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A hypnotic paradigm for studying intrusive memories

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ABSTRACT

Despite the importance of intrusive memories in clinical disorders, research has been limited by a dearth of paradigms that permit experimental study of intrusions. This study describes a hypnotic paradigm for eliciting intrusive memories. Forty-nine highly hypnotisable participants nominated a distressing memory prior to being hypnotised. During hypnosis, they received the suggestion that they would remember the memory in response to a designated cue after the hypnosis session. Half of the participants also received a posthypnotic amnesia suggestion for the source of the memory. Following hypnosis, all participants completed a cognitive task and during the task received the cue to recall the memory. Results demonstrated that memories experienced after posthypnotic amnesia were experienced as more involuntary and more distressing than those that were knowingly retrieved. Participants in the post-hypnotic amnesia condition also demonstrated greater interference on the cognitive task after the retrieval cue was given than those who intentionally retrieved the memory. These findings suggest that posthypnotic suggestion provides a useful paradigm to elicit intrusive memories under experimental conditions.

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Intrusive thoughts and memories are common in many clinical disorders, including posttraumatic stress disorder (Brewin, 1998), obsessive compulsive disorder (Salkovskis, 1985), depression (Brewin, 1998), social phobia (Hackmann, Clark, & McManus, 2000), and agoraphobia (Day, Holmes, & Hackmann, 2004). Across all these disorders, intrusions share the common properties of occurring involuntarily and causing significant distress (Clark & Rhyno, 2005). In general, intrusive memories are experienced as more vivid and distressing than non-intrusive memories (Berntsen, Willert, & Rubin, 2003). They are also experienced as spontaneous, repetitive, and difficult to control, regardless of the content (Clark & Rhyno, 2005; Dougall, Craig, & Baum, 1999). Since the early proposals of Janet (1904), theorists have asserted that intrusive memories of trauma are different from ordinary autobiographical memories (e.g., Brewin, Dagleish, & Joseph, 1996; Ehlers & Clark, 2000). Such memories have been described as being more vivid and more emotionally intense than voluntary memories of traumatic or non-traumatic events (Bryant & Harvey, 1998). Intrusive memories have also been shown to be difficult to control (Wegner, 1994), and to interfere with ongoing task performance (Hellawell & Brewin, 2002). Most research has relied on retrospective reports of intrusive memories (e.g., Brewin, 1998; Bywaters, Andrade, & Turpin, 2004; Hackmann, Ehlers, Speckens, & Clark, 2004;

Reynolds & Brewin, 1998) or diary methods (e.g., Berntsen, 2001). Other studies have studied intrusions by presenting participants with evocative stimuli (Lynch, Schneider, Rosenthal, & Cheavens, 2007) or reminders of traumatic events (Bryant & Harvey, 1998). All of these approaches are potentially confounded by retrospective bias or by extraneous environmental factors (Clark & Purdon, 1995). There is a need to develop new paradigms to examine intrusions under experimental conditions.

There are several reasons to suggest that hypnosis may provide a useful model for studying intrusions. Hypnotisability is associated with susceptibility to intrusive thoughts (Bryant & Idey, 2001) and a tendency to attribute involuntariness to internal experiences (Kirsch & Lynn, 1999). Numerous clinical disorders that are characterised by intrusive memories are associated with elevated levels of hypnotisability, including PTSD (Spiegel, Hunt, & Dondershine, 1988), acute stress disorder (Bryant, Guthrie, Moulds, Nixon, & Felmingham, 2003), and phobias (Frankel & Orne, 1976). One of the classic responses during hypnosis is posthypnotic amnesia. Posthypnotic amnesia involves suggesting to hypnotised persons that following hypnosis they will be unable to recall particular aspects of the hypnotic experience until they receive a cancellation instruction. A number of studies have demonstrated that a suggestion for posthypnotic amnesia can alter an individual's access to autobiographical memories to create profound but reversible forgetting in highly hypnotisable individuals (Barnier, 2002; Bryant, Barnier, Mallard, & Tibbits, 1999). More usefully, posthypnotic amnesia has often been shown to be a useful means of

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creating psychological phenomena without individuals' awareness by providing a suggestion to experience the phenomena and then covering the suggestion with posthypnotic amnesia (Zimbardo, Andersen, & Rabat, 1981, Zimbardo, LaBerge, & Butler, 1993). Importantly, hypnotic suggestion permits a strong sense of involuntariness in the experience of the suggestion, which enhances the comparability of the suggested experience of intrusive thoughts with the involuntary nature of intrusions in clinical populations. In an early application of this approach, Zimbardo et al. (1981) suggested to highly hypnotisable participants that they would experience deafness after hypnosis. Half of the participants were also administered a suggestion for posthypnotic amnesia for the deafness suggestion. This study found that participants who had experienced deafness but lacked the knowledge of why they were deaf reported paranoia reactions on subsequent tests, whereas those who were deaf but realised that this was the result of a direct suggestion did not experience the paranoia (Zimbardo et al., 1981). This study highlights the utility of using hypnosis to create a psychological state and cover the reason for why it is occurring. This paradigm provides a potential means of eliciting intrusive memories in the laboratory setting in that a hypnotic suggestion can be used to instruct individuals to retrieve certain memories, paired with a posthypnotic suggestion to be amnesic of the source of the memory in order to create a sense of involuntariness and intrusion.

The present study examined the capacity for hypnosis to elicit involuntary intrusive memories in the laboratory. To test this approach, we focused on highly hypnotisable participants because of their distinctive ability to experience hypnotic suggestions and posthypnotic amnesia (Bryant et al., 1999). Participants were asked to elicit a memory of a distressing event prior to hypnosis. During hypnosis, half of the participants received the suggestion that they would think about the distressing memory after hearing a posthypnotic cue after waking from hypnosis. They were also given a suggestion for posthypnotic amnesia in order to cover the reason for the recollection (posthypnotic amnesia condition). The other half of the participants were instructed during hypnosis that they would be asked to think about their distressing memory after waking (intentional retrieval condition). After the hypnosis session, all participants received the cue midway through a cognitive task. Participants in the intentional retrieval condition were also prompted to retrieve the memory of their distressing event. All participants completed a second version of the cognitive task to index the relative interference of the memories on ongoing task performance. The rationale for administering the cognitive task was that a defining feature of intrusions is that the cognitive load associated with the intrusion interfere with ongoing cognitive functioning. Accordingly, an important index of the load associated with an experimentally-generated intrusion is the extent to which it interferes with cognitive processes. We hypothesised that memories in the posthypnotic amnesia condition would be characterised by greater involuntariness, distress, vividness, and interfere more on a concurrent cognitive task than intentionally retrieved memories.

1. Method

1.1. Participants

The sample comprised of 48 (28 female and 20 male) highly hypnotisable undergraduate student participants of mean age 20.29 years ($SD = 5.89$). Participants were preselected on the basis of their extreme scores on a 10-item version of the group administered Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS-A; Shor & Orne, 1962) that was administered to 843

undergraduate students. High hypnotisability was subsequently confirmed by obtaining high scores on a 10-item version of the individually administered Stanford Hypnotic Susceptibility Scale, Form C (SHSS-C; Weitzhenhoffer & Hilgard, 1963). Participants scored in the range 7–10 on the HGSHS-A ($M = 8.32$, $SD = 0.85$), and 7–10 on the SHSS-C ($M = 8.24$, $SD = 1.04$). Participants were randomly allocated to retrieval conditions.

1.2. Procedure

Following written informed consent, the experimenter (ZH or LH) instructed participants to elicit a memory of a distressing event. Participants provided ratings of (a) involuntariness (1 = *not at all*, 9 = *extremely*), (b) frequency (1 = *not at all*, 9 = *almost everyday*), (c) distress (1 = *not at all*, 9 = *extremely*), and (d) vividness (1 = *not at all*, 9 = *extremely*) of the memory. The experimenter administered a 20-min hypnotic induction (based on the SHSS-C induction, Weitzhenhoffer & Hilgard, 1963) and a number of unrelated hypnotic suggestions (arm rigidity, hand lowering). Participants in the amnesia condition then received the suggestion that "After a while, when you've woken up, you will hear me say to you, '*Let's move onto something else*'. When I say this, you will think about the memory of [*the distressing event*]. As soon as you hear me say this, you will think about this memory... you will remember this memory. You will think about this memory when you hear me say '*Let's move onto something else*' but you will forget that I told you to do so. You will also forget discussing it with me before hypnosis. You will forget anything I said or asked you about this memory just as you will forget the other things until I say to you '*Now you can remember everything*'. Indeed, it will prove to cost so much effort to recall anything I said or asked you about this memory that you will prefer not to try. Even if you do try, you will forget that I told you to think about this memory after hypnosis until I say to you, '*Now you can remember everything*'. You will not remember anything until then. When you hear me say '*Let's move onto something else*' you will think about this memory." Participants in the intentional retrieval condition were informed that "After a while, when you've woken up, I will ask you to think about the memory of [*the distressing event*]." All participants then underwent a deinduction procedure to finish the hypnosis session.

Following deinduction, participants completed a sustained attention task that required them to quickly and accurately scan through a list of paired names of neutral objects or number sequences and indicate whether the pairs were the same or different (e.g., "1027" vs. "1072") for 1 min (names or numbers were presented alternately). Two versions of the pairs were created and participants received Version A or Version B prior to the intrusion cue, and the alternate version following the intrusion cue in a counterbalanced order. After one minute, the experimenter provided the posthypnotic cue phrase (i.e., "let's move onto something else"). Participants in the intentional retrieval condition were further instructed "to think about the memory of [*the distressing event*] you told me about earlier, and as you think about it I want you to continue with the task". The experimenter then instructed the participants to continue with the cognitive task for one additional minute. The order of the task versions was counterbalanced across retrieval conditions. At the end of the second task, the experimenter asked "What were you thinking about during that task?" If the target memory was not mentioned, participants were specifically asked "Did you have any thoughts of the distressing memory?" If participants indicated they experienced the target memory, the experimenter asked participants to briefly describe their memory and provide another set of ratings of how involuntary the memory was (1 = *meant to think about it*, 9 = *did not mean to think about it*), how distressing the memory was

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