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Shorter communication

Alleviating distressing intrusive memories in depression: A comparison between computerised cognitive bias modification and cognitive behavioural education

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ABSTRACT

Negative appraisals maintain intrusive memories and intrusion-distress in depression, but treatment is underdeveloped. This study compared the efficacy of computerised bias modification positive appraisal training (CBM) versus a therapist-delivered cognitive behavioural therapy session (CB-Education) that both aimed to target and alter negative appraisals of a negative intrusive autobiographical memory.

Dysphoric participants (Mean BDI-II = 27.85; $N = 60$) completed baseline ratings of a negative intrusive memory, negative appraisals and the Impact of Event Scale, and were randomly allocated either one session of CBM, CB-Education, or a no intervention monitoring control condition (Control). Mood and intrusion symptoms were assessed at one week follow-up.

For all groups, there were significant reductions over one week in mood (depression and anxiety), memory intrusiveness and negative appraisals. Groups differed in terms of intrusion-related distress, with the CB-Education group showing greatest reduction, followed by the CBM group.

The study provides evidence for the link between maladaptive appraisals of intrusive memories and distress in depressed mood. Further, both a single session of CB-Education and (to a lesser degree) CBM are useful in reducing intrusion-related distress. This study may have been underpowered to detect differences and replication is needed with larger samples.

Introduction

Similar to posttraumatic stress disorder (PTSD), depression is characterised by recurrent and distressing negative intrusive memories (Kuyken & Brewin, 1994). These memories are vivid images, highly avoided, impair daily functioning, and perpetuate depression (Brewin, Reynolds, & Tata, 1999; Newby & Moulds, 2011), yet they are a neglected feature of the disorder. In contrast to PTSD in which trauma memories are the core focus of psychological treatment, traditional forms of cognitive behaviour therapies (CBT) for depression do not typically target intrusive memories (Beck, Rush, Shaw, & Emery, 1979). Additionally, despite preliminary evidence for the use of imaginal exposure and imagery rescripting to reduce such memories in depression (e.g., Kandris & Moulds, 2008; Wheatley et al., 2007), few studies have evaluated techniques that aim to target and reduce intrusive memories in depressed samples.

Mirroring PTSD findings, the way an individual appraises the experience of an intrusive memory appears to be critical in depression (Moulds, Kandris, Williams, & Lang, 2008; Newby & Moulds, 2010). Applying cognitive models of PTSD to depression (Ehlers & Clark, 2000), studies have demonstrated that the degree to which an individual assigns negative interpretations/appraisals to their intrusive memories (e.g., "This memory means I am going crazy"), rather than memory frequency, is a key driver of the distress experienced upon remembering the event. Negative appraisals of intrusions are positively correlated with depression

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symptoms, intrusion-related distress and cognitive avoidance strategies (e.g., Starr & Moulds, 2006; Williams & Moulds, 2008), and have been shown to predict depression symptoms at six month follow-up over and above baseline symptoms, indicating a maladaptive maintaining role (Newby & Moulds, 2011). Together, these findings suggest that it could be clinically useful to directly target maladaptive negative appraisals of intrusive memories in the treatment of depression. Training depressed individuals, either implicitly or explicitly, to reappraise intrusive memories in a more adaptive way (e.g., "intrusive memories are normal") may be one possible approach by which to facilitate a reduction in intrusion-related distress. The aim of the current study is to investigate this possibility.

One method that has recently shown promise in modifying appraisals of intrusive memories is computerised cognitive bias modification (CBM). In a non-clinical sample, Lang, Moulds, and Holmes (2009) found that non-explicit, systematic computerised training of positive appraisals of image-based intrusions served to protect against the deleterious effects of a depressing film. Compared to participants trained to adopt negative appraisals, those trained to have positive appraisals of intrusions (positive CBM) *prior to* watching a depressing film went on to have fewer intrusive memories of the film, lower Impact of Event Scale scores (IES, a measure of memory intrusiveness and avoidance, Horowitz, Wilner, & Alvarez, 1979) and lower intrusion-related distress at one week. This study was the first to demonstrate that CBM techniques can successfully modify appraisals of intrusions, leading to reductions in important intrusive memory variables. Similarly, Woud et al. showed that systematic computerised training in a positive reappraisal style *following* a distressing film resulted in less frequent intrusive memories of the film and intrusion distress over the subsequent week (Woud, Holmes, Potsma, Dalgleish, & Mackintosh, 2012), relative to participants who received negative reappraisal training (see also Woud, Postma, Holmes, & Mackintosh, 2013).

These studies raise important questions: (1) Can the benefits of positive CBM training be extended beyond memories of a film to intrusive image-laden autobiographical memories (e.g., divorce or bereavement)? (2) Can the results be extended from a healthy sample to dysphoric or depressed participants? (3) Is a single CBM session of positive appraisal training as efficacious in reducing intrusive memories as a traditional therapist-delivered CBT session that explicitly facilitates more adaptive appraisals of intrusive memories?

Traditional cognitive therapy techniques such as cognitive restructuring and behavioural experiments are typically used to modify maladaptive cognitions in depression. In trauma-focused CBT, these techniques are used to change maladaptive appraisals of the trauma and intrusive re-experiencing (e.g., Ehlers, Clark, Hackmann, McManus, & Fennell, 2005). However, it is unknown whether such techniques are useful in targeting maladaptive appraisals of intrusive memories in depression, and whether CBT techniques can also reduce intrusive memory frequency and distress in depression. Therefore, we designed a focused single session of cognitive behavioural education using cognitive therapy techniques (CB-Education) to act as a therapist-delivered control condition for the computerised CBM. Both sessions (CBM and CB-Education) targeted the same specific mechanism: negative appraisals of intrusive memories. Direct comparisons between CBM and CBT can provide further insight into the therapeutic utility of CBM as a stand-alone intervention for changing maladaptive cognitive biases that characterise depression. Bowler and colleagues showed CBM and computerised CBT were equally efficacious in reducing social anxiety symptoms (Bowler et al., 2012). However, no previous studies have directly compared the relative efficacy of a *face-to-face* CBT session and CBM, and none have compared CBM and CBT in depressed samples.

In this study, participants with mild to moderate depressed mood (dysphoria) described a negative intrusive autobiographical memory, and were then randomly assigned to either positive CBM training, a CB-Education session, or a no-intervention monitoring condition to control for non-specific effects of assessment and self-monitoring (Control). Consistent with previous studies, we assessed frequency, distress and IES scores at baseline. Participants completed a daily diary of their intrusive memory for one week, and were followed up one week later to assess their experience of the intrusive memory. We expected that both the active training conditions (CB-Education and CBM) would be more effective than the Control condition at reducing intrusion-related distress, negative appraisals, memory frequency and IES scores over the course of the week. We also predicted CBM and CB-Education would demonstrate comparable efficacy based on the findings from Bowler et al. (2012).

Method

Participants

Participants ($N = 90$) were recruited from the community via posters and online advertisements and screened for eligibility for inclusion in the study via email or phone. Twenty two were excluded on the basis of their responses (self-reported bipolar disorder: $n = 2$; not currently depressed: $n = 5$, no negative intrusive memories over the past week: $n = 3$, insufficient English: $n = 3$, not contactable: $n = 5$, unsuitable for other reasons: $n = 4$). Sixty eight were invited to proceed with the study, and a further 8 were excluded at face-to-face interview because they met DSM-IV criteria for PTSD. This left 60 participants who were randomly allocated using alternation to either the CB-Education ($n = 20$), CBM ($n = 20$) or Control ($n = 20$).[1] Participants were reimbursed ($AUD20/hour), and all had BDI-II scores >12 indicating mild to extremely severe symptoms (Beck, Steer, & Brown, 1996). All participants attended the one-week follow-up appointment.

Measures

The Structured Clinical Interview for the DSM-IV Axis I Disorders (SCID-I, First, Spitzer, Gibbons, & Williams, 1996) assessed current and lifetime DSM-IV diagnoses of Major Depressive Disorder (MDD), Dysthymia (current), PTSD and Acute Stress Disorder (ASD). The SCID-I was administered by fully qualified Masters-level clinical psychologists (JN, AW), and by an Intern Clinical Psychologist (TL) with a PhD qualification in psychology.[2]

The Beck Depression Inventory – Second Edition (BDI-II, Beck, et al., 1996, alpha = .83) and *Beck Anxiety Inventory* (BAI, Beck & Steer, 1996, alpha = .81) assessed the severity of depressive and anxiety symptoms, respectively, over the past fortnight.

The Intrusive Memory Interview (IMI, following Hackmann, Ehlers, Speckens, & Clark, 2004) was used as a self-report

[1] This project was approved by the Human Research Ethics Advisory Panel at the University of New South Wales. All participants provided written informed consent prior to participation.

[2] To determine inter-rater reliability, 9 (17.4%) of the participants were re-interviewed by another Clinical Psychologist within two weeks of initial interview. With the exception of a discrepant diagnosis recorded for one participant, there was complete agreement between interviewers in their diagnostic assessments.