnaires being used to evaluate the group.

3.1.2 Description of participants. There were nine staff who attended at least three sessions AND filled in pre and post questionnaires. The following graphs

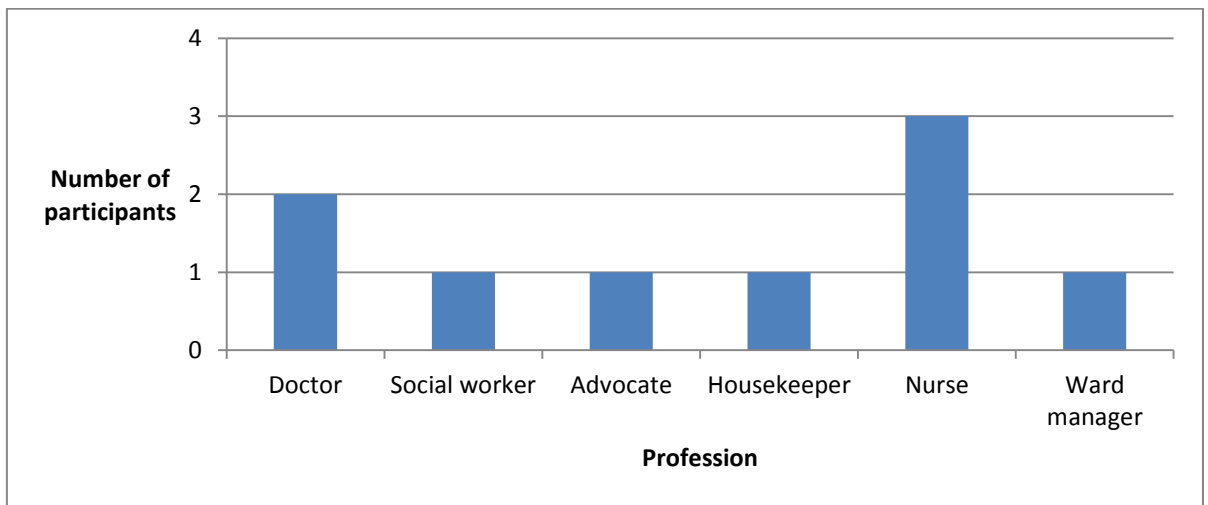(Figures 2-5) illustrate the profession, gender, age and clinical experience of these participants.
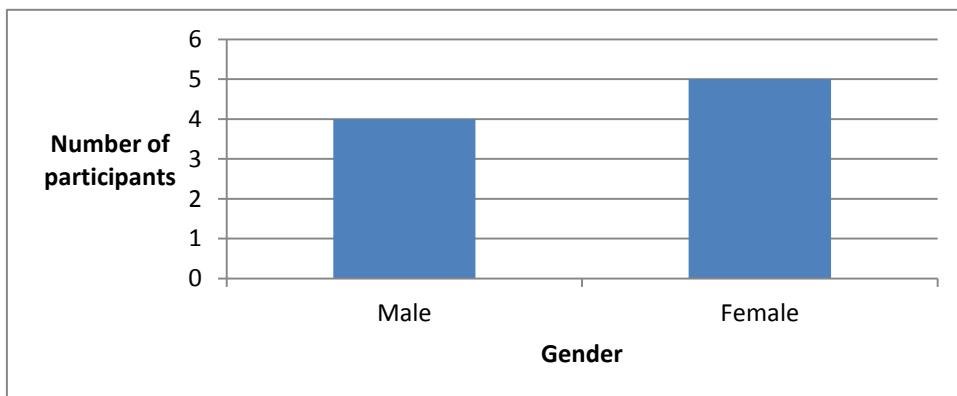

Figure 2. Profession of the participants.
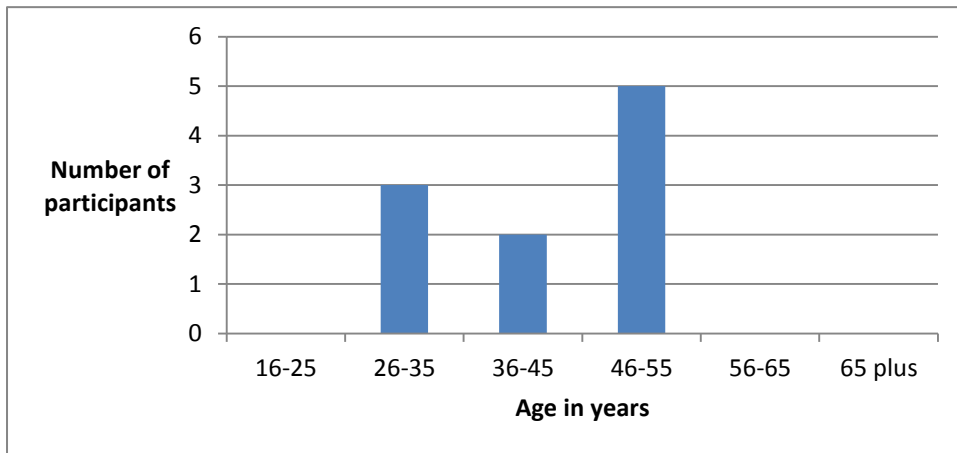

Figure 3. Participants' gender.

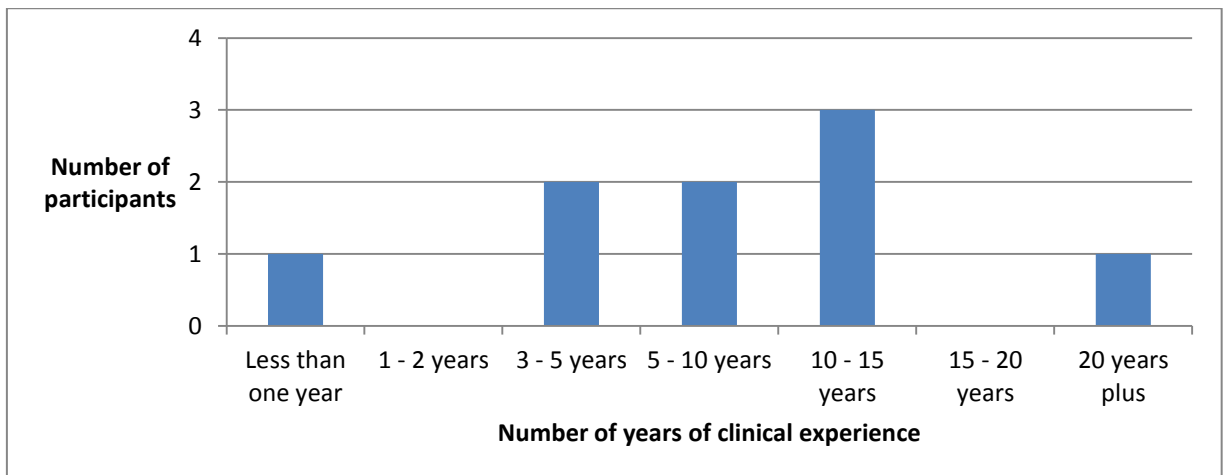*Figure 4. Age of participants.*

Figure 5. Participants' number of years of clinical experience.

3.1.3 Pre and post questionnaires. To qualify as participants in the research, staff had to attend at least three sessions. Of the ten participants who attended at least three sessions, nine completed pre and post measures. The mean number of sessions attended by the nine participants was four.

Data was not normally distributed so Wilcoxon signed rank tests were used to compare pre group and post group scores on the MBI, Five Facet and Self Compassion questionnaires. A significant difference was found between the pre and post Five Facet scores for the subscale Observe (n = 9, Z = -2.39, p = 0.017). No significant differences were found between pre and post scores on the MBI and Self Compassion questionnaires. All statistical test outcomes can be seen in Appendix 7.

3.1.4 Feedback questionnaire. Feedback on the feedback questionnaires was unanimously positive. All ten participants who completed the feedback questionnaire thought that:

- Offering a mindfulness group to staff working on a ward is a good idea
- They would consider attending another mindfulness group if it was offered at their place of work
- They would recommend a colleague to attend a mindfulness group if one were available
- They would encourage their patients to attend mindfulness groups that were available to them

The mean amount of expected home practice done by staff completing the feedback questionnaire was 30.5%.

When asked to rate on a scale of 0 to 10 (0=not at all, 10=completely) whether attending a mindfulness group altered the way staff approached or coped with stressful situations, the mean score given was 7.15 (range 0.5 – 10). When asked to rate on the same scale whether attending a mindfulness group had altered aspects of staff clinical practice, the mean score given was 6.05 (range 0.5 – 10).

Table 1 demonstrates the responses endorsed when participants were asked how they would ideally like mindfulness sessions to be structured if they were to continue attending.

Table 1

Participants' desired structure of future mindfulness groups

Structure	Number of participants
10 minutes a day	0
20 minute session once a week	0
20 minute session twice a week	3
One hour session per week	5
Other	
10 minutes a day plus one hour session per week	1
20 minutes twice a week or one hour per week	1

Table 2 demonstrates the responses endorsed by participants when they were asked about their ideal way to attend the 8 week mindfulness group.

Table 2

Participants' desired way to attend the 8 week mindfulness group

Desired way to attend	Number of participants
Two hour weekly sessions plus home practice	2
One hour weekly sessions plus home practice (as we did)	8
All sessions offered over the course of one week	0
All sessions offered in a two day intensive package	0

3.2 Qualitative data

Summary of themes organised into topic areas:

 3.2.1 Experience of the group. For a staff group to be effective it is important that staff actually attend. This will be influenced by two factors: the feasibility of attending the group, but also the motivation staff have to attend the group. This motivation will be affected by participant's experience of the group so understanding how participants viewed their experience is important. If participants are happy to be involved in a group it is logical that they will take more away from it than if they would rather not be attending.

Fortunately our participants identified the group as a pleasant thing to do and this was a strong theme to emerge. Staff made comments such as *"I found it a nice place to be"* and *"I loved it, really relaxing"*.

The participants identified the time of the group as space away from work stresses. Staff mentioned that the group *"provided a valuable opportunity for a period of calm in the middle of the afternoon of a busy day"* and that it *"allowed time to be in the moment and feel body sensations"*.

The group also provided the opportunity for staff to spend time with each other, but in a different sort of way to usual. The following quote demonstrates this theme well: *"I think working as we do, in the environment that we do, we often have a sense that we should be reflective, and we should take time out to look after ourselves and our colleagues, but we often do that in a verbally mediated way in staff-support and things like that, but this was a very different approach and style"*.

This different style was not completely viewed in a positive way. A number of participants talked about finding the group exposing. One person said *"...you've got to give a different aspect of yourself non -verbally don't you? And even though it's just lying on a mat and doing body maps, or sharing what you think about things, or doing exercises in front of people, it's just a little bit of exposure isn't' it?"*.

Participants also identified the group as being difficult at times for other reasons. For example one participant said *"...sometimes the chaos and business of the ward and leaving that, and then taking that time to wind down is quite hard initially"*.

Overall however the group was better than participants expected. Participants talked about the group being more useful than they thought it would be and including more experiential exercises than they imagined.

      3.2.2 Feasibility. In terms of feasibility the main theme to come through in the analysis was that the time slot worked well. Participants identified that the time slot covered both the early and morning shift, did not clash with any other regularly timetabled events on the ward, and occurred when most of the young people were at school. Some participants did caveat this with the fact the time slot was fine if the ward was stable. For example one participant said *"if somebody is getting restrained we can't all sit and meditate...and can't plan for that really"*.

Participants did also highlight that it was difficult to attend when the group clashed with other commitments. Examples used included meetings and being on call but also annual leave and not being on shift. For example one nurse commented *"you can't change your off day, so I missed it, you know, I couldn't have helped that, that was just how the rota worked"*. Some participants did mention that it would be useful to be allocated the time specifically by their manager, and also that reminders are useful to make sure they can organise their workload to make sure the slot remains free. Further studies need to explore this barrier in more detail as it is of concern that, while the bulk of the inpatient staff are nurses, they were in the minority of attendees.

When talking about homework a common theme was that participants did not feel that they had done enough of it, mainly because they forgot, despite good intentions. Participants recognised that it was important to prioritise time to do homework tasks, but this often did not occur. A number of participants talked about doing homework tasks in an informal way for example telling other people about mindfulness and trying to do the odd activity mindfully. When talking about homework one participant said *"I did...doing some tasks mindfully after the first few groups, but not*

particularly conscientiously…I would struggle to find a specific reason. It didn't reflect a lack of interest, just a lack of application".

3.2.3 Skills learnt. One way to consider the effectiveness of the mindfulness group is to evaluate the skills that were learnt by participants. Participants talked about learning a range of skills. A common theme to emerge was that the group had helped participants to slow down their thinking, to focus, and to prioritise. For example one participant described what he had learnt in the group sessions helping him to *"unclutter the various overlapping thoughts in my mind"*. Another participant said *"Running around with the chaos and the way the ward is at times you think you're being very mindful but when in fact you're not. You actually get to be quite mindless I think. So I think the exercises help you sort of to think, help you slow down your thinking and to prioritise things, which I think is a helpful skill to keep doing really".*

The mindfulness group appeared to facilitate greater awareness in participants, as demonstrated in the following quotation. *"…as I'm driving most of the time it makes my journey to work that more of an experience as opposed to sometimes I wonder how I got from point A to point B before I end up at home. But now I'm more conscious, sometimes not all the time. And I think that's credit to things I learnt in the group".*

Some participants also mentioned learning that they didn't need to be judgemental and critical of themselves and their feelings and thoughts. For example one participant said that the group *"helped me to realise that what I was feeling was normal and that I am going to feel distressed and upset but that's fine to feel that way".*

Another theme that emerged was that not only was the group experienced as relaxing but that it taught people how to relax. Some participants also mentioned having learnt about mindfulness in a general sense, having not come across the therapeutic approach before.

Although participants talked about a number of skills the group had taught them during the interviews a number of participants did make comments suggesting that they had not gained the skills completely yet.

3.2.4 Incorporating mindfulness into personal and professional life.

When considering effectiveness in terms of whether the group had made a difference to participant's lives, a number of themes came through when talking about the usefulness of mindfulness outside the group. Many participants mentioned using mindfulness techniques to get to sleep. For example one participant said *"...particularly before I go to bed, my mind is just running, running with thoughts, so I would use sort of body scanning techniques just to try and calm them down"*.

One of the main themes to emerge in terms of usefulness outside the group was participants using mindfulness techniques in stressful situations. This was both in terms of work and non-work situations. For example one participant said *"if I was on the tube for instance in a stress situation, I would try focus on the breathing...and that I found helpful for me"*, and another participant said *"I think when things get particularly stressful within the working environment, I tend it use it in order not to allow myself to overheat or become over stressed"*.

In terms of work situations participants also mentioned using mindfulness techniques in meetings, particularly to focus and to notice when their mind wanders off topic. For instance one participant said *"...before, I think definitely in meetings when other professionals are there, I think maybe I let them lead sometimes. I was off somewhere else and not in the moment, and I'm definitely using that to recognise that and bring myself back"*. Another participant said in relation to mindfulness *"I find I use it when I do quite stressful meetings such as tribunals where you need to concentrate on what you're saying and it tends to work really"*.

The other main theme to emerge in terms of using mindfulness outside the group was the actual and potential use of mindfulness with patients. One participant said *"I actually talked to the young people sometimes about mindfulness and how I found it helpful and maybe they would as well"*. Referring to the group, another participant said that it *"pretty much expanded my nursing skills repertoire in some respects*

because I take things I learnt in the group and try and implement them with the young people".

3.2.5 Suggestions for group improvement. When evaluating the effectiveness and feasibility of an intervention it is important to consider how participants think it could have been more effective or feasible. In terms of suggested improvements for the mindfulness group, many participants mentioned that the room needed to be bigger. For example one participant *said "I wasn't too keen about lying on a mat on the floor. I found it awkward being in that room, although it's a big room, it's not quite big enough really. It's really about, sort of, impinging on other people's personal space".*

Participants would also have preferred it if staff could attend every session. This was for a couple of reasons. One participant said *"I would have loved to have had the whole thing...where they fed back from last week, I felt left out because I missed that week and yeah, so I kind of lost a bit there because I didn't really know what they were talking about".* Another participant said *"running a group like that in an inpatient service meant you tended to get a fluctuating cast of attendees so sometimes the momentum of the group stalled a little bit because things had to be repeated. I think a stable group throughout would have been obviously easier".*

Participants suggested that it would have helped to have protected time to attend the group. They also suggested that more consistent attendance would have been facilitated if the group had been arranged further in advance. One participant *said "if it had been arranged further in advance...I would have made sure that particular day, I was on shift".*

Participants also suggested some different group time possibilities that could enhance effectiveness and/or feasibility. For example one participant commented that *"it's probably harder to concentrate on the mindfulness technique than if say was to do it before or after work for example"* and another said *"I didn't know whether doing it in the morning, when the kids are at school might sort of then make people more mindful for the rest of the shift".*

4. Discussion

4.1 Discussion of findings

The current study shows that a staff MBSR group in a ward environment is a feasible and acceptable option. The group can also be seen to have facilitated the development of mindfulness skills in participants.

Although only the Observe subscale on the Five Facet Mindfulness questionnaire had significant differences between pre and post scores, participants reported having learnt a number of mindfulness skills including increased observation, awareness, and ability to treat thoughts and feelings non-judgementally. The significance of the differences between pre and post scores on Observe subscale is consistent with Moore (2008) who found that the Observe subscale of the KIMS was the only subscale with a significant difference between pre and post scores in his study with trainee psychologists.

A significant difference in the Describe, Acting with awareness, Non-judge and Non-react subscales of the Five Facet Mindfulness Questionnaire was not found in this study. Given that participants did report gaining skills in these areas during the interviews, it may be that the Five Facet Mindfulness questionnaire was not sensitive to the amount of change experienced by participants. Alternatively when completing the pre-course questionnaires participants may not have been fully aware of how 'unmindful' they were resulting in an initial over estimation of their mindfulness skills.

Alternatively it could be hypothesised that greater mindfulness skills may have developed if more sessions had been attended and if more home practice had occurred. The average participant only attended half of the sessions on offer and thus it is unsurprising that some skills may not have been learnt or practised to a satisfactory level. In addition, participants suggested that they did on average 30.5% of the expected home practice. Home practice is considered a key component of most mindfulness interventions and is likely to have an effect on the effectiveness of the intervention. Carmody and Baer (2008), for example, found that for adult participants

with stress related problems, illness, anxiety or chronic pain; time engaged in home practice of formal meditation exercises was significantly related to extent of improvement in most facets of mindfulness and several measures of symptoms and well-being. Similarly Kristeller and Hallett (1999) found that for women with binge eating disorder participating in a mindfulness intervention, reported practice time correlated with improvements in Binge Eating Scale scores and BDI scores.

Baer et al. (2006) suggest that the skills of observing internal mental and physical states might be a facet of mindfulness that is highly sensitive to change as a result of meditative practice and as mindfulness skills develop changes in other facets of mindfulness will be more evident (Moore, 2008). A number of participants did report that they did not feel they had gained the mindfulness skills completely in the qualitative feedback. It may be that continued practise following the group, as well as greater attendance and home practice, would increase the effectiveness of the intervention and produce more significant differences on pre post mindfulness questionnaire measures.

An increase in Self-Compassion scores overall or on any of the subscales was not found using the Self Compassion Questionnaire. This is slightly different to Moore (2008) who reported a significant change in self-report of Self-kindness, but there were no significant results for any other subscales in his study. An increase was found in the Self kindness subscale in this study but the difference did not reach significance. Moore (2008) notes that the high-test reliability coefficient of 0.93 on the Self Compassion Questionnaire might affect the utility of the scale for assessing change over the short duration of the course. Although Moore's (2008) intervention only lasted a duration of four weeks, the same could apply to the eight week course used in this study.

A reduction in perceived stress was also not found using the MBI. Again this is consistent with Moore (2008) who reported that a hypothesised reduction in perceived stress using the Perceived Stress Scale was not found. If the non-significant results found using the Five Facet and Self Compassion questionnaire in this study indicate an insufficient amount of learning of mindfulness skills then this may explain why the MBSR group did not facilitate a reduction in stress. Like with the

171

mindfulness skills however, the quantitative and qualitative data are not entirely consistent. During the interviews following the MBSR group participants mentioned using the mindfulness techniques they had learnt in stressful situations and similarly indicated on the feedback questionnaire that attending the group had altered the way they approached or coped with stressful situations. One possibility for the inconsistency in quantitative and qualitative data (which was also the case in Moore) is that the MBI was not sensitive enough to the amount of change experienced by participants.

Given the small sample size, it is also possible that the power of the study was not sufficient to detect differences of a modest or small effect size, especially given the insufficient 'dose' of intervention each participant received.

In the context of contributing to the literature so far, we have shown that it is possible to implement a structure more similar to the original MBSR programme in a busy clinical setting with a variety of healthcare professionals. However, more adaptations are required to enhance attendance and engagement in homework.

The qualitative interview and feedback data in this study was particularly positive. Participants enjoyed the group and thought it had benefit for themselves in and outside the group setting. Participants were motivated to attend the group but did encounter some feasibility issues which made it harder to attend including shift patterns not including group time, other commitments such as meetings clashing with the group, and the unpredictability of an inpatient ward meaning intentions to attend the group were not always realised.

The low attendance rates, although not unexpected given the high dropout rate in other staff mindfulness intervention studies (e.g. Shapiro et al., 2005), were disappointing. Representation of the MDT at sessions was good but it was hoped that many more nurses and health care assistants would have attended given that they are on the front line dealing with patients continuously while on shift, and thus may be most at risk of experiencing staff burnout. The attendance rates and interviews suggested that the group was more feasible for MDT staff than nurses and HCAs.

4.2 Limitations

A criticism of this study is that the participants who were interviewed were those who had managed to attend at least three sessions of the group. This means the study was unable to investigate in depth the reasons behind those who attended less than three sessions which may have highlighted more feasibility issues. On the other hand participants often mentioned other colleagues and their experience of attending/not attending the group during interviews. It is also unlikely that the non-participants experienced completely different feasibility issues to the participants who shared the same job role. Given that the participants were very positive in their feedback it may be that they were more motivated to attend, and thus more motivated to find ways around the feasibility issues. How such staff achieved this may have been clearer if comparison to those who did not attend was possible.

Additionally, the positive nature of the feedback may not have been replicated by the staff members who did not attend the group or who only attended one or two sessions. Not being able to interview these non-participants means the feedback about the group may not be as thorough and representative as it could be and thus important recommendations may be missed. This study also does not include any long term follow up meaning any longer term effects of a ward based MBSR group are unknown.

Despite limitations, the analysis of the interviews and feedback questionnaire have led to the identification of a number of recommendations for improving the MBSR group, which will be put into place and evaluated following the audit cycle. These will hopefully enable the group to be both more feasible and effective in the future.

4.3 Recommendations

The ward group room was identified as being too small which made participants feel uncomfortable at times. There is no bigger room on the ward but another room on the surrounding site could be a possibility. This would involve negotiation with staff however as the group being on the ward was actually identified as a positive in the qualitative feedback.

The problem of nurses and HCAs struggling to attend many groups due to sessions not fitting in with shifts could perhaps be resolved by having taster sessions and then planning the group a month or two later. People could then decide if the group was something they wished to participate in and then request shift patterns accordingly. This would help counter some of the disadvantages of not being able to attend every session including a fluctuating cast of attendees and not knowing what people are referring to when talking about concepts from the session before.

Given that attendance rates and home practice rates were rather low it may be that 10 minute practices at the start of the day / shift, in addition to a weekly hour group, may be an easier and more effective option to promote mindfulness practice and a mindful culture on the ward. It may also help address some of the comments about improving the timing of the group, for example having the practice at the start of the shift may enable the staff to be mindful for the rest of the shift.

In terms of the content of the group, participants were pleased to engage in experiential exercises and valued being able to spend time together, and support each other, in a different way to a verbally mediated staff support group. A continued focus on experiential exercises in future groups would thus appear positive, although there are some circumstances where more discussion may be useful.

Although the majority of participants were able to report situations where they had used their mindfulness skills outside the group, either in one or both of their professional and personal lives, some participants were unable to provide any examples. In- group discussions of when attendees have applied mindfulness skills in the preceding week may be particularly useful for those attendees who struggle to apply the principles outside of the group. It may provide such attendees with the ideas needed to try out mindfulness techniques in areas of their lives where they could be helpful. Continuing, and even increasing, the use of clinically relevant examples used by the facilitator in the sessions may further promote this.

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6. Appendices

Information Sheet

Why is this research being done and what does it involve?

The aim of this research is to evaluate the feasibility and effectiveness of a ward based staff mindfulness group. To do this, staff of the Bethlem Adolescent Unit will be invited to attend a mindfulness based stress reduction group, run by the ward's Clinical Psychologist. The group is open to all staff, the only condition being that they feel able to commit themselves to at least four of the eight group sessions. The group will run for one hour a week, for eight weeks. Questionnaires will be issued to participants before the group starts and after it finishes. Some data may also be collected from participants during the group. Participants will additionally be invited to attend brief interviews once the group finishes to gain more information about their experiences.

What do I have to do now?

- An envelope containing this information sheet, a consent form, and the first set of questionnaires will be placed in staff trays before the group is due to start.
- After reading this information, please fill out the consent form.
- If consenting to participate, please fill out the questionnaires and put them back in the envelope. Seal the envelope, and place it in the designated tray in the nursing office.
- If you decide not to participate but feel comfortable stating a reason, please fill out the appropriate part of the consent form. Please still seal your envelope with all papers inside, and place it in the designated tray.

What else will I have to do?

- If you consent to participate you will need to try and attend the staff mindfulness group for at least three of the eight sessions offered.
- We will ask you to fill in another set of questionnaires once the group has finished. These will be issued in a similar manner to the initial questionnaires.
- Once the group has finished you will also be invited to attend a brief interview to talk about your experiences of the group.

What will happen to the information I provide?

You will not be asked to provide your name or any other identifiable information when filling in your questionnaires. Your envelope will have a number written inside it which corresponds to a list of numbers which is matched to a staff name. This list is kept so pre and post questionnaire data can be compared. This list will only be seen by the researcher and will be

kept in a safe, locked environment. The list will be destroyed once the research has been completed. In a similar way, only your number will be recorded when taking part in the post group interview. The researcher will be the only person to know who said what, and no names or identifiable information will be used in the write up.

What else should I know?

You have the right to withdraw from the research at any time, and you can ask the researcher to destroy your data at any point during the investigation.

If any significant issues or distress arise for you while you are filling out the questionnaires, or participating in the groups or interviews, you are welcome to talk to the researcher or group facilitator.

Alternatively if you are struggling with issues related to stress at work it is advised that you talk to your supervisor or manager. You may also wish to consider referring yourself to the confidential staff counselling service. For an assessment call Mary Banks, Principal Staff Counsellor on: 020 3228 4365 or 020 3228 5207 to arrange an initial telephone consultation.

Consent Form

I understand what will happen if I want to take part in the research ☐

I have had a chance to ask the researcher any questions ☐

I understand that any data used for the study is stored fully confidentially ☐

I agree to take part in the research ☐

If you do not wish to take part in the research please state why:

_____

_____   _____   _____
Signature   Printed name   Date

Human Services Survey

The purpose of this survey is to discover how various persons in the human services or helping professions view their jobs and the people with whom they work closely. Because persons in a wide variety of occupations with answer this survey, it uses the term *recipients* to refer to the people for whom you provide your service, care, treatment, or instruction. When answering this survey please think of these people as recipients of the service you provide, even though you may use another term in your work.

On the following page there are 22 statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, write a "0" (zero) before the statement. If you have had this feeling, indicate how often you feel it by writing the number (from 1 to 6) that best describes how frequently you feel that way. An example is shown below.

Example:

HOW OFTEN:

1	2	3	4	5	6
Never	A few times a year	A few times a month	Once a week	A few times a week	Every day

How Often

0 - 6   Statement:

_____   I feel depressed at work.

If you have never felt depressed at work, you would write the number "0" (zero) under the heading "How Often". If you rarely feel depressed at work (a few times a year or less), you would write the number "1". If your feelings of depression are fairly frequent (a few times a week, but not daily) you would write a "5".

Human Services Survey

1	2	3	4	5	6
Never	A few times a year	A few times a month	Once a week	A few times a week	Every day

How Often

0 – 6

_____ I feel emotionally drained from my work

_____ I feel used up at the end of the workday

_____ I feel fatigued when I get up in the morning and have to face another day on the job

_____ I can easily understand how my recipients feel about things

_____ I feel I treat some recipients as if they were impersonal objects

_____ Working with people all day is really a strain for me

_____ I deal very effectively with the problems of my recipients

_____ I feel burned out from my work

_____ I feel I'm positively influencing other people's lives through my work

_____ I've become more callous toward people since I took this job

_____ I worry that the job is hardening me emotionally

_____ I feel very energetic

_____ I feel frustrated by my job

_____ I feel I'm working too hard on my job

_____ I don't really care what happens to some recipients

_____ Working with people directly puts too much stress on me

_____ I can easily create a relaxed atmosphere with my recipients

_____ I feel exhilarated after working closely with my recipients

_____ I have accomplished many worthwhile things in this job

_____ I feel like I'm at the end of my rope

_____ In my work, I deal with emotional problems very calmly

_____ I feel recipients blame me for some of their problems

Five Facet Mindfulness Questionnaire

Description:

This instrument is based on a factor analytic study of five independently developed mindfulness questionnaires. The analysis yielded five factors that appear to represent elements of mindfulness as it is currently conceptualized. The five facets are observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience.

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

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

_____ 1. When I'm walking, I deliberately notice the sensations of my body moving.

_____ 2. I'm good at finding words to describe my feelings.

_____ 3. I criticize myself for having irrational or inappropriate emotions.

_____ 4. I perceive my feelings and emotions without having to react to them.

_____ 5. When I do things, my mind wanders off and I'm easily distracted.

_____ 6. When I take a shower or bath, I stay alert to the sensations of water on my body.

_____ 7. I can easily put my beliefs, opinions, and expectations into words.

_____ 8. I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted.

_____ 9. I watch my feelings without getting lost in them.

_____ 10. I tell myself I shouldn't be feeling the way I'm feeling.

_____ 11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.

_____ 12. It's hard for me to find the words to describe what I'm thinking.

_____ 13. I am easily distracted.

_____ 14. I believe some of my thoughts are abnormal or bad and I shouldn't think that

way.

_____ 15. I pay attention to sensations, such as wind in my hair or sun on my face

_____ 16. I have trouble thinking of the right words to express how I feel about things

_____ 17. I make judgments about whether my thoughts are good or bad.

_____ 18. I find it difficult to stay focused on what's happening in the present.

_____ 19. When I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it.

_____ 20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.

_____ 21. In difficult situations, I can pause without immediately reacting.

_____ 22. When I have a sensation in my body, it's difficult for me to describe it because I can't find the right words.

_____ 23. It seems I am "running on automatic" without much awareness of what I'm doing.

_____ 24. When I have distressing thoughts or images, I feel calm soon after.

_____ 25. I tell myself that I shouldn't be thinking the way I'm thinking.

_____ 26. I notice the smells and aromas of things.

_____ 27. Even when I'm feeling terribly upset, I can find a way to put it into words.

_____ 28. I rush through activities without being really attentive to them.

_____ 29. When I have distressing thoughts or images I am able just to notice them without reacting.

_____ 30. I think some of my emotions are bad or inappropriate and I shouldn't feel them.

_____ 31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.

_____ 32. My natural tendency is to put my experiences into words.

_____ 33. When I have distressing thoughts or images, I just notice them and let them go

_____ 34. I do jobs or tasks automatically without being aware of what I'm doing.

_____ 35. When I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about.

_____ 36. I pay attention to how my emotions affect my thoughts and behavior.

_____ 37. I can usually describe how I feel at the moment in considerable detail.

_____ 38. I find myself doing things without paying attention.

_____ 39. I disapprove of myself when I have irrational ideas

Self-Compassion Scale

(Kristin Neff, 2003)

How I Typically Act Toward Myself in Difficult Times

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner.

```
`  1          2         3         4         5
Almost                          Almost
never                           always
```

_____ 1. I'm disapproving and judgmental about my own flaws and inadequacies.

_____ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.

_____ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.

_____ 5. I try to be loving towards myself when I'm feeling emotional pain.

_____ 6. When I fail at something important to me I become consumed by feelings of inadequacy.

_____ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.

_____ 8. When times are really difficult, I tend to be tough on myself.

_____ 9. When something upsets me I try to keep my emotions in balance.

_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.

_____ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____ 14. When something painful happens I try to take a balanced view of the situation.

_____ 15. I try to see my failings as part of the human condition.

_____ 16. When I see aspects of myself that I don't like, I get down on myself.

_____ 17. When I fail at something important to me I try to keep things in perspective.

_____ 18. When I'm really struggling, I tend to feel like other people must be having an easier time of it.

_____ 19. I'm kind to myself when I'm experiencing suffering.

_____ 20. When something upsets me I get carried away with my feelings.

_____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.

_____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.

_____ 23. I'm tolerant of my own flaws and inadequacies.

_____ 24. When something painful happens I tend to blow the incident out of proportion.

_____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.

_____ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Interview Schedule

Overall experience

Would you be able to tell me about your experience of attending the mindfulness based stress reduction group?

In your opinion, what were the main advantages of attending the group?

In your opinion, what were the main disadvantages of attending the group?

Impact of group

In what ways (if any) do you feel that you benefited from attending the group?

What did you learn from attending the group?

What impact did attending the group have on you?

Have you used anything that you learnt in the group outside the group setting?

Experience of sessions

Was there anything you disliked about being in the group sessions?

Is there anything that would have made the group more enjoyable or useful for you?

What prior expectations did you have about the group? How did the reality of the group fit with your prior expectations?

Feasibility

How convenient for you was it to attend the group?

What barriers prevented you being able to attend sessions?

What things made it easier for you to be able to attend sessions?

How could the timing or structure of the group be altered to make the group more convenient to attend?

Home Practice

Did you ever complete homework for the group? If so, how did you find this? What did you do?

<u>Use of mindfulness</u>

Do you use mindfulness to manage stress in your personal or professional life?

Has an awareness of mindfulness altered you clinical practice in any way? If so, how?

<u>Other factors</u>

Did the questionnaires to evaluate the group have an effect on your group attendance?

Questionnaire

Do you think offering a mindfulness group to staff working on a ward is a good idea?

Yes ☐   No ☐

Has attending mindfulness group altered the way you approach or cope with stressful situations?

●————————————————————————————————————●

 Not at all   Completely

Please comment…..

Has attending mindfulness group altered any aspects of your clinical practice?

●————————————————————————————————————●

Not at all   Completely

Please comment….

What proportion of expected home practice did you do?

●————————————————————————————————————●
0%   100%

What activities were easiest for you to do as home practice?

Would you consider attending another mindfulness group if it was offered at your place of work?

Yes ☐   No ☐

Would you recommend a colleague to attend a mindfulness group if one were available?

Yes ☐   No ☐

Would you encourage your patients to attend mindfulness groups that were available to them?

Yes ☐   No ☐

When in the day would be easiest for you to attend a group such as mindfulness? What is it about this time that makes it so?

If you were to continue attending mindfulness sessions on the ward, how would you ideally like this to be structured. All sessions would be drop in (voluntary)?

10 minutes a day   ☐

20 minute session once a week   ☐

20 minute session twice a week   ☐

One hour session per week   ☐

Other   ☐
Please comment:

In an ideal world what would have been your most desired way to attend the 8 week mindfulness group?

2 hour weekly sessions plus home practice   ☐

1 hour weekly sessions plus home practice (as we did) ☐

All sessions offered over the course of one week   ☐

All sessions offered in a two day intensive package   ☐

Other   ☐
Please comment:

Appendix 7: Statistical test outcomes

Wilcoxon Signed rank tests:

Measure	Z statistic	Significance level (p)	Decision
MBI Emotional Exhaustion subscale	-0.21	0.83	Not significant
MBI Depersonalisation subscale	-1.81	0.07	Not significant
MBI Personal Accomplishment subscale	-0.53	0.60	Not significant
Five Facet Observe subscale	-2.39	0.017	**Significant**
Five Facet Describe subscale	-1.59	0.11	Not significant
Five Facet Non-react subscale	-1.63	0.10	Not significant
Five Facet Act with Awareness subscale	-0.42	0.67	Not significant
Five Facet Non-judge subscale	-1.13	0.26	Not significant
Self-compassion Self-kindness subscale	-1.80	0.072	Not significant
Self-compassion Self-judgement subscale	-1.27	0.21	Not significant
Self-compassion Common humanity subscale	-0.51	0.61	Not significant
Self-compassion Isolation subscale	-0.92	0.36	Not significant

Self-compassion Over-identified subscale	-0.68	0.50	Not significant
Self-compassion Mindfulness subscale	-0.11	0.91	Not significant
Total Self-compassion score	-1.01	0.31	Not significant