case the patient should be given a more realistic and accurate perspective on her responsibility, while at the same time fostering her cultural background concerning superstitiousness to be considered as a personality variable. A re-attributional process targeted at cognitive distortions concerning personal responsibility or control over untoward events succeeded, at first, in changing that sense of responsibility qualitatively, but not quantitatively. Quantitative change occurred only after her repeated listening to the reconstructed content of her ruminations.

It is hoped that, apart from single case reports in the literature, there will be, in the years to come, controlled studies that will corroborate on a larger scale the effectiveness of such a cognitive-behavioural method.

References


Effects of “Eye Movement Desensitization” on Emotional Processing in Normal Subjects

Harald Merckelbach, Eef Hogervorst and Mirjam Kampman

University of Limburg, The Netherlands

Ad de Jongh

Academic Centre for Dentistry, Amsterdam, The Netherlands

A number of single case reports have made impressive claims for the efficacy of “eye movement desensitization” (EMD) in the treatment of traumatic memories. Many of these case reports claim that EMD reduces the unpleasant feelings associated with traumatic images. However, at present, there are no published controlled studies that provide evidence for these claims. The present experiment investigated whether EMD inhibits emotional responding during retrieval of aversive information. Normal Ss (N=40) were exposed to an aversive slide. During a next stage, half of the Ss underwent EMD while they rehearsed the slide information, whereas the other half underwent a control procedure (i.e., finger tapping) while rehearsing slide information. Before and after EMD or control intervention, heart rate and self-report data were obtained while Ss retrieved and visualized the aversive slide. No evidence was found to suggest that EMD inhibits emotional reactivity more than does finger tapping.

Introduction

Shapiro (1989a, 1989b) recently introduced a new treatment technique for traumatic memories and intrusions, termed “eye movement desensitization” (EMD). Basically, EMD requires that the patient rehearse important details of the traumatic memory. Meanwhile the therapist induces fast, lateral eye movements in the patient by moving his hand from side to side in front of the patient. After 10 to 30 eye movements, the patient is instructed to blank out the traumatic image and to relax. Next, the patient brings back the image, describes whether its intensity and emotional significance has changed and a new series of eye movements is initiated. This procedure is repeated a number of times.

Several case reports have described the successful elimination of post traumatic stress disorder (PTSD) in one session by using EMD (e.g. Puk, 1991). Two types

Reprint requests to Harald Merckelbach, Department of Experimental Abnormal Psychology, University of Limburg, PO Box 616, 6200 MD Maastricht, The Netherlands.

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of explanations have been advanced to account for the effects of EMD. One explanation is speculative in nature and suggests that fast, lateral eye movements mimic the inhibitory function of rapid eye movement (REM) sleep, thereby restoring the activation-inhibition balance of the nervous system that has been disturbed by the trauma (Shapiro, 1989a). The second explanation is not necessarily inconsistent with the first, but seems to be more testable. It assumes that fast, lateral eye movements undermine the traumatic image that is held in working memory: EMD would desensitize distressing memories by diminishing the visual aspect of these memories (e.g., Hassard, 1993; Kleinknecht and Morgan, 1992). In line with this is the observation that patients treated with EMD report increasing difficulty in retrieving and visualizing the traumatic scene. Thus, for example Kleinknecht and Morgan (1992) remarked that "After the first set of 30 arcs, Jim reported that the previously vivid and anxiety producing image had faded and he could no longer generate it ( . . . ). He was then unable to reconstruct the shooting image. Try as he might, he could not form a coherent image" (p. 45).

So far, few studies have explored the possible mechanisms behind the effects of EMD. However, the dangers of generalizing from single case reports are obvious (e.g., Lohr et al., 1992). Given this state of affairs, a laboratory experiment was carried out. The main purpose of this experiment was to examine whether EMD inhibits aversive imagery in normal subjects. More specifically, the present experiment explored whether EMD affects imagery of aversive visual material in such a way that this imagery becomes less detailed and less aversive. To measure the emotional impact of aversive imagery, heart rate as well as self-report data were obtained. Effects of EMD on emotional processing were compared to those of a control activity (i.e. finger tapping; see below) in a between-subjects design. Thus, the focus of the present study was on the possible mechanism underlying EMD rather than the clinical usefulness of EMD.

Method

Subjects

Subjects were 40 undergraduate students (24 women). Mean age was 22 yrs (range 18–26 yrs). Subjects were instructed that they would see a slide and then would have to answer some questions. Subjects were assigned to the EMD group or the control group. Control and EMD group each contained 12 women and 8 men.

Procedure

The experiment consisted of four phases. During phase 1, Ss were exposed to an aversive slide depicting a mutilated hand. This slide was taken from the International Affective Picture System (Lang, Öhman and Vaitl, 1988). Slide duration was 10 seconds. During phase 2, Ss were told that they were to retrieve and visualize the slide scene with all its details. Ss were instructed to keep the image turned on vividly for 10 seconds. During this imagery period, heart rate (HR) was measured with a Beckman plethysmograph attached to the left index finger. The plethysmograph was connected to a Beckman Pressure/Pulse/Voltage coupler. HR was recorded on
paper and converted to beats per minute (BPM). Following this, Ss completed two 100 mm visual analogue scales (VASs). The first VAS (VAS1) asked how well they managed to visualize the aversive scene (0= “not at all”; 100= “very clearly”). The second VAS (VAS2) concerned the aversiveness of the visualized scene (0= “neutral”; 100= “extremely aversive”). During phase 3, Ss were subjected to either the EMD or the finger tapping procedure. Ss were asked to retrieve and visualize the slide for a period of 15 seconds. Meanwhile, E induced in EMD Ss a series of 24 eye movements, two every second, by moving her hand rapidly across Ss' visual field. To ensure that the EMD procedure was carried out in a proper way, an EMD therapist was consulted before the experiment started. The procedure was conducted in keeping with his advice and with the detailed descriptions of EMD that have been published (e.g. Shapiro, 1989b). After a 10 second rest period, a new series of 24 eye movements were induced while Ss kept rehearsing the slide that they had seen. In total, 4 sets of 24 eye movements were induced while Ss memorized the slide. Note, in passing, that good outcome results have been claimed with this number of eye movements (Kleinknecht and Morgan, 1992). Control Ss followed a similar procedure with the exception that they performed 4 sets of 24 finger taps. Finger taps were performed with the index finger of the right hand. Finger tapping was used in this group to control for the potential effects of motor activity per se on emotional processing. During phase 4, control and EMD Ss were instructed to turn on the slide scene for 10 seconds. HR was measured and after the imagery period, Ss completed the VASs again.

Results

Table 1 shows mean HR, VAS1, and VAS2 scores before (phase 2) and after (phase 4) EMD or finger tapping. Due to a procedural error, the data of one subject in the control group had to be excluded. Three separate 2 (groups) × 2 (trials: before vs after) analyses of variance (ANOVAs), with the last factor being a repeated measure, were carried out.

A 2 × 2 ANOVA performed on the HR data yielded no main effect of groups (F(1, 37)=1.0). There was a marked decline in HR over trials (F(1, 37)=24.3, p<0.01). As a significant groups × trials interaction made clear, this decline was stronger in the control group than in the EMD group (F(1, 37)=8.6, p<0.01). An ANOVA performed on the VAS1 data showed that there was no main effect of

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<th>EMD GROUP</th>
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<tr>
<td></td>
<td>before</td>
<td>after</td>
</tr>
<tr>
<td>HR</td>
<td>76.7 (8.5)</td>
<td>74.7 (9.0)</td>
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<tr>
<td>VAS1</td>
<td>69.2 (11.7)</td>
<td>53.0 (16.7)</td>
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<tr>
<td>VAS2</td>
<td>56.8 (21.6)</td>
<td>51.6 (24.4)</td>
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Table 1. HR (BPM), VAS1 scores (number of details), and VAS2 scores (aversiveness) before and after the intervention in the EMD (n=20) and the control (n=19) group (standard deviations are given in parentheses).
groups or interaction effect of groups with trials (both comparisons: $F(1, 37) < 1.0$). However, there was a main effect of trials ($F(1, 37) = 51.0, p < 0.01$), due to the fact that after the “treatment” (i.e., EMD or finger tapping), Ss reported having a less detailed image of the aversive slide. VAS2 data showed a similar pattern. That is, the main effect of groups ($F(1, 37) < 1.0$) as well as the interaction effect of groups with trials ($F(1, 37) = 2.3, p = 0.14$) were non-significant, but the main effect of trials did attain significance ($F(1, 37) = 12.0, p < 0.01$). The latter effect was due to the fact that after both “treatments,” the imagery of the slide was rated as less aversive.

**Discussion**

Some case reports have suggested that EMD interferes with visual working memory, thereby reducing the emotional impact of traumatic memories. The present experiment examined whether these effects of EMD emerge under controlled laboratory conditions in normal subjects who are engaged in the processing of aversive material. Subjects who underwent EMD were not found to report less details of the aversive stimulus than control subjects. Furthermore, neither physiological data (heart rate) nor self-report data (VAS) substantiated the claim that EMD reduces the emotional impact of aversive memories. Consequently, these findings cast doubts on the idea that EMD affects emotional memory more than does an arbitrary control intervention.

Some limitations of the present experiment deserve comment. First, one could argue that a failure to apply EMD principles in a correct way might account for the null findings of the present experiment. However, EMD is said to be a simple procedure and its principles have been described in some detail (Hassard, 1993). Note also that an EMD therapist was consulted before the current experiment was conducted. Still, it remains possible that superior effects of EMD on emotional processing would have been obtained if a more extensive EMD procedure (e.g., more sets of eye movements) would have been employed.

Secondly, the present experiment did not include follow-up measurements. The current study relied on short-term measurements, precisely because case reports have claimed sudden and immediate effects of EMD. Nevertheless, the possibility that superior effects of EMD would have emerged with long-term measurements can not be ruled out. A third point is that the EMD procedure used in the present experiment did not involve the more cognitive aspects known as “reprocessing”. The obvious reason for this is that combining eye movements with other interventions would have made it impossible to establish causal relationships. Meanwhile, Shapiro (1991) has recently renamed the procedure “eye movement desensitization and reprocessing” (EMDR) to underline the importance of this reprocessing component. The essence of reprocessing is that negative self-statements related to the trauma are retrieved during eye movements and eventually replaced by more positive self-appraisals. Note, however, that a number of recent EMD case studies did not include such reprocessing components but nevertheless found impressive results (e.g., Pellicer, 1993).

The fourth point concerns the focus of the current experiment. The present
experiment was concerned with potential mechanisms underlying EMD effects and relied on normal subjects. Therefore, the findings presented above do not preclude the possibility that EMD is a useful clinical tool in PTSD patients (but see, for a controlled clinical study with disappointing results, Boudewyns, Stwertka, Hyer, Albrecht and Sperr, 1993).

In sum, the present experiment found no evidence to suggest that EMD affects emotional imagery and processing more than does a control intervention. Therefore, the present findings are not inconsistent with an interpretation of EMD effects in terms of placebo, demand, and/or expectancy mechanisms (see also Herbert and Mueser, 1992; Lohr et al., 1992).

References


