



Effects of rumination on intrusive memories: Does processing mode matter?

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ABSTRACT

Background and objectives: Excessive rumination following traumatic or highly distressing experiences has been proposed to be an important maintaining factor of posttraumatic stress symptoms. However, not all forms of repetitive thinking about a negative event appear to be dysfunctional. It has been suggested that the abstractness of thinking is critical for its symptom-maintaining effects. The present study tested this hypothesis using an experimental analogue design with participants who had experienced a recent negative life event.

Methods: After a short symptom provocation task, participants ($N = 57$) 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 h after the session.

Results: In line with the expectations, 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 h following the session.

Limitations: An analogue design was used. Therefore, results need to be replicated with survivors of traumatic events following DSM-IV.

Conclusions: Taken together, the results support the idea that abstractness of thinking is responsible for the dysfunctional effects of rumination about a highly distressing or traumatic event.

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1. Introduction

Past research has identified a number of risk factors for the development of posttraumatic stress symptoms in response to a traumatic event (for an overview see Ozer, Best, Lipsey, & Weiss, 2003). In recent years, researchers have become increasingly interested in additionally investigating processes that are involved in the maintenance of the disorder (Schnurr, Lunney, & Sengupta, 2004; Steil & Ehlers, 2000). This interest is based on the observation that although most trauma survivors initially experience acute stress symptoms in the immediate aftermath of the event, only a small percentage develops chronic PTSD (McFarlane, 2000). In their cognitive model, Ehlers and Clark (2000) propose repeated and prolonged rumination related to a traumatic event to be one of the variables that are involved in the maintenance of posttraumatic stress symptoms (for similar views see Joseph, Williams, & Yule, 1997; Wells & Sembi, 2004). Trauma-related rumination has been defined as recurrent negative thinking about a trauma and/or its

consequences (Michael, Halligan, Clark, & Ehlers, 2007). Results of phenomenological studies show that rumination can be distinguished from other forms of intrusive cognitions in PTSD, such as re-experiencing symptoms (e.g., Evans, Ehlers, Mezey, & Clark, 2007; Speckens, Ehlers, Hackmann, Ruths, & Clark, 2007).

1.1. Evidence for rumination as a maintenance factor

The hypothesis that rumination maintains posttraumatic stress symptoms has been tested in a series of cross-sectional studies. Results show that ruminative thinking about the causes and consequences of a traumatic experience is significantly and substantially correlated with PTSD symptom severity (e.g., Clohessy & Ehlers, 1999; Ehring, Ehlers, & Glucksman, 2006; Moore, Zoellner, & Mollenholt, 2008; Steil & Ehlers, 2000). Additionally, studies using a prospective longitudinal design found that rumination predicted PTSD symptoms at different follow-up intervals over and above initial symptom levels, initial diagnostic status, or other known predictors (e.g., Ehlers, Mayou, & Bryant, 1998; Ehring, Frank, & Ehlers, 2008; Michael et al., 2007; Murray, Ehlers, & Mayou, 2002; Nolen-Hoeksema & Morrow, 1991).

To date, only few experimental studies have been carried out in order to examine a potential causal relationship between ruminative

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thinking and subsequent PTSD symptoms. In one of the studies, an analogue design with participants who had experienced a negative life event instead of a trauma was used (Ehring, Fuchs, & Kläsener, 2009). Participants were first asked to provide a detailed narrative of the event and were then assigned to either a rumination or a distraction condition. Ruminating about the negative life event led to the maintenance of event-related intrusive memories and negative mood, whereas distraction led to a reduction of these symptoms. In a series of additional experiments with healthy non-traumatized individuals, distressing films were used to study the effects of rumination. Rumination led to significantly more analogue PTSD symptoms and/or a significantly slower recovery from the film than the control conditions (Butler, Wells, & Dewick, 1995; Wells & Papageorgiou, 1995; Zetsche, Ehring, & Ehlers, 2009).

Taken together, the correlational and experimental studies conducted to date provide substantial evidence that rumination plays a role in the maintenance of posttraumatic stress symptoms following trauma or highly distressing events. However, it is important to note that repetitive thinking about a negative event and/or its consequences is not always dysfunctional. For example, repeated and detailed writing about a traumatic event can reduce PTSD symptoms and associated psychopathology (e.g., van Emmerik, Kamphuis, & Emmelkamp, 2008). In addition, trauma-related rumination has also been found to be positively associated with posttraumatic growth (Calhoun, Cann, Tedeschi, & McMillan, 2000). Since the repetitiveness of rumination and its focus on a negative content alone cannot account for the differential effects of trauma-related thinking, it appears important to specify how functional and dysfunctional forms of trauma-related rumination can be distinguished.

1.2. A processing mode account of repetitive negative thinking

According to Watkins (2008), the style or mode of processing adopted while thinking in a repetitive way is a crucial variable that accounts for the functional versus dysfunctional effects of repetitive negative thinking. Dysfunctional thinking, e.g. in the form of rumination, is thought to be characterized by abstract, evaluative, general and decontextualized processing. Specifically, ruminative thoughts are suggested to often consist of analytical and evaluative “why” questions that focus on the desirability and importance of wanted outcomes and the discrepancies between current and wanted outcomes (henceforward referred to as *abstract-evaluative thinking*). By ruminating in an abstract-evaluative way (e.g., *Why did it happen?*), the attention is directed to negative causes, meaning and implications of the distressing issue. On the other hand, adopting a more concrete, low-level processing mode during thinking is thought to be adaptive and to facilitate emotional processing. This mode is characterized by non-evaluative and concrete “how” questions that refer to direct experiential awareness of feelings and thoughts in the present moment (henceforward referred to as *concrete-experiential thinking*). When thinking in a concrete-experiential way, the focus is more on the actual experience of events and its concrete mental representations, including contextual, specific and incidental details (e.g., *How did I feel moment-by-moment?*).

Evidence supporting the idea that functional versus dysfunctional forms of repetitive thinking can be distinguished on the basis of the modes of processing described above comes from two lines of research looking at rumination in depression and/or worry in generalized anxiety disorder. First, results of correlational studies show that blind raters rate worrisome thoughts as more abstract than non-worrisome thoughts (Stöber, Tepperwien, & Staak, 2002). In addition, the abstractness of thinking has been found to be related to diagnoses of generalized anxiety disorder and depression

(Stöber & Borkovec, 2002; Watkins & Moulds, 2007). Secondly, Watkins and colleagues have conducted a series of experimental studies showing that the induction of abstract-evaluative thinking, but not that of concrete-experiential thinking, leads to increased emotional reactivity, reduced emotional processing and increased negative self-evaluation (e.g., Moberly & Watkins, 2006; Rimes & Watkins, 2005; Watkins, 2004; Watkins, Moberly, & Moulds, 2008).

1.3. Does processing mode matter when thinking about a trauma?

Ehring et al. (2008) recently adapted Watkins' (2008) hypothesis to account for differences between functional versus dysfunctional repetitive thinking about a trauma. Specifically, they suggest that the abstractness of thinking is responsible for the symptom-maintaining effects of trauma-related rumination in PTSD. Preliminary evidence supporting this view was found in two studies with road traffic accident survivors, in which the abstractness of trauma-related rumination was rated from responses to an iterative rumination task (Ehring et al., 2008). Results showed that the combination of abstractness and frequency of ruminative thinking predicted PTSD symptoms better than rumination frequency alone.

In a recent experimental study, Ehring, Szeimies, and Schaffrick (2009) tested the effects of abstract versus concrete thinking on analogue PTSD symptoms. A stressful film depicting scenes from real-life emergency situations in the aftermath of motor vehicle accidents (MVA) was used as an analogue stressor. Results showed that the induction of abstract thinking about the film led to a longer maintenance of negative mood and arousal than induced concrete thinking or distraction. Although these results are promising, two limitations are noteworthy. First, although the stressful film paradigm can generally be regarded as a useful method to study the development of posttraumatic stress symptoms experimentally (see Holmes & Bourne, 2008), it remains unclear whether the findings reported above can be generalized to rumination about real-life negative events. Rumination has been described as self-focused thinking about personally relevant topics (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008), and the degree of personal relevance and self-focus can be expected to be limited when thinking about a film depicting traumatic events happening to other people. Therefore, the present study aimed to extend the earlier findings by Ehring, Fuchs, et al. (2009) by investigating the differential effects of abstract versus concrete thinking on real-life negative events. Second, in contrast to their hypotheses Ehring, Szeimies, et al. (2009) only found differential effects of their manipulation on negative mood and arousal, but not on intrusive memories that are one of the core symptom of PTSD. In the current study, we therefore specifically focused on the effects of the different processing modes on intrusions.

1.4. The present study

The present study tested the effects of abstract-evaluative versus concrete-experiential thinking on intrusive memories in an analogue sample of individuals who had experienced a negative life event within the past 5 years. As rumination has been suggested to be involved in the *maintenance* of posttraumatic stress symptoms (e.g., Ehlers & Clark, 2000), participants first underwent a symptom-provocation task before engaging in either an abstract-evaluative or a concrete-experiential mode of thinking about the negative event. Intrusive memories as the main dependent variable were monitored during the session and assessed 12 h and 36 h following the experiment. In line with the abstractness hypothesis of trauma-related rumination, we expected that after intrusive memories have been triggered by the symptom provocation task abstract-evaluative thinking should lead to a significantly longer maintenance of these intrusions than concrete-experiential thinking.

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