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The Impact of Ruminative Processing on the Development of Intrusive Memories

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Abstract

Despite substantial evidence of the detrimental effects of ruminative self-focus, paradoxically (as noted and reviewed by Watkins, 2004) there are clear suggestions that under some circumstances self-focused attention can actually promote well-being and confer benefits. We sought to replicate the findings of Watkins (2004) that adopting an abstract/analytical mode of processing following a negative event results in increased spontaneous intrusions of the event; i.e., results in poor emotional processing. In the current study 57 low ($\text{BDI-II} \leq 7$) and 59 high ($\text{BDI-II} \geq 12$) dysphoric undergraduate participants viewed a 4 min. emotion-eliciting video, were randomly assigned to an analytical, experiential, or distraction processing condition, then monitored the frequency of video-related intrusions. Results indicated the effectiveness of the video in inducing moderately distressing intrusions, and suggest that the hypothesized effects of ruminative self-focus on intrusion severity may be dependent upon the self-referential nature of the material to be processed. Results did support previous findings (Williams & Moulds, 2007) that intrusion-related distress is not merely a function of intrusion frequency. Directions for future investigations of the cognitive processes that are important in the maintenance of depressive disorders are discussed.

Keywords: Depression, rumination, intrusive memories, self-focus

The Impact of Ruminative Processing on the Development of Intrusive Memories

1. Introduction

1.1. Rumination and Depression

Depressive rumination has been defined as repetitive but passive thinking about current depression symptoms, and their causes, meanings and consequences. (Nolen-Hoeksema, 1991). Correlational and longitudinal studies have demonstrated that rumination predicts the onset and maintenance of depression (Just & Alloy, 1997; Nolen-Hoeksema, 2000; Nolen-Hoeksema, Parker, & Larson, 1994; Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema & Morrow, 1991; Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Roberts, Gilboa, & Gotlib, 1998; Vickers, & Vogeltanz-Holm, 2003). Extending this, a now extensive body of experimental studies has demonstrated that inducing ruminative self-focus by having participants read through various self-focusing statements (“*Think about*: the possible consequences of your current mental state”; see Nolen-Hoeksema & Morrow, 1991) for several minutes results in the maintenance or enhancement of negative mood in dysphoric and clinically depressed individuals. By comparison, engaging in a distraction task (‘*Think about*: clouds forming in the sky’) has an ameliorative effect (Gibbons, Smith, Ingram, Pearce, Brehm, & Schroder, 1985; Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998; Lyubomirsky & Nolen-Hoeksema, 1995; Papageorgiou & Wells, 2003; Watkins & Teasdale, 2004).

Central to rumination is the process of chronic maladaptive self-focus. While reflecting on the causes (“why do I feel this way?”) or the consequences (“I cannot work efficiently because of how I am feeling”) of depressed mood may represent a typical response, Lyubomirsky and Nolen-Hoeksema (1993) note that it is the enduring nature of such self-focus that is problematic and associated with depression

maintenance. According to Nolen-Hoeksema (1991), self-focus inhibits engagement in distracting behaviours and limits focus on alternative cognitions that direct attention away from one's depressive state and potentially alleviate negative affect. Ruminative self-focus is argued to interfere with goal-oriented behaviours that could remediate depressive symptoms; a suggestion that is supported by the finding that ruminators are less likely to use structured problem solving methods in response to emotional difficulties (Nolen-Hoeksema & Morrow, 1991). Further, Nolen-Hoeksema (1991) proposed that individuals who ruminate in response to negative events will be less likely to engage in activities that provide positive reinforcement or opportunities for success, thus heightening the risk of experiencing a sense of failure or worthlessness.

1.2. Mode of Processing in Self-focus

Despite substantial evidence of the detrimental effects of ruminative self-focus, paradoxically (as noted and reviewed by Watkins, 2004) there are clear suggestions that under some circumstances self-focused attention can actually promote well-being and confer benefits. More generally framed as self-awareness, directed self-focus can be conceptualized as a means of obtaining insight and self-knowledge that could potentially ameliorate negative mood and function as a central variable in learning to exert control over emotional states (McFarland & Buehler, 1998). Self-focused attention is also central to cognitive models of depression, and therefore to the delivery of treatments for mood disorders (Teasdale, 1999). Additionally, researchers have found that directing individuals to focus on certain negative experience through expressive writing tasks can actually lead to improvements in negative affect (Hunt, 1998; Lepore, 1997).

The work of Watkins and colleagues (Watkins, 2004; Watkins & Teasdale, 2001; 2004) has addressed these seemingly contradictory effects and suggested that it is not self-focus per se that is problematic; rather, that it is the mode of processing (abstract/analytical or concrete/experiential) adopted *during* self-focus that determines whether self-focus has a positive or a negative outcome (Watkins, 2004; Watkins & Moulds, 2005). Abstract/analytical processing is characterised by ‘why’ questions (e.g., ‘*Why do I feel this way?*’), while concrete/experiential processing involves a focus on moment-to-moment experience (e.g., ‘*How do I feel?*’). Evidence in support of this distinction and in support of the differential effects of these two forms of self-focus is accruing. For example, Watkins and Teasdale (2004) found that inducing depressed participants to focus in an analytical manner maintained their tendency to retrieve overgeneral autobiographical memories, whereas inducing depressed participants to focus in an experiential manner reduced overgeneral memory. Given that overgeneral memory recall is a key marker of maladaptive cognitive processing (see Williams, Barnhofer, Crane, Hermans, Raes, Watkins, & Dalgleish, 2007, for review), being able to amend this bias through varying one’s mode of self-focus has important clinical implications (Watkins & Teasdale, 2004). Similarly, a manipulation of mode of self-focus influences the problem-solving abilities of depressed patients. Watkins and Moulds (2005) reported that inducing experiential self-focus improved the problem-solving performance of individuals with major depressive disorder (MDD).

These modes of processing have also been applied to the processing of negative events. Watkins (2004) investigated the differential impact of concrete/experiential and abstract/analytical processing on recovery from a laboratory-based negative event (i.e., a forced failure task). Participants were

instructed to write about their failure experience in one of these two conditions. The findings demonstrated that participants in the abstract/analytical group reported more intrusions about the failure experience than those who wrote in a concrete/experiential mode. On the basis that intrusive thoughts indicate unsatisfactory emotional processing (Rachman, 1980), the results support the proposal that abstract/analytical self-focus (i.e., rumination) prevents successful emotional processing.

1.3. Rumination and Intrusive Memories

A related area of research that has received increasing attention in the depression literature is the relationship between rumination and intrusive memories of autobiographical events. Intrusive memories of negative past events represent another cognitive process implicated in the maintenance of depressive symptoms (Brewin, Reynolds, & Tata, 1999). Recent studies (Starr & Moulds, 2006; Williams & Moulds, in press) have found that rumination is correlated with the frequency of intrusive memories and intrusion-related distress. However, the correlational design of these studies precludes inferences about the direction of these relationships. A plausible temporal account (that also accords with the finding of Watkins, 2004) is that engaging in rumination following a distressing event represents a form of cognitive avoidance that prevents successful processing of the memory. Although rumination appears to involve the processing of symptom-relevant information, and thus may appear antithetical to the concept of cognitive avoidance, ruminating in response to intrusive memories may not translate into successful *emotional* processing. The processing and subsequent integration of emotionally-relevant information into conceptual memory is argued to be integral to the cessation of intrusive memories (Ehlers & Steil, 1995). As a result of rumination, these unprocessed memories continue to intrude. An alternative causal account is that the experience of frequent

intrusive memories of a negative event prompts rumination. A study that experimentally manipulates rumination is needed to clarify the direction of this association.

Although the relationship between intrusive memories, depression, and rumination represents a new area of research, there is a body of literature that links depression and rumination to *non-intrusive* autobiographical memories. 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). Lyubomirsky et al. (1998) note that either enhanced or selective recall of negative memories may interact with rumination and contribute to the maintenance of depressive symptoms by highlighting one's current mood and interfering with appropriate problem solving abilities. A series of studies 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 et al., 1998). Thus it is reasonable to assume that rumination may also influence the manifestation or frequency of intrusive or *spontaneously occurring* memories in dysphoria.

2. Aims of the Current Study

The current study sought to: (i) further validate the association between ruminative processing and intrusive memories of a negative event, and (ii) experimentally assess the differential effects of experiential and analytical ruminative processing on intrusion frequency. Although we sought to replicate the findings of Watkins (2004) by manipulating mode of processing and examining the impact on

subsequent spontaneously occurring memories, our study differed in the following key ways. First, we explored the differential impact of processing manipulations intrusive memories of a sad event in high ($\text{BDI-II} \geq 12$) versus low ($\text{BDI-II} \leq 7$) dysphoric participants. Second, Watkins (2004) employed a failure task to induce negative affect. It is plausible that this task also induced anxiety (i.e., individuals may have been embarrassed by their poor performance), and not primarily sad mood. Accordingly, we utilised a sad film-clip as a potentially more depression-relevant stressor. Films have commonly been utilized to evoke emotional responses (Gross & Levenson, 1995) and to investigate encoding processes of traumatic events (Holmes, Brewin, & Hennessy, 2004; Stuart, Holmes, & Brewin, 2006). In addition, use of a film-clip ensures consistency across participants in terms of content and duration of exposure, and allows comparisons of emotional responses to an objectively rated event. Moreover, viewing a film may simulate the manner in which experiences are encoded because it allows for development of an emotional response within a context (Cribb, Moulds, & Carter, 2006). Third, given that visual intrusions are the most commonly reported in investigations of intrusive memories in dysphoria (Williams & Moulds, 2007), the focus of our investigation was on intrusions experienced in this sensory modality. Watkins (2004) used the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979) to index intrusiveness and avoidance of the failure task, but the IES only includes one item (“Pictures about it popped into my mind”) that truly captures the phenomena of interest to us. Accordingly, we employed direct monitoring of sensory intrusions (rather than thoughts) and real-time reporting of associated levels of distress and avoidance (i.e., via report of suppression efforts). Recent commentaries have suggested that intrusion-related distress, in addition to intrusion frequency, should also be considered as an index of emotional processing

(Marcks & Woods, 2005; Steil & Ehlers, 2000). Accordingly, we obtained ratings of intrusion-related distress. Finally, the Watkins study did not include a control condition. We therefore included a distraction control group in order to clarify the differential effects of the experimental manipulations and naturally-occurring processing of the sad film-clip.

2.1. Hypotheses

Our primary hypothesis was that high dysphoric participants in the analytical condition would report greater intrusion frequency and intrusion-related distress than high dysphoric participants allocated to the distraction condition. In the absence of previous research using a distraction/control condition, we tentatively hypothesized that high dysphoric participants allocated to the experiential condition would report significantly less intrusion frequency and associated distress than high dysphoric participants in the analytical and distraction conditions. By comparison, we hypothesised that low dysphoric participants would not differ in intrusion frequency or distress, regardless of processing condition.

Based on a previous finding (Watkins, 2004) that trait rumination was associated with increased susceptibility towards intrusiveness it was also anticipated that differences in intrusion frequency would be influenced by trait levels of rumination as indexed by the RRS. Similarly, we anticipated that any observed effects would be more pronounced in the high dysphoric group compared to the low dysphoric group. Finally, based on previous correlational findings (Williams & Moulds, 2006), we expected to observe an independent relationship between intrusion frequency and reported levels of intrusion distress and to observe a positive association between depression status and levels of intrusion distress.

3. Method

3.1. Participants

Sixty-nine females and 49 males with a mean age of 19.24 ($SD = 3.25$) were recruited from The University of New South Wales and participated in exchange for undergraduate course credit.

3.2. Procedure

Participants provided informed consent, and were then queried about current and past depression and trauma status and completed baseline ratings of current mood. Participants then watched a short video sequence taken from the 1994 film “The Shawshank Redemption” directed by Frank Darabont (Sony Pictures Releasing, Showtime Networks) on individual media players. The selected clip shows an older gentleman recently released from prison and unsuccessfully trying to re-integrate into society. The clip ends with the depiction of his suicide by hanging. The film is rated MA (Australian rating system) and is not specifically graphic in nature, so was considered suitable for student viewing.

Participants were then randomly assigned to the analytical, experiential, or distraction processing condition, and instructed to work through the assigned list of statements for five minutes. Participants in the analytical condition were administered the instructions employed by Watkins and Teasdale (2004), as follows: *“As you read the items, use your imagination and concentration to think about the causes, meanings, and consequences of the items. Spend a few moments visualizing and concentrating on each item, attempting to make sense of and understand the issues raised by each item.”* The experiential group received the following instructions: *“As you read the items, use your imagination and concentration to focus your mind on each experience. Spend a few moments visualizing and concentrating on your*

experience, attempting to find a phrase, image, or set of words that best describes the quality of what you sense". In both conditions an equal number of items were modified and anchored to the video (e.g., "*trying to understand your feelings*" was changed to "*trying to understand your feelings about the video*"). Participants in the distraction condition were administered the standard Nolen-Hoeksema and Morrow (1993) distraction statements. Participants completed manipulation check measures to ensure that the inductions had the intended effects, then monitored the frequency of video-related intrusions for a five minute monitoring period. Finally, participants completed the remaining self-report inventories.

3.4. Measures

3.4.1. Depression and PTSD Screen: The presence of: (i) a current and/or past major depressive episode, and (ii) current or past PTSD (i.e., in the event of any trauma exposure) were assessed by asking a series of open-ended questions based on DSM-IV (APA, 1994) criteria for depression and PTSD. Questions were based on the preliminary items of the relevant SCID modules.

3.4.2. Manipulation Checks: In order to evaluate the effectiveness of the video in inducing negative affect, participants rated how happy and sad they were currently feeling before and after watching the film-clip (on a scale where 0 = *not at all happy/sad*, 100 = *extremely happy/sad*). Manipulation checks were also administered before and after the experimental processing induction. These manipulation checks were taken from Watkins and Teasdale (2001). Participants were also asked to rate how much they were self-focused (0 = *not at all focused on myself*, 100 = *extremely focused on myself*). Participants also rated the degree to which their thinking was

abstract versus compared to concrete, and were given the following information to assist making this rating “thinking about the meaning of an event would be more abstract than thinking about what you did in a situation” (0 = *not thinking in an abstract way at all*, 100 = *thinking in an extremely abstract way*). After engaging in the induction task, participants re-rated their mood. They also rated the degree to which they were focusing on themselves during the task, how abstract their thinking was during the task, and additionally how much they felt like their thoughts were in a verbal (versus visual) form during the task (0 = *not thinking in a verbal way at all*, 100 = *thinking in an extremely verbal way*).

3.4.3. Monitoring Sheet: Information regarding intrusion frequency and distress was collected by asking participants to place a tick mark on the sheet provided every time they experienced a *spontaneous* video-related image/memory/sensory occurrence and to rate their level of distress associated with each category of intrusion. Categories were as follows: (i) thoughts only, (ii) visual image/snapshot/ moving scene, (iii) auditory sensory modality, and (iv) a combined category of overlapping sensory features. Ratings of distress were provided on a 1-10 scale, where a higher score indicated increasing distress. The researcher verbally described the nature of spontaneously occurring cognitions and emphasized that these were different than deliberate efforts to think about or reflect on the video.

3.4.4. Video Suppression Ratings: To assess avoidance or suppression of any intrusions of the video content, participants were asked to rate how much they were trying to avoid thinking of the video and how much they were actively trying to

suppress thoughts/images of the video if they did occur (0 = *not at all*, 7 = *trying very hard*).

3.4.5. *Beck Depression Inventory – Second Edition* (BDI-II; Beck, Steer & Brown, 1996). The BDI is a 21 item self-report inventory that measures symptoms of depression. The BDI possesses high internal consistency, with alpha coefficients of .86 and .81 for psychiatric and non-psychiatric populations, respectively (Beck et al., 1988).

3.4.6. *Ruminative Response Scale* (RRS) of the *Response Styles Questionnaire* (RSQ; Nolen-Hoeksema & Morrow, 1991). The RRS consists of 22 items assessing degree of ruminative coping style. The items elicit reactions to mood that are self-focused (e.g., *I think, “Why do I react this way?”*), symptom-focused (e.g., *“think about your feelings of fatigue”*), and focused on the mood’s possible consequences and causes (e.g., *“I am embarrassing to my friend/family/partner”*). This measure shows good test-retest reliability (Nolen-Hoeksema, Parker, & Larson, 1994) and internal consistency (Nolen-Hoeksema et al., 1991). Following Treynor, Gonzalez, and Nolen-Hoeksema (2003), the total score as well as the subscale scores for depression, reflection, and brooding were calculated. Alpha coefficients for the total scales and each of the subscales were .90, .88, .82, and .64, respectively.

4. Results

4.1. Sample Characteristics

Seventy-five percent of the sample did not endorse symptoms of depression in the past month while the remaining 25% (9 females and 5 males) did report negative

affect or loss of pleasure/interest for at least a two-week interval prior to the assessment. Additionally, 44% (15 females and 9 males) reported symptoms consistent with at least one prior life-time depressive episode. Assessing prior episodes was considered important as research demonstrates that recovered depressed individuals are at greater risk to respond to ruminative inductions (Watkins & Baracaia, 2001). Given the nature of the mood induction (i.e., a film-clip that depicted suicide), participants were also queried about lifetime trauma history. One male participant reported that a family member had committed suicide via hanging and it was considered appropriate that he be excluded from the study.

Familiarity with the film was also assessed, in order to ensure that participants who had watched the film prior to participation in the study did not have less of an emotional response than those who had not. The majority (i.e., 61%) of participants had not previously seen the film. There were no differences between ratings of how negative (2.23, SD = 1.93 versus 2.52, SD = 2.34), sad (8.43, SD = 1.44 versus 8.39, SD = 1.65), or distressing (6.30, SD = 2.15 versus 6.62, SD = 2.28) the film was for those participants who had and had not seen the film previously, respectively, all t 's < 1, all p 's > .05.

Gender effects were also assessed as elevations in both depression and a tendency to ruminate have been consistently reported in females (Nolen-Hoeksema, 1987; Nolen-Hoeksema et al., 1993, 1994, 1999). Adjustments due to multiple comparisons across the main independent variables resulted in a p value of .005 to attain significance. Independent samples t -tests revealed no significant differences across the BDI, RRS, Intrusion frequency, video-response ratings, or manipulation check measures, all t 's < 1, all p 's > .005, thus all subsequent analyses were conducted by collapsing across gender.

4.2. Video Induction and Manipulation Checks

To test the effectiveness of the mood induction and the effects of the processing condition manipulation, data were first inspected to identify any participants who were not sensitive to the manipulation. As a result, data was excluded for 21 participants who did not show the expected patterns of change following the processing manipulations. A 3 x 4 MANOVA was then conducted with mean change scores entered for happiness, sadness, self-focus, and abstract thinking entered as dependent variables with processing condition (distraction, experiential, analytical) entered as independent variables. Mean change scores are presented in Figure 1.

 Insert Figure 1 here

As anticipated, participants across the three processing conditions reported reductions in ratings of happiness from pre-video ratings and these reductions did not differ significantly across the three conditions, $F(2, 113) = .47, p > .05$. Mean change scores for ratings of sadness also did not differ significantly across the three conditions, $F(2, 113) = 2.46, p > .05$. Also as predicted, mean change scores for ratings of self-focus did differ across the three conditions, $F(2, 113) = 12.69, p < .001$. Post-hoc tests revealed that participants in both the analytical and experiential condition reported a greater change in ratings of self-focus compared to those in the distraction condition, $t's > 5, p's < .001$ which did not differ significantly from each other, $t(80) = 1.14, p > .05$. Mean change scores for abstract thinking also differed across the three processing conditions, $F(2, 113) = 22.20, p < .001$, demonstrating a greater increase in both the analytical and experiential condition compared to the distraction condition, $t's > 1, p's < .05$. Also as anticipated, the analytical group

reported greater mean ratings of abstract thinking post induction $t(80) = 4.10, p < .001$.

4.3. Intrusion Frequency and Distress

Manipulation checks revealed that the film clip stimulus was effective in inducing sad mood and resulted in an average of 5.94 ($SD = 4.31$) intrusions across all participants. It is also noteworthy that participants rated their intrusions as being moderately distressing (5.48, $SD = 2.40$) on a 1-10 scale, which suggests that the video was not only successful in inducing negative affect, but also served as a valid means of creating intrusions that are comparable in severity to autobiographical intrusions. We reported mean ratings of associated distress of 5.08 ($SD = 3.15$) in a previous study investigating naturally occurring intrusive memories (Williams & Moulds, 2007).

4.4. Experimental Groups at Baseline:

Random assignment of participants to the processing conditions after removal of participant data resulted in 34 (16 low dysphoric, 18 high dysphoric) participants in the analytical, 48 (23 low dysphoric, 25 high dysphoric) participants in the experiential, and 34 (18 low dysphoric, 16 high dysphoric) participants in the distraction condition. To ensure that the experimental groups did not differ in depression status or trait rumination, separate 2 (depression status: low dysphoric, high dysphoric) $\times$ 3 (processing condition: analytical, experiential, distraction) ANOVAs were conducted with BDI-II and RRS scores as dependent variables. As anticipated, the main effect of depression status on BDI-II scores was significant, $F(1, 110) = 167.27, p < .001$, indicating that mean BDI-II scores were greater in the high dysphoric group (20.61, $SD = 9.08$) compared to the low dysphoric group (3.91, $SD = 2.46$). Importantly, the main effect of condition on BDI-II scores was not

significant, $F(2, 110) = .14, p > .05$, and the depression status x condition interaction was not significant, $F(2, 86) = .24, p > .05$. Similar results were obtained for RRS scores with results showing a significant main effect of depression status, $F(1, 110) = 46.74, p < .001$, indicating that RRS total scores were significantly greater in the high dysphoric group (51.32, $SD = 11.48$) compared to the low dysphoric group (36.92, $SD = 9.46$). Importantly, the main effect of condition on RRS scores was not significant, $F(2, 110) = 2.30, p > .05$ and the depression status x condition interaction was not significant, $F(2, 110) = 1.93, p > .05$.

4.5. Self-focus and Intrusion Frequency and Distress

Descriptive statistics for the primary outcome variables are reported in Table 1. To test the main predictions that analytical self-focus would result in greater post-film intrusions and levels of distress in the high dysphoric versus low dysphoric group, and that high dysphoric participants allocated to the experiential condition would report significantly less intrusion frequency and associated distress than high dysphoric participants in the analytical and distraction conditions, separate 2 (Group: low dysphoric, high dysphoric) x 3 (Processing condition: analytical, experiential, distraction) ANOVAs were conducted, with intrusion frequency and associated levels of distress as dependent variables.

For intrusion frequency, there was no main effect of processing condition $F(2, 110) = 1.49, p > .05$, or group, $F(1, 110) = .42, p > .05$. The condition x group interaction was not significant, $F(2, 110) = .20, p > .05$. For intrusion distress, there was no main effect of processing condition, $F(2, 49) = .77, p > .05$, or group, $F(1, 49) = 2.33, p > .05$. The condition x group interaction was not significant, $F(2, 49) = 1.57, p > .05$.

Insert Table 1 here

To test whether the null findings could be attributed to differences in suppression efforts by participants during the monitoring phase, separate ANOVAs with suppression and avoidance ratings as dependent variables were conducted. No differences in efforts to avoid thinking about the video contents or in efforts to suppress video-related intrusions were observed, F 's < 1, p 's > .05.

4.6. Trait Rumination and Susceptibility to Induction Effects

As there was no effect of experimental condition on intrusion frequency or distress, we wanted to assess whether these variables were influenced by an interaction between trait levels of rumination and experimental condition as predicted. Accordingly, we categorised participants as high or low on the RRS Brooding subscale using a median split analysis. There were no differences in intrusion frequency or distress ratings by condition, F 's < 1, p 's > .05.

4.7. Depression and Rumination

Additional correlational analyses were conducted to help substantiate the distinction between our high and low dysphoric groups. Results supported the well-established association between depression and rumination, as mean RRS Total scores were significantly higher in the high dysphoric (51.32, SD = 11.48) than the low dysphoric group (36.92, SD = 9.46), $t(117) = 7.35$, $p < .001$. The observed correlation between BDI-II scores and the RRS Reflection subscale was $r = .25$ compared to the RRS Brooding subscale ($r = .45$) and the RRS Depression subscale ($r = .68$), all p 's <

.001. Current dysphoric status (as indexed by endorsement of SCID screening criteria) was also associated with the RRS Brooding subscale ($r = .25$) and the RRS Depression items ($r = .47$), p 's $< .01$, but not the RRS Reflection subscale ($r = .14$, $p > .05$).

4.8. Prediction of Intrusion Distress

In accordance with previous findings (Starr & Moulds, 2006; Williams & Moulds, 2007), intrusion frequency did not correlate with intrusion-related distress ($r = -.22$, $p > .05$), confirming that intrusion-related distress is not merely a function of intrusion frequency. However, intrusion-related distress was correlated with BDI scores ($r = .31$, $p < .05$) and post-video ratings of sad mood ($r = .43$, $p < .01$). To further investigate the variables associated with reported levels of distress, BDI-II, RRS Depression and RRS Brooding subscales were simultaneously entered along with mean change scores in ratings of sadness in a regression analyses. This equation accounted for 19% of the variance in intrusion distress scores with BDI-II scores ($\beta = .44$) and ratings of sadness change ($\beta = .37$) contributing significant variance to the equation, $F(2, 52) = 7.46$, $p < .001$.

5. Discussion

The current study assessed the influence of different modes of self-focus on the processing of negative material in a non-clinical sample. The first task was to devise a means of inducing both negative affect and salient intrusions that would be relatively consistent across participants. Manipulation checks revealed that the film clip chosen as the emotion-eliciting stimuli was in fact effective in inducing sad mood and in creating moderately distressing intrusions that were comparable in frequency to negative autobiographical intrusions. Despite the apparent effectiveness of the emotion-eliciting stimuli, we did not observe any hypothesized effects.

We predicted that analytical self focus would result in greater post-video intrusions and levels of distress compared to experiential self-focus. However, there were no differences in either intrusion frequency or associated levels of distress across the conditions, and neither of nor did either of the self-focussing conditions differed from the distraction condition on the outcome measures. We also failed to observe any effects in the high dysphoric compared to the low dysphoric sub-sample. It was thought possible that individual differences in avoidance or suppression efforts may have obscured any effects across the experimental conditions. Participant data was analysed for differences in both efforts to avoid and efforts to suppress any video-related content but results again revealed no significant differences.

Given the relatively low sub-sample sizes across the conditions, it may be tempting to attribute the null findings to a lack of statistical power in the analyses. However, the ruminative manipulation employed in the current study has been demonstrated to produce robust effects and the sample size met power analyses recommendations of .80 (Cohen, 1992) based on post-hoc G*Power 3 software analysis (Faul, Erdfelder, Lang, & Buchner, in press). Alternative explanations may therefore better account for the null findings.

A potential reason for the lack of significant findings may be the nature of the stimuli used. Although the video proved to be a successful mood inducing stimuli and resulted in intrusions comparable to naturally occurring memories, the created intrusions were unlikely to be self-referent. Borton, Markowitz, and Dieterich (2005) highlight the distinction between personally relevant information and self-referent information. They define personally relevant thoughts as those that are important to an individual but are not linked directly to one's sense of self. Self-referent thoughts on the other hand are directly linked to one's sense of self and one's personal

characteristics. It may be the case that in the current study not only was the video content not self-relevant, but it was additionally not self-referent. Watkins (2004) reported a differential effect of self-focus condition on the subsequent intrusiveness of thoughts about the failure task, but the induction was in fact self-relevant and was also likely to convey information about one's intellectual and thus personal character and therefore also be self-referent. In order to test this possibility we are presently in the process of modifying the current protocol and applying it to participants with naturally occurring negative intrusive memories.

A further methodological difference may have affected the results obtained in the current study. Watkins (2004) employed a modified expressive writing to vary the mode of processing which participants completed over three separate time periods. The nature of this processing manipulation may have engaged participants differently than a simple cognitive manipulation and the repetition across time may have lead to a more robust effect compared to the simple 5 min. induction method used in the current study. It is unlikely; however, that this difference would account for the findings in the current study as previous experimental studies have reported significant effects using this induction technique (Watkins & Moulds, 2005; Watkins & Teasdale, 2004).

Finally, intrusions based on the video stimuli may not have been ideally amenable to emotional processing. The concept of emotional processing was captured by Rachman (1980) who described it as a resultant decline of subjectively experienced problematic states through repeated exposure to those states. Others have argued that in order for emotional processing to occur affect must also integrate with cognition (Greenberg, 2002; Greenberg & Pascual-Leone, 1995; Greenberg & Safran, 1984). Pos, Greenberg, Goldman, and Korman (2003, p.1007) explain:

“Once contact with emotional experience is achieved, clients must also cognitively orient to that experience as information and explore, reflect on, and make sense of it. This includes exploring beliefs relating to experienced emotion, giving voice to emotional experience, and identifying needs that can motivate change in personal meanings and beliefs. If such exploration and reflection occur, new emotional reactions and new meanings potentially emerge that subsequently may be integrated into and change existing cognitive–affective meaning structures”

Thus, directing participants to engage in a task of emotional processing may require a much more complex experience that has both affective and cognitive features. By this account, it is unlikely that the stimuli used in the current investigation sufficiently met this criteria.

Some of the present findings were however encouraging and add support to the associations between depressive mood and ruminative self-focus. RRS Total and subscale scores were significantly greater in the high dysphoric ($\text{BDI-II} \geq 12$) compared to the low dysphoric ($\text{BDI-II} \leq 7$) sub-sample. Additionally, endorsement of SCID criteria for a current depressive episode was associated with the RRS Brooding subscale but not the RRS Reflection subscale. It is interesting to note that some of the Brooding subscale items contain an analytical component (Watkins, 2004) while the Reflection subscale contains items that represent a more purposeful and goal-directed form of self-focussing (Treynor, Gonzalez, & Nolen-Hoeksema, 2003) which mirrors the experiential mode of processing. The observed pattern of correlations is therefore consistent with theoretical expectations and aligns with evidence that it is specifically the Brooding subscale of the RRS that is predictive of future depressive episodes (Treynor et al., 2003).

The current investigation also supported earlier research on the nature of autobiographical intrusive memories. In a study investigating the importance of one's appraisals on intrusion distress and depression status, Williams and Moulds (2007) reported that the frequency of one's reported intrusions were not predictive of concurrent depression status or levels of distress. In the current study intrusion frequency did not correlate with intrusion-related distress again suggesting the independent relationship of these two variables.

In summary, despite demonstrating that we were able to effectively induce negative affect and create moderately distressing intrusive memories using a video presentation, results did not support our primary hypothesis of a differential effect of self-focused attention on the frequency or severity of these intrusions. We tentatively attribute these null findings to the non-referential nature of the intrusions and suggest that future research address the possibility that the effects of ruminative self focus (whether adaptive or maladaptive) may be contingent upon this variable. Although our peripheral findings relating to the association between intrusion frequency, distress, and depression status are supportive of previous research (Williams & Moulds, 2007), they should be considered in light of the non-clinical nature of the sample. Despite this limitation, the current study offers directions for future investigations of the cognitive processes that are considered important in the maintenance of depressive disorders.

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Figure 1. Mean Change Scores of Manipulation Check Measures across Processing Conditions.

Table 1

Means of Intrusion Frequency and Distress Across Group and Processing Conditions.

Condition	Intrusion Frequency (N = 116)	Intrusion Distress (N = 55)
Analytical		
Low Dysphoric	7.12 (4.88)	3.60 (2.53)
High Dysphoric	6.88 (4.80)	6.09 (2.04)
Experiential		
Low Dysphoric	5.08 (4.01)	4.81 (2.09)
High Dysphoric	5.92 (4.34)	6.20 (1.66)
Distraction		
Low Dysphoric	4.94 (3.87)	4.88 (2.75)
High Dysphoric	5.13 (4.90)	6.03 (1.94)

Note: unequal sample sizes were due to missing data for distress ratings (range 1-10).

Low Dysphoric = BDI-II ≤ 7 ; n = 57; High Dysphoric = BDI-II ≥ 12 ; n = 59;

Standard deviations appear in parentheses.