Effects of thought suppression on episodic memory

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Summary—Subjects were shown a short film fragment. Following this, one group of subjects (n = 26) was instructed to suppress their thoughts about the film, while the other group (n = 24) received no instructions. Five hours later, subjects returned to the laboratory and completed a questionnaire testing their memory about the film. Results showed that suppression subjects reported a higher frequency of thoughts about the film than control subjects. No evidence was obtained for Wegner, Quillian, and Houston’s (1996; Journal of Personality and Social Psychology, 71, 680-691) claim that suppression has an undermining effect on memory for chronology. Possible causes for the differences between the results as obtained by Wegner et al., and those found in the present study are discussed. These causes may pertain to the experimental design, but also to differences in emotional impact of the stimulus material that was used in both studies. © 1997 Elsevier Science Ltd

INTRODUCTION

Thought suppression refers to the process of consciously trying to prevent certain thoughts from entering working memory (Wegner, 1989). A number of laboratory and field studies have found that in normal subjects, attempts to suppress certain thoughts produce paradoxical effects, i.e., promote the frequency with which the target thought intrudes the stream of consciousness (the so-called ‘white bear’ effect; e.g. Wegner, Schneider, Carter & White, 1987; Roemer & Borkovec, 1994; Salkovskis & Campbell, 1994). Much the same seems to be true for clinical populations. That is, there are indications that in patients with anxiety disorders (e.g. spider phobia, dental phobia, generalized anxiety disorder), suppression of emotional or threat-relevant topics contributes to the intrusive character of these topics (e.g. Muris, Merckelbach, Horsemens, Sijens, Leew, 1997; De Jongh, Muris, Merckelbach & Schoenmakers, 1996; Becker, Roth & Margraf, 1994). Interestingly, there is also evidence that in individuals who have experienced a trauma (such as PTSD patients, see Rozzell, McFall & Malas, 1991), avoidance of traumatic memories is accompanied by high levels of disturbing intrusive memories (e.g. Kuyken & Brewin, 1994; McFarlane, 1988; Reynolds & Tarrier, 1996), suggesting that avoidance or thought suppression may enhance intrusive memory. All in all, these findings support the idea that thought suppression makes thoughts or memories hyperaccessible (Wegner & Erber, 1992). In contrast, some clinicians (e.g. Terr, 1993) argue that thought suppression may undermine episodic memory, i.e. may produce psychogenic amnesia. By this view, traumatized individuals may engage in a dissociative encoding style which, in turn, may foster cognitive avoidance of disturbing memories and, thus, impair memory for traumatic events (but see McNally, Metzger, Lasko & Pitman, 1995).

In a recent article, Wegner, Quillian and Houston (1996) (exp. 1; exp. 2) claim to have found experimental evidence for a negative effect of thought suppression on the accuracy of episodic memory. Subjects in their experiments were shown a short film and then were assigned to three conditions: a suppression condition in which subjects had to suppress thoughts about the film, an expression condition in which subjects were encouraged to think about the film, and a no-instruction control group. Five hours later, subjects’ memories of the film were tested. While the three groups did not differ in terms of the number of film details they remembered, subjects in the suppression condition had poorer recollection of the sequence of the film scenes than either expression or control subjects. Suppression also affected metamemory representations of the film in that compared to expression and control subjects, suppression subjects thought more of the film as a collection of isolated pictures. Wegner et al. conclude that: "...participants who suppressed the film were more likely than others to report their memories of the film as having the character of snapshots rather than of moving film..." (p. 688). As to the interpretation of their findings, Wegner et al. argue that suppression of individual memory items (e.g. certain film scenes) enhances the accessibility of these items, thereby undermining the associative links of these items to other items. That is, suppression turns certain elements into ‘snapshots’ and this compromises memory of temporal order. This line of reasoning is attractive because it combines the paradoxical effect of thought suppression documented in experimental studies with the amnestic power of thought suppression reported by some clinicians.

The present study further examined the effects of suppression on the accuracy of episodic memory. The experiment differed from the Wegner et al. study with respect to the film fragments that were used. Wegner et al. relied on a film about a crash between a union and a company (exp. 1), and a film about a stuntman (exp. 2). These fragments were selected because they were "interesting but nontraumatic" (p. 682). To enhance ecological validity, the present study employed an emotional film fragment. Such a fragment was chosen to investigate whether thought suppression has the effect of damaging sequence memory for negative emotional events. After all, clinicians’ claim that thought suppression has an inhibitory effect on memory pertains to cases in which individuals experienced highly aversive events.

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METHOD

Subjects

Subjects were 50 healthy undergraduate volunteers (43 women). Their mean age was 20.8 yr (range 18–29 yr). Subjects participated in return for a small financial compensation. They were assigned to the suppression condition (n = 26) or the no-instruction condition (n = 24).

Procedure

Subjects were shown a 3-min film clip, in classes of approximately 10 students. The film fragment was about a tourist who was attacked by a grizzly. The fragment started with some landscapes, then showed the climax (i.e. the attack), and ended with some ambiguous scenes, so far that it remains uncertain whether the tourist survives the attack. Thus, there was a straightforward chronology. Pilot research showed that this particular film clip was evaluated as emotional and fairly aversive (Brekelmans, 1995). The above described film fragment was selected because of its emotional and realistic nature. The fragment was derived from a ‘Faces of Death’ video. This video contained accidentally recorded film fragments of real-life, traumatic events. After the film had been shown, subjects were asked to return to the laboratory 5 hrs later. Subjects in the suppression condition were instructed not to think of the film, i.e. to avoid any thoughts about the film. Subjects in the control condition received no further instructions. In the afternoon session, all subjects were asked to complete a questionnaire about the film.

Measures

The questionnaire consisted of 48 items, addressing various topics. To begin with, subjects were asked an open-ended question about the number of times they had thought about the film fragment (‘How many times did you think about the film, during the past five hours?’). They were asked a further four questions about their emotional evaluation of the film (e.g. ‘How shocking was the film, according to you?’). Subjects answered these questions using 100 mm Visual Analogue Scales (VASs), ranging from 0 (e.g. ‘not at all’) to 100 (e.g. ‘extremely shocking’).

The remaining 43 items concerned subjects’ memories of the film. Of these, 15 questions were about details of the film (e.g. ‘Did the deer walk from left to right, or from right to left?’) and 12 were about the chronology of the film scenes (e.g. ‘In the film two animals were shown, a deer and a grizzly. Which animal was shown first?’). These questions were open-ended. For each correct answer, subjects received one point. Accordingly, high scores on the detail and chronology scales indicate good memory. Furthermore, there were 14 meta-memory items. These items asked subjects how they experienced their memory of the film in terms of VASs. Some meta-memory items were derived from the Memory Characteristics Questionnaire, described by Johnson, Foley, Suengas and Raye (1988). In accordance with Johnson et al.’s factor analysis, the meta-memory items used in the present study tapped the following categories: clarity (eight items addressing clarity, colourfulness, detailedness, and vividness, e.g. ‘How vivid is your memory for the film?’; 0 = ‘not at all’; 100 = ‘very much’), context (four items, e.g. ‘My memory for the place where the event took place is’: 0 = ‘vague’, 100 = ‘clear’), and intensity (two items, e.g. ‘I find the story’: 0 = ‘very unlikely’; 100 = ‘very likely’). The questionnaire concluded with two items concerning the degree to which subjects’ internal representation of the film might be fragmented (e.g. ‘Thinking about the film, I see’: 0 = ‘isolated film scenes’; 100 = ‘a moving film’).

RESULTS

Subjects in the suppression condition reported more thoughts about the film fragment than subjects in the control condition. Mean scores were 3.5 (SD = 2.6) and 2.1 (SD = 1.7), respectively (t(48) = 2.3, P = 0.03). Subjects in the suppression condition evaluated the film clip as less aversive than subjects in the control condition, mean scores being 207.2 (SD = 69.2) and 271.2 (SD = 62.8), respectively; (t(48) = 3.4, P = 0.001. Table 1 shows mean scores of the two groups on the various memory components. Both groups scored highly similar on detail and chronology questions [both (t(48) < 1.0]. Of the meta memory items, the clarity scale showed a difference between the two groups in that suppression subjects rated their memory of the film as more clear, detailed, vivid and so on than control subjects: (t(48) = 2.5, P = 0.02. There were no differences between the two groups with regard to context (t(48) < 1) and intensity items [t(48) = 1.4, P = 0.17]. Suppression subjects were not more likely to think of their memory of the film in terms of snapshots than were control subjects. If anything, the opposite was true: mean scores were 103.0 (SD = 46.2) and 80.0 (SD = 51.1), respectively; (t(48) = 1.7, P = 0.10.

DISCUSSION

The main results of the present study can be summarized as follows. First, in line with previous findings (e.g. Wegner et al., 1987), suppression subjects reported a higher frequency of the target material than control subjects. Second, suppression subjects evaluated the film as less aversive than control subjects. Third, suppression did not affect detail mem-

Table 1. Mean scores on the various memory items of suppression subjects (n = 26) and control subjects (n = 24) (standard deviations are given between parentheses)

<table>
<thead>
<tr>
<th>Scale (range)</th>
<th>Suppression group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detail memory (0–15)</td>
<td>7.7 (2.1)</td>
<td>7.3 (2.1)</td>
</tr>
<tr>
<td>Sequence memory (0–12)</td>
<td>7.4 (1.5)</td>
<td>7.3 (1.6)</td>
</tr>
<tr>
<td>Meta-memory questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarity (0–800)</td>
<td>551.6 (89.6)</td>
<td>476.1 (125.2)</td>
</tr>
<tr>
<td>Context (0–400)</td>
<td>224.3 (66.6)</td>
<td>219.4 (71.9)</td>
</tr>
<tr>
<td>Intensity (0–200)</td>
<td>60.0 (30.8)</td>
<td>74.0 (40.4)</td>
</tr>
</tbody>
</table>

Note: *P < 0.05.
ory, nor did it affect memory for chronological order. The latter finding is in contrast with the results reported by Wegner et al. (1996). Fourth, suppression did have consequences for the meta-memory judgements in that suppression subjects evaluated their memory of the film as being more clear, detailed, vivid and so on compared to controls. How can this pattern of results be explained? The paradoxical effect of thought suppression may account for, at least, some of the results. Since suppression subjects had thought of the film more frequently during the day, they may have experienced their memory of that film as more familiar and, consequently, as less emotional, but more clear. However, these effects were restricted to the meta-memory domain, since suppression did not affect memory for details or memory for sequence of the film.

The current study failed to find evidence for the idea that suppression undermines memory for sequence of an episode, nor did it confirm the claim that suppression results in a fragmented (snapshot like) representation of an episode. One reason for the differences between the current results and those presented by Wegner et al. (1996) might be the measures that were employed in both studies. Wegner et al. obtained various measures, such as free recall, cued recall, clip ordering, and clip recognition. For the content questions, they mainly relied on cued recall items, while sequence memory was mainly assessed through the ordering of film clips. Clip ordering showed a significant difference in the first experiment of Wegner et al. with the suppression group exhibiting a poorer performance on this measure than the other groups.

Surprisingly, in the second experiment, the clip ordering measure showed no differences between groups, when this assessment followed a free recall test. Perhaps, then, these various memory measures interact and differ in their sensitivity. In contrast, the present study used only one type of memory index, namely cued recall measures. Another possible reason for our failure to replicate Wegner et al.’s findings may be found in the nature of the suppressed material. The film clips used by Wegner et al. were emotionally neutral and had a duration of approximately 10–35 min. The present study relied on an aversive 3-minute clip. Obviously, longer episodes possibly have more complex chronologies. Thus, it may well be the case that suppression effects on memory for sequence become only evident with complex material. However, this explanation seems unlikely given the fact that the relatively short film, that was used in the current study, appeared to contain enough chronology for subjects to forget some of it: mean scores on the chronology scale were 7.4 for suppression subjects, and 7.3 for controls, with the maximum score being 12. Therefore, our failure to find distortions in sequence memory is not likely to be ascribed to the simplicity and short duration of the film fragment. There is another, theoretically more interesting reason for our failure to replicate Wegner et al.’s findings. Whereas Wegner and associates employed neutral material, the present study used aversive stimulus material. As mentioned previously, this film was chosen because in daily life, suppressed material will mostly be of an aversive nature. Possibly, the emotional value of memories modulates the effects of suppression. One could argue that emotional memories are more accessible and, therefore, less easily undermined by suppression. While such an interpretation is difficult to reconcile with clinical descriptions about the amnestic power of suppression of traumatic memories (e.g. Terr, 1991), it is in line with studies on so called ‘flashbulb memories’ (e.g. Conway, Anderson, Larsen, Donnelly, McDaniel, McClelland et al., 1994).

In general, these studies show that details surrounding an important event can be retrieved easily. A final remark pertains to how memory effects of suppression fit into the thought suppression literature. There is abundant evidence that thought suppression results in an increased frequency of the to be suppressed material (i.e. the ‘white bear’ effect). Note that Wegner et al.’s findings deviate from this pattern. That is, in both their experiments, suppression subjects did not report a higher frequency of thoughts about the film, than control subjects. The findings in the current study are in line with the well-documented ‘white bear’ effect: suppression subjects reported more thoughts about the film, than control subjects. It is not clear how to reconcile these conflicting results. Therefore, future studies on thought suppression should examine how the paradoxical effect is related to memory effects, and under what circumstances suppression leads to memory enhancement or distortion.

REFERENCES


