



Metacognition, memory disorganization and rumination in posttraumatic stress symptoms

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ABSTRACT

The present study aimed to assess the relative contribution of memory disorganization and beliefs about trauma memory in the prediction of posttraumatic stress symptoms. A sample of 95 student nurses and midwives narrated their memory of the most distressing placement related event they had experienced. Several questionnaires were administered, including the Beliefs about Memory Questionnaire (BAMQ), which was devised for the study. Pearson's correlations, hierarchical analyses and mediation analyses were performed on the data. The reliability and validity of the BAMQ gained preliminary support. Beliefs about the trauma memory, but not memory disorganization within the trauma narrative, predicted a significant proportion of the variance in posttraumatic stress symptoms after control variables were accounted for. Consistent with the metacognitive model of PTSD, the use of rumination mediated the relationship between beliefs about the trauma memory and PTSD symptoms. The findings provide preliminary support for the role of meta-memory in the maintenance of PTSD symptoms and question the importance of memory disorganization.

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1. Introduction

Theoretical models of PTSD have assigned an important role to the nature of the trauma memory in the persistence of symptoms. For instance, Horowitz (1986) argued that PTSD symptoms are maintained due to the trauma memory not being integrated with the individual's pre-trauma schemas. Foa and Kozak (1986) proposed that information about the trauma is contained within a fear-structure in the memory of individuals with PTSD, which needs to be activated and corrected for successful recovery. Foa and Riggs (1993) stated that the trauma memory is disorganized and fragmented in those with PTSD, due to impaired processing of the trauma. Recent theories of Brewin, Dalgleish, and Joseph (1996) and Ehlers and Clark (2000) also focus on the nature of the trauma memory as being important in the maintenance of PTSD, where the individual must pay deliberate attention to the memory for successful treatment to occur. Ehlers, Hackmann, and Michael (2004) proposed that the 'disjointedness of trauma memories is crucial in understanding re-experiencing'.

Several studies have found that traumatic memories are rated as more fragmented and disorganized than memories of non-traumatic events (Byrne, Hyman, & Scott, 2001; Koss, Figueredo, Bell, Tharan, & Tromp, 1996; Tromp, Koss, Figueredo, & Tharan, 1995; van der Kolk & Fisler, 1995). In these studies, however, participants rated their own memories using questionnaires. Arguably, attributions concerning one's memory (i.e. meta-memory) rather than objective memory structure were assessed, limiting the conclusions that can be made.

Foa, Molnar, and Cashman (1995) objectively measured the degree of fragmentation and organization in the trauma narratives of individuals with PTSD. They predicted that the trauma narrative would become more organized and less fragmented as PTSD symptoms decreased throughout exposure therapy. Although their findings partially supported such hypotheses, indices of fragmentation did not significantly decrease during therapy and increases in organization were not associated with trauma-related anxiety.

Several studies have adopted Foa et al.'s (1995) method of measuring memory disorganization. Within these studies, evidence for memory disorganization being related to Acute Stress Disorder (Harvey & Bryant, 1999) and PTSD (Murray, Ehlers, & Mayou, 2002) has been found. Halligan, Michael, Clark, and Ehlers (2003) found that narrative disorganization predicted unique variance in PTSD symptoms six months after the trauma. They failed, however, to find any relationship between change in memory disorganization and change in PTSD symptom severity. Evans, Ehlers, Mezey, and Clark (2007) found that the narratives of

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young offenders who experienced intrusions about their crime were more disorganized than the narratives of those without intrusions. Memory disorganization, however, did not remain a significant unique predictor of the presence of intrusions when appraisals of the event and its sequelae were entered into the regression. Jones, Harvey, and Brewin (2007) found that three measures of memory disorganization: repetitions, non-consecutive chunks and coherence in the narrative, one week after trauma predicted PTSD severity three months later. However, there was no evidence that the narrative became less disorganized after recovery from initial Acute Stress Disorder. Finally, Kleim, Wallot, and Ehlers (2008) found that, when listening to the worst moment of their trauma, participants with PTSD took significantly longer to retrieve unrelated non-traumatic autobiographical memories than those without PTSD. There was no difference in the speed of retrieval of non-traumatic memories when retrieved before and after listening to the trauma script or when participants were listening to the worst moment of an unrelated negative life event. Furthermore, longer retrieval latencies during trauma 'hot-spots' were associated with re-experiencing symptoms. Kleim et al. (2008) concluded that these results suggest that disjointedness between the trauma memory and other autobiographical information is associated with PTSD. It is possible, however, that those with PTSD may have been engaging with the hotspots in the trauma memory, for example through attempting to control their thoughts or by focusing on and interrogating the contents of the memory. Such strategies would distract participants from the task, increasing retrieval latencies.

Several studies have failed to find a relationship between memory disorganization and posttraumatic stress symptoms. van Minnen, Wessel, Dijkstra, and Roelofs (2002) compared PTSD patients who improved and did not improve with exposure therapy. The changes in trauma narratives from the first to last exposure session did not differ between the two groups when using Foa et al.'s (1995) analysis of memory disorganization. All patients showed significant decreases in disorganized thoughts over the course of therapy. Similarly, no significant differences in narrative disorganization pre- and post-cognitive behavior therapy were found by Moulds and Bryant (2005).

In conclusion, although several studies have directly tested the memory disorganization hypothesis, the findings remain inconclusive. In order to account for the inconsistent findings, an alternative account of the role of memory in PTSD might be required.

The metacognitive model of PTSD (Wells, 2000; Wells & Sembi, 2004a) offers an alternative account and proposes that metacognitions are more important than features of memory in causing PTSD. In particular, beliefs about thinking and memory are implicated. This is the only model to give a central role to metacognition. According to Wells (2000) immediately after a traumatic event symptoms, such as intrusive thoughts and memories and arousal, are a normal feature of an in-built reflexive adaptation process (RAP). The goal of this process is to develop new procedures (metacognitions) for controlling cognition and action in future encounters with traumatic stimuli. An important aspect of this process is the use and strengthening of flexible executive control over processing. However, the RAP is obstructed by activation of a style of processing called the Cognitive Attentional Syndrome (CAS). The CAS consists of worry/rumination, threat monitoring and unhelpful coping behaviors and arises due to the metacognitive beliefs and plans that are activated by the event and initial symptoms. Both positive and negative metacognitive beliefs influence the CAS, which then maintain symptoms due to preventing cognition from re-tuning to the normal threat-free mode of processing.

The metacognitive model of PTSD (Wells, 2000) implies that a fragmented memory is only important when it becomes the focus

of maladaptive thinking and coping strategies. An individual may interpret the fragmented memory as meaning something negative, for example 'gaps in my memory mean I did something wrong' or have positive metacognitive beliefs about the need for memory completeness, for example 'I need to have a clear memory for the event to prevent it from happening again.' Such beliefs may lead the individual to remain focused on the event, for example, by checking their memory and engaging in 'gap filling' (Wells, 2008) and rumination, preventing the normal adaptation process. Consequently, meta-memory, i.e., one's beliefs, appraisals, and strategies concerning trauma memory might account for PTSD symptoms rather than memory disorganization.

O'Kearney, Speyer, and Kenardy (2007) found that children who continued to try to make sense of their experiences after a traumatic event were more likely to experience persistent intrusions. Such attempts at developing a cohesive personal memory may reflect meta-memory beliefs about the need for a complete memory or the meaning of not having a complete memory. These findings are consistent with a central tenet of the metacognitive model, that sustained processing (the CAS) prolongs symptoms. Also consistent with the metacognitive model, Halligan et al. (2003) found that appraisals of the meaning of memory disorganization predicted PTSD symptoms over and above memory disorganization.

If theories that emphasize the role of a fragmented and disorganized memory in the maintenance of PTSD (Foa & Riggs, 1993) are correct, where disorganization might reflect poor integration and elaboration of the trauma memory (Ehlers & Clark, 2000), exposing the individual to the memory in therapy would conceivably be required (Ehlers et al., 2004). If the trauma memory is not found to be important in the onset or maintenance of PTSD, memory-exposure may no longer be able to sustain its position as being a crucial element of treatment. Not all individuals with PTSD are willing to tolerate the elevated anxiety and worsening of symptoms that can accompany exposure therapy (e.g., Tarrrier et al., 1999). Exposure therapy is not seen as a necessary treatment component in the metacognitive model. It would appear important, therefore, to clarify the role of the trauma memory in PTSD symptoms, both to further our understanding of the mechanisms maintaining this disorder and to ensure that the most appropriate treatment can be identified and implemented.

The primary aim of the current study was to determine whether memory disorganization predicts PTSD symptoms over and above meta-memory. The study also aimed to determine whether additional factors seen as potentially important in the metacognitive model of PTSD would contribute further to the prediction of posttraumatic stress symptoms. The following hypotheses were tested:

1. PTSD symptoms will be significantly associated with measures of meta-memory, metacognitive beliefs, and strategies that comprise the CAS, i.e., rumination and thought control strategies.
2. Meta-memory would predict PTSD symptoms over and above any variance in symptoms predicted by memory disorganization and potentially confounding variables (age, gender, number of previous traumas, time since the trauma, distress at the time of the trauma, depression).
3. Memory disorganization would not account for any additional variance in PTSD symptoms over and above the variance accounted for by meta-memory and confounding variables.
4. Further variance in PTSD symptoms would be accounted for by maladaptive metacognitive beliefs, rumination, and/or dysfunctional thought control strategies.

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