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## How does immediate recall of a stressful event affect psychological response to it?



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### ABSTRACT

**Background and objectives:** In forensic settings, individuals who experience a traumatic event are often encouraged to recall it soon afterwards to preserve their memory for it. Some theories of the development of post-traumatic stress disorder (PTSD) suggest that this may increase psychopathology. The primary aim of the study was to examine the effect of immediate recall of a trauma analogue video on psychopathology.

**Method:** Eighty-five undergraduate students were randomised to view a video of a car accident, described as either a real event (high stress) or training event (low stress). They then completed either the Self-Administered Interview (SAI<sup>©</sup>, Gabbert, Hope, & Fisher, 2009) or a filler task. All participants returned one week later to provide an account of the event.

**Results:** As predicted, participants in the SAI early recall task condition remembered the video content better one week after seeing the video, shown both by their greater recall of correct details and greater rejection of misinformation. However, completing the SAI resulted in higher anxiety immediately afterwards, and more severe PTSD-like symptoms one week later, compared to control condition. PTSD intrusion-like symptoms also predicted more accurate recall, while avoidance predicted poorer memory.

**Limitations:** While the trauma analogue video used in this study has been previously used, and did effectively trigger post-traumatic-like symptoms, it is unclear how well these results generalise to actual trauma situations.

**Conclusions:** These results suggest the relationship between PTSD symptoms and memory might be more complex than previously recognised, with intrusive phenomena possibly promoting memory and avoidance symptoms compromising memory.

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## 1. Introduction

Traumatic response to an event and memory for that event are closely intertwined. The way people respond psychologically to stressful events is influenced by how they remember them (Brewin, 2011; McNally, 2003). In turn, memory for an event is impacted by psychological response to it (Christianson, 1992). However, how they interact remains unclear. In some circumstances, details of a traumatic event need to be recalled soon after the event for forensic purposes.

One tool that has been developed to record eyewitness memory immediately after a crime is the Self-Administered Interview

(SAI<sup>©</sup>; Gabbert, Hope, & Fisher, 2009). The SAI is a paper-and-pen booklet that instructs witnesses to answer general questions about the event in as much detail as they can. Like the Cognitive Interview (Fisher & Geiselman, 1992) witnesses are instructed to imagine the location of the event, what they saw, thought and felt at the time of the event, and to report everything they can remember. This is aimed to increase clarity of details recalled through a process known as context reinstatement (Hope, Gabbert, & Fisher, 2011). The SAI is regularly used in the UK, Norway, and the Netherlands, and as such, was used in this research to increase applicability of the findings.

The SAI was designed to be given to witnesses as soon after a crime as possible to reduce delay between encoding and recall, thus optimising memory. Furthermore, this immediate recall is intended to protect individuals from incorporating incorrect post-event information into their memories (Gabbert, Hope, Fisher, & Jamieson, 2012). The SAI encourages individuals to retain as many details about the event as possible by offering an early recall

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opportunity. Research suggests that it improves recall of the event one week later, and is protective against misinformation (Gabbert et al., 2009, 2012). However, previous research has been conducted using low stress, non-violent mock-crime videos as memory stimuli. No comparison of its effect on events of differing levels of stress has been examined.

Whilst not all crimes are traumatic in nature, some clearly are. How recalling a stressful event shortly after experiencing it interacts with the processes by which traumatic responses develop remains unclear. Cognitive theories of PTSD have not specifically addressed the impact of actively promoting better recall of the event on psychological outcomes. However, they do discuss the impact of processing a traumatic event. As Brewin, Dalgleish, and Joseph (1996) point out, most cognitive theories agree that integration of the memory with pre-existing cognitive structures is integral to psychological recovery. Writing about the details of a recently experienced stressful event may encourage this. Ehlers and Clark's (2000) model of PTSD asserts that organisation of trauma representations within the context of other autobiographical memories is crucial for successful processing. If this does not occur, trauma memories will be continually and unintentionally retrieved, resulting in the intrusion symptoms. Foa's model of PTSD (Foa & Kozak, 1986; Foa, Steketee, & Rothbaum, 1989) also suggests that processing supports psychological recovery. Accordingly, exposure to fear memories activates the trauma schema, allowing new information to be incorporated into the memory of the event, thus reducing anxiety.

By encouraging individuals to recall the details of the event, an early initial recall opportunity could help individuals organise their memories and reduce anxiety. However, at a very early stage, some types of processing may not be beneficial. Meta-analyses of psychological debriefing have found that debriefed individuals are no less likely to develop PTSD and, in some cases, are more likely to develop symptoms (e.g. Rose, Bisson, & Wessely, 2003). Paterson, Whittle, and Kemp (2014) examined debriefing in which individuals reconstructed the details of the event. They found that, after viewing a stressful video, debriefed participants reported significantly more intrusion symptoms than non-debriefed participants.

Some theories of PTSD make predictions about the impact of recalling a traumatic event in the period immediately following the event. Brewin et al.'s (1996) theory suggests that this period is particularly anxiety provoking due to both emotional reactions and conditioned responses to threat stimuli. In this initial phase, rather than engaging extensively with trauma representations, they claim individuals need to graduate their exposure to trauma memories and gradually process them. Otherwise, the anxiety may be so great that they avoid processing altogether.

Similarly, Horowitz's (1986) theory of PTSD suggests that individuals may experience a phase, immediately after the traumatic event, during which they cannot begin processing. This phase occurs because the discrepancy between the new information and established schemas creates extreme anxiety. Any attempt at processing during this period leads to increased avoidance symptoms. Thus, both theories (Brewin et al., 1996; Horowitz, 1986) suggest that encouraging extensive processing immediately after the trauma may increase anxiety and avoidance symptoms.

The effect of stress on memory consolidation is another area that remains unclear due to mixed findings. In his review, Christianson (1992) concluded that stressful events were well retained, sometimes *better* retained, than non-stressful events. Recent research has similarly found that higher levels of stress during encoding are associated with better recall (e.g. Paz-Alonso, Goodman, & Ibabe, 2013; Wiemers, Sauvage, Schoofs, Hamacher-Dang, & Wolf, 2013). However, a meta-analysis by Deffenbacher,

Bornstein, Penrod, and McGorty (2004) suggested that stressful events are less well remembered than non-stressful events. A recent study has supported this contention, finding worse memory in individuals who had anxiety induced during encoding (Attwood, Penton-Voak, Burton, & Munafò, 2013). These contradictory findings are consistent with the disagreement within the PTSD literature. Some researchers assert that, although some details may be distinctly recalled, when asked to deliberately recall the event, individuals with PTSD generally display an inaccurate and incomplete memory (Brewin, 2011; Halligan, Michael, Clark, & Ehlers, 2003). However, other theorists assert that trauma memories are enhanced compared to non-trauma memories. McNally (2003) contends that the inherent intensity of the trauma experience heightens recall. The empirical evidence for these assertions is mixed, with some studies indicating that traumatic events are less well remembered than non-traumatic events (Byrne, Hyman, & Scott, 2001; Tromp, Koss, Figueredo, & Tharan, 1995) and others suggesting the opposite (Berntsen, 2001). As such, whether individuals with PTSD have heightened or decreased recall of the trauma experience is unclear.

This research aimed to answer two questions. First, how does recall soon after a stressful event affect psychological response to it? As argued above, we hypothesised that participants asked to recall information immediately following exposure to a traumatic video would have higher anxiety than control participants and that this would lead to increased avoidance over time. Second, are high stress events differentially recalled than low stress events? Due to the mixed nature of the previous research (described above), we did not hypothesise whether stress would lead to better or worse memory.

## 2. Method

### 2.1. Design

The study was a  $2 \times 2$  design conducted in two sessions. In session 1, participants watched a video depicting the aftermath of a car accident. To manipulate stress, in the high stress condition the video was described as being a real event (Real video). In the low stress condition, the video was described as being an event staged for training purposes (Training video). Participants were cluster randomised in small groups into these conditions.

After viewing the video on individual computers using headsets, participants were re-randomised into writing conditions. One group completed the SAI, writing about the events of the video (SAI). The other group completed a booklet of filler questions (Control). All participants completed measures of psychological responses and memory for the event (Fig. 1).

### 2.2. Participants

Eighty-five (52 female) undergraduate students participated in the study for course credit. The mean age was 19.56 years ( $SD = 3.93$ ). Five participants did not return for session 2, however, their data from the session 1 was included.

Participants were excluded if they, or a close friend or family member, had been involved in a serious car accident. They were advised not to sign up if they had a history of anxiety disorder.

### 2.3. Materials

#### 2.3.1. Video

The visual content of the videos was identical. The video (10 min) presented live footage of the aftermath of a car accident. Three victims are lying next to a road beside an upturned car. They

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