



Eye Movement Desensitization and Reprocessing for Panic Disorder: A Case Series

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Abstract — Eye Movement Desensitization and Reprocessing (EMDR), a new technique that has shown some promise in the treatment of traumatic memories, was evaluated in this pilot study. Subjects were seven clients suffering from panic disorder who received EMDR treatment for memories of past and anticipated panic attacks and other anxiety-evoking memories of personal relevance. Standardized self-report inventories and behavioral monitoring instruments were employed to measure change with treatment. After five sessions of EMDR, subjects reported a considerable decrease in the frequency of panic attacks, fear of experiencing a panic attack, general anxiety, thoughts concerning negative consequences of experiencing anxiety, fear of body sensations, depression, and other measures of pathology.

The eye movement desensitization and reprocessing (EMDR) procedure, developed by Shapiro (1989a,b; 1991), is an imaginal exposure and cognitive reprocessing technique for treating negative affect associated with traumatic memories. EMDR requires that the client engage in imaginal recall of the disturbing event and focus on associated affect, cognitions, and body sensations while performing rapid saccadic eye movements by following the repetitive motion of the therapist's hand. After the eye movement set, which usually lasts for about 20 seconds, the client briefly reports on any changes in the image, or concurrent experiences. The client then engages in the next set of eye movement during which she or he is to focus on any newly, spontaneously generated material. This cycle of imaginal exposure in conjunction with eye movement followed by the client's feedback is continued until the client no longer generates

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relevant associations, is feeling comfortable, and reports that the original memory fails to elicit discomfort. At this point a positive cognition is paired with the original scene by having the client imagine the original scene, rehearse the positive statement covertly, and simultaneously engage in eye movement.

Shapiro (1989a,b; 1991) has reported encouraging results for EMDR in the treatment of posttraumatic stress disorder (PTSD). In this study, 22 subjects suffering from PTSD were successfully desensitized to traumatic memories. These results were maintained at 1- and 3-month follow-up. Although the rapidity and extent of change in response to relevant memories and presenting complaints are impressive, they have to be considered in light of the methodological problems of this study. No objective or validated measures of PTSD were employed. Although the study did have a control group for recall of traumatic events, this group was treated immediately in a cross-over with EMDR, thus precluding the collection of controlled data on the extra-session effects of the treatment. There was no standardized diagnostic evaluation.

Uncontrolled case studies and case series conducted by other investigators (Kleinknecht & Morgan, 1992; Lipke & Botkin, 1992; Marquis, 1991; McCann, 1992; Puk, 1991; Wolpe, 1990; Wolpe & Abrams, 1991) provide some support for Shapiro's findings. In general, authors report marked, rapidly achieved improvement, and judge EMDR to be a powerful treatment tool.

Preliminary results of a controlled study conducted by Boudewyns, Stwertka, Hyer, Albrecht, and Sperr (1993) yielded a less favorable outcome. These authors compared EMDR with a control condition omitting the eye movement but otherwise comparable. Clients were Vietnam veterans with PTSD who had been recalcitrant to previous treatment. After two sessions, the EMDR veterans reported greater reductions in their anxiety response to the traumatic memory than the control patients. However, more stringent psychophysiological and psychological outcome measures did not reflect clients' positive self-report of change. The authors suggest that the treatment may have been too brief to effect change on these stringent measures with such a chronic population.

Sanderson and Carpenter (1992) also tested the contribution of eye movement to the effects of a simplified version of EMDR. They compared EMD to Image Confrontation, a procedure which purportedly differs from EMD only in requiring subjects to keep their eyes closed and motionless. The two procedures were equally effective in reducing anxiety levels among phobic subjects. Note, however, that the EMD procedure applied in this study was akin to an imaginal flooding procedure with the addition of eye movement rather than the EMDR procedure introduced by Shapiro. Moreover, the overall time spent on EMD and on Image Confrontation was extremely brief, making it unlikely that differential treatment effects would be observed. Both groups received only seven sets of imaginal exposure, with or without eye movement, lasting 20 seconds each. Thus, it seems premature to conclude that the eye movement component of EMDR is superfluous.

In summary, solid empirical data on EMDR's efficacy are lacking. Nonetheless, the technique's popularity is growing, causing considerable controversy among clinicians and researchers who are concerned that a large number of clients might receive potentially unsatisfactory treatment when alternative

treatment techniques with more validation are available (Herbert & Mueser, 1992; Lohr, Kleinknecht, Conley, Dal Cerro, Schmidt, & Sonntag, 1992).

Subsequent to training with Shapiro, we and our colleagues at the Agoraphobia and Anxiety Treatment Center have used EMDR with many clients with anxiety disorders. Our positive clinical experience with EMDR and the lack of controlled studies led us to conclude that a more adequate trial of EMDR was desirable. We were especially impressed with EMDR's potential with patients with panic disorder. Panic patients almost always report early panic episodes to have been highly traumatic, and their subsequent symptoms are, in some ways, like those experienced by PTSD victims. Since fear of panic attacks is considered by cognitive-behavior therapists (e.g., Beck & Emery, 1985; Goldstein & Chambless, 1978) to be the core of panic disorder, we were intrigued enough to explore the possible effects of EMDR for panic-related memories on the clinical status of clients with panic disorder.

Thus, the purpose of this case series was to investigate the short-term effectiveness of EMDR in reducing symptoms associated with panic disorder. In addition to assessing change on panic variables, such as frequency of panic attacks, fear of experiencing a panic attack, and general anxiety, we also included a number of assessment measures of secondary interest, such as measures of depression, agoraphobic avoidance, and global symptomatology to allow a test of EMDR's broader effects.

METHOD

Subjects

Subjects were seven outpatients referred by mental health professionals or self-referred to the Agoraphobia and Anxiety Treatment Center (AATC) in Bala Cynwyd, PA. All met DSM-III-R (American Psychiatric Association, 1987) criteria for a primary diagnosis of panic disorder, and five subjects had an additional diagnosis of agoraphobia. Five clients had comorbid diagnoses of simple phobia, and five, generalized anxiety disorder.

Clients were evaluated according to the Structured Clinical Interview for DSM-III-R, Axis I (SCID, outpatient version; Spitzer, Williams, & Gibbon, 1989). All interviews were conducted by the therapist, who was trained in its administration and scoring via readings, observation, and audiotape review for approximately 30 hours, and had given at least 10 interviews prior to this study. Interrater reliability for the diagnosis of current panic disorder in a recent sample of 39 clients at our center was good, kappa = .81. Clients in the present study were included in the set from which the reliability sample was drawn.

Exclusionary criteria were as follows: age below 18 or above 65 years; onset of the panic disorder less than 12 months prior to entering this study; a SCID-I diagnosis of present alcohol or substance dependence, social phobia, obsessive-compulsive disorder, or present or past psychosis. No criterion was imposed for the number of panic attacks per week the clients currently reported, as long as they described continued fear of future attacks. Clients concurrently involved in other psychotherapy programs were included only if they agreed to suspend their therapy for the duration of this study.

Clients' mean age was 32.6 years (range 25–50); the mean duration of the panic disorder was 14.3 years (range 5–35). Five of the subjects were female; six clients were Caucasian, one was African-American. One client (6) was taking 20 mg of the benzodiazepine Serax at intake, but had been on a stable dose for the past two years. None of the other subjects was taking psychotropic medications.

Measures

To assess change with treatment, self-report questionnaires and self-monitoring records were employed.

Standardized self-report data. A series of questionnaires was administered 1 week before treatment began and 1 week after completion of therapy. The Agoraphobic Cognitions Questionnaire (ACQ; Chambless, Caputo, Bright, & Gallagher, 1984) and the Body Sensations Questionnaire (BSQ; Chambless et al., 1984) were employed to assess thoughts concerning negative consequences of experiencing anxiety and fear of physical responses. The Mobility Inventory for Agoraphobia (MI; Chambless, Caputo, Jasin, Gracely, & Williams, 1985) was included to assess avoidance of various situations both while accompanied (MI-AAC) and alone (MI-AAL). To measure general anxiety and depression the Beck Anxiety Inventory (BAI; Beck & Steer, 1990) and the Beck Depression Inventory (BDI; Beck & Steer, 1987) were employed. Measures of general distress included the Brief Symptom Inventory (BSI; Derogatis, 1975a), an abbreviated version of the Symptom Checklist-90 (Derogatis, 1975b), which reflects psychological distress on nine axes of psychopathology and yields three global indices of distress, and the Distress Scale (DS), which indicates interference with four different areas of daily functioning due to anxiety. The last is a modification of scales introduced by Margraf and Schneider (1990).

Self-monitoring records. To provide detailed information on the occurrence of panic attacks and fear of experiencing a panic attack, and daily levels of anxiety, clients were instructed to maintain self-monitoring records for 6 weeks, beginning 2 weeks before treatment and ending 2 weeks beyond the end of treatment.

Subjects were carefully informed about how to differentiate panic attacks from nonpanic episodes of anxiety. They were instructed to carry the self-monitoring forms with them at all times and record information about their panic attacks as soon as the attack was over. Whenever clients experienced a panic attack or episode, they recorded the date, time of onset, duration, the maximum level of anxiety experienced during the attack using a scale from 0–10, what symptoms accompanied it using the list of symptoms defining panic attacks according to DSM-III-R, and what thoughts or images they had immediately before and during the attack.

Each night clients were required to record the following information on 0 to 10 point scales: the maximum level of fear of having a panic attack for the day and the highest level of anxiety during the day. The client who was taking psychotropic medication was instructed to monitor the amount of medication used each day.

Therapist

All therapies were conducted by the second author, a Master's level psychologist with two years of experience with anxiety-disordered clients prior to this study. She was trained by Shapiro in the use of EMDR and was closely supervised by the first author, who was also trained in EMDR and had 6 months of clinical experience in its use. For supervision purposes, each therapy session was audio-taped.

Treatment

Clients received one 60-minute information-gathering session followed by five individual 90-minute EMDR sessions over a period of 2 weeks. Treatment was applied following Shapiro's procedures (Shapiro, 1989a,b; 1991; Level I Training Seminar on EMDR, March 22nd & 23rd, 1991; Level II Training Seminar on EMDR, October 30th & 31st, 1991; Philadelphia, PA). During the initial session the therapist identified relevant anxiety-provoking memories, such as the first and the worst panic attack, life events the client identified as related to the panic disorder, and anticipated panic episodes. At the beginning of the first EMDR session, clients were provided with a rationale for the procedure. They were told that EMDR was a newly developed desensitization technique with which the senior author had some clinical success, but that there were no valid theories or data on the efficacy of this procedure. In order to provide for a relatively clean test of EMDR's efficacy, clients were not taught anxiety management skills, nor were they given homework assignments for exposure between sessions, as would be typical. As suggested by Shapiro, treatment started with the memory that elicited the highest level of discomfort.

RESULTS

Wilcoxon matched-pair signed-ranks tests revealed significant improvement from pre- to posttreatment on all measures, all $p < 0.028$, two-tailed. Means, standard deviations, and individual scores for both assessment times are shown in Tables 1 and 2. Self-monitoring data for the treatment period are included in Table 2.

To determine the clinical significance of treatment gains, the Reliable Change (RC) Index (Jacobson, Follette, & Revenstorf, 1984) with the proposed modification by Christensen and Mendoza (1986) was employed. Following Jacobson et al.'s suggestion, we classified a subject as being reliably improved or reliably worse only when the standardized difference between two assessments, corrected for the reliability of the instrument, equaled or exceeded 1.96 ($p < .05$). A client was considered as having recovered when reliable improvement was determined via the RC Index, and when the posttest score crossed a cutoff point for this measure. Using Jacobson et al.'s criterion *c* for clinical significance, the cutoff point was defined as a score halfway between the standardized means of the clinical and normal population. Subjects who scored below the cutoff score at pretest were eliminated

TABLE 1
INDIVIDUAL SCORES, MEANS, AND STANDARD DEVIATIONS ON SELF-REPORT
QUESTIONNAIRES AT PRE- AND POST-ASSESSMENT

Subject	Measure						
	BAI	ACQ	BSQ	MI ^a	BDI	BSI ^b	DS ^c
Subject 1							
pre	20	2.3	2.9	3.1	21	2.25	2.3
post	13	2.1	1.9	3.0	7	1.57	1.5
Subject 2							
pre	19	2.1	2.3	4.2	22	1.65	2.5
post	12	2.1	1.5	3.8	8	0.17	2.0
Subject 3							
pre	52	3.8	3.6	4.4	29	1.95	3.5
post	45	3.4	0.7	3.7	24	1.71	1.5
Subject 4							
pre	21	2.2	2.3	1.8	4	0.82	0.8
post	7	1.3	1.3	1.5	0	0.08	0.0
Subject 5							
pre	40	2.4	2.7	3.6	18	2.34	2.0
post	11	1.9	2.5	2.9	8	0.85	1.3
Subject 6							
pre	43	2.9	3.4	2.4	17	1.80	2.8
post	11	1.5	1.9	1.2	1	0.15	0.6
Subject 7							
pre	23	2.3	2.3	1.7	11	1.85	1.4
post	0	1.3	1.1	1.2	2	0.12	0.0
<i>M</i> pre	31.1	2.6	2.8	3.0	17.4	1.81	2.2
<i>SD</i>	13.5	0.6	0.4	1.1	8.1	0.5	0.9
<i>M</i> post	14.1	1.93	1.83	2.46	7.1	0.65	0.99
<i>SD</i>	14.3	0.6	0.6	1.2	8.1	0.6	0.8

^aDepicted are scores of the MI-AAL. ^bDepicted are scores of the General Severity Index (GSI), the most sensitive global scale of the BSI. ^cThe DS measures interference with four areas of daily functioning employing 0 to 4 point rating scales. Depicted are mean scores across these four areas.

from the analysis for recovery, but included in the analysis for reliable change. Subjects whose initial scores were so low that they could not reliably improve as determined via the RC index were excluded from the analysis for reliable change as well.

For all reported measures, except the Brief Symptom Inventory, test-retest reliability coefficients of clinical samples were used to determine the RC Index. Results of the analyses for reliable improvement and recovery are shown in Table 3. No subject showed reliable deterioration. The Distress Scale and the self-monitoring records could not be included in the data analysis of clinically significant change due to the absence of norms and reliability data.

TABLE 2
 INDIVIDUAL SCORES, MEANS, AND STANDARD DEVIATIONS ON SELF-MONITORING
 DATA FOR PRE-TREATMENT, TREATMENT, AND POST-TREATMENT;
 DSM-III-R DIAGNOSES OF PANIC DISORDER (PD) AND PANIC DISORDER WITH
 AGORAPHOBIA (PDA)

Subject	Measure			
	Number of Panic Attacks ^a	Fear of Panic ^b	Highest Anxiety ^b	DSM-III-R Diagnosis
Subject 1				
pretreatment	1	5.6	7.2	
treatment	0	3.6	4.8	
posttreatment	0	3.8	3.9	PDA
Subject 2				
pretreatment	14	2.3	8.0	
treatment	6.5	3.4	5.9	
posttreatment	2	1.2	4.4	PDA
Subject 3				
pretreatment	10	5.5	6.1	
treatment	0.8	2.8	3.7	
posttreatment	2	3.0	3.5	PDA
Subject 4				
pretreatment	8	7.3	7.4	
treatment	9.8	6.2	6.8	
posttreatment	0	0.8	1.9	PD
Subject 5				
pretreatment	2	4.6	4.4	
treatment	0	3.7	3.6	
posttreatment	0	5.3	5.1	PDA
Subject 6				
pretreatment	1	3.0	5.3	
treatment	0	0.5	3.5	
posttreatment	0	0.6	3.1	PDA
Subject 7				
pretreatment	0	3.5	4.5	
treatment	0	2.2	4.0	
posttreatment	0	0.3	1.8	PD
<i>M (SD)</i>				
pretreatment	5.1 (5.4)	4.5 (1.7)	6.1 (1.4)	
treatment	2.4 (4.0)	3.2 (1.7)	4.6 (1.3)	
posttreatment	0.56 (0.9)	2.1 (1.9)	3.3 (1.2)	

Self-monitoring data include 2 weeks of daily monitoring before and after treatment.

^aNumber of panic attacks for pre and posttreatment is the total number experienced over a 2-week period. The time over which treatment was conducted varied with an average of 2 weeks (range 9–18 days). The number of panic attacks is prorated for a 2-week period of treatment.

^bDepicted are mean scores across days for a 2-week period for pre and posttreatment and for 9–18 days for treatment.

TABLE 3
NUMBER OF CLIENTS RELIABLY IMPROVED AND
RECOVERED AT POSTTEST

Measure	Improved ^a n/Total	Recovered ^b n/Total
BAI	3/7	1/7
ACQ	3/7	3/7
BSQ	1/4	1/4
MI-AAL	1/5	1/5
BDI	3/5	3/5
BSI (GSI)	6/7	4/7

Number of improved clients is based on the RC index. Number of recovered clients is based on a twofold-criterion.

^aSubjects whose initial scores were so low that they could not reliably improve were excluded from the analyses for improvement.

^bSubjects with pretest scores lower than the cutoff score are not included in the analyses for recovery.

DISCUSSION

Treatment Efficacy

The clients in this study found EMDR to be a credible and acceptable treatment. All who were offered treatment accepted it, and all finished the 5-session course of treatment. Our results demonstrate considerable improvement across a broad range of measures, including standardized self-report questionnaires and daily self-monitoring records. Out of six subjects who experienced panic attacks in the pretreatment period, four were panic-free at posttest and the other two experienced a 80%–86% reduction in panic frequency. However, these data need to be interpreted with caution, since three out of six clients had very low frequency of panic attacks at pretest. Clients also reported a decrease in general anxiety and fear of experiencing a panic attack. In concert with the decrease in panic-related symptoms, subjects indicated improvement on depression and a broad range of symptoms as measured with the BSI. However, the majority of subjects failed to improve on avoidance behavior and fear of body sensations.

The two clients (4 and 7) who were not agoraphobic seemed to benefit most from treatment. Even though Client 4 had the highest pretreatment score on fear of panic, she and Client 7 had the lowest posttreatment scores. They also scored the lowest on both anxiety measures posttreatment. Unlike most agoraphobic clients, they showed impressive change on both fear of body sensations and catastrophic thinking. On the broader measures, the BSI and daily functioning scales, these clients again had the lowest posttest scores. These data support other findings that panic clients without agoraphobia respond more to treatment than do those without complicating avoidance (see Clum, 1989).

Since no direct effort was made to treat catastrophic panic-related cognitions as measured by the ACQ, inconsistent change on this measure is not surprising. Clearly, in this series changes in cognitions do not seem to underlie other changes, at least for some clients (for example, see change on the ACQ vs. number of panic attacks and fear of panic attacks for Clients 1, 2, and 3). This pattern is unusual, since cognitive change usually closely parallels panic symptom change (see Chambless & Gillis, 1993).

Client 5 is worthy of special note. At the time she began the project she was separated from an abusive husband, and there had been a period of quiescence in their relationship for some weeks that lasted through the treatment phase. Just after completion of treatment, her husband began to harass her through telephone threats, appearing at her home uninvited and slashing the tires of her car. She is the only client who showed posttreatment increases in distress on some measures (fear of experiencing a panic attack and highest level of anxiety). Nevertheless, in spite of her stress level, she was no longer having panic attacks at posttest, and she showed improvement on depression and the broader measures, such as the BSI and daily functioning scales. Given the usual reactivity of panic patients to stress, this is rather remarkable.

In light of the uncontrolled nature of this case series, there are a number of alternative explanations for our findings that must be considered. First, passage of time might account for the improvement. This is unlikely, since in our previous research, panic patients failed to improve over a one-month waiting period (Chambless, Goldstein, Gallagher, & Bright, 1986), or with eight sessions of supportive therapy (Chambless, Foa, Groves, & Goldstein, 1979). Second, positive expectations by a therapist might have had a powerful placebo effect. This is doubtful. All therapy sessions were conducted by the second author. At the time that we began, she had no previous experience with EMDR. Throughout the series, the therapist remained skeptical of the procedure, and often expressed feelings of guilt that she was not providing "real therapy." In addition, we told clients that, although our clinical observations were encouraging, there was no scientifically acceptable evidence of EMDR's effectiveness. Hence, we think it is unlikely that these common confounds accounted for EMDR's efficacy, but controlled research is clearly necessary for more definitive conclusions.

Treatment Process

Despite its name, EMDR as applied in this study was not akin to a systematic desensitization procedure, in that after the initial scene presentation (the one evoking the most anxiety), that scene may or may not have been repeated. The clients' associations guided the process, and the sessions were often marked by a broad range of associations. Even when the initial scene was not repeated, upon checking again at the end of a string of associations, the therapist usually found the original scene no longer evoked anxiety, or evoked a good deal less than upon first presentation. However, not all clients' processes were like this. Some did repeat the same scene a number of times with minor changes, and others presented a sequence of scenes representing an unfolding process of the remembered event. It is too early to even speculate whether

amount of improvement in treatment is related to these differences in the process of EMDR with various clients. There was also great variability in the content of scenes, in that for some clients the work focused on panic-related material only, such as memories of panic episodes, panic-related body sensations, and anticipated panic episodes. For others, the primary focus was on events preceding the onset of panic attacks, often childhood memories. Certain themes like lack of trust, feelings of helplessness, and most consistently, a profound sense of loneliness were very common.

Typically, the client reported feeling very tired by the end of a session, but described sleeping well and feeling better than usual for a day or two following each session. This was true regardless of the intensity of affect experienced during treatment. However, on some occasions an increase in stress was reported following a session. Typically, this followed a session in which new and upsetting material arose near the end of a session and could not be processed during that session.

It should be noted that, in the EMDR procedure, there are a number of unique and potentially important elements other than the eye movement; the most marked difference between EMDR and typical exposure procedures is the free-flowing nature of the associations reported and allowed after the initial exposure to the anxiety-evoking stimulus. For example, a stream of images beginning with a disturbing memory of a previous panic episode may lead immediately to associations to memories of childhood, conflict with parents in which similar helpless feelings were experienced, and so forth. At the end of this stream, the patient usually no longer reports distress to the original image, whereas during typical exposure treatment, repeated and prolonged exposure to one image is required for anxiety reduction. Other elements of EMDR not found in the usual exposure procedures include the intensely focused nature of the treatment, the physical proximity of the therapist to the patient, and the cognitive restructuring component. One or more of these may account for the reported rapidity of effects.

CONCLUSIONS

Although the results of this case series suggest that EMDR might be a powerful treatment for panic disorder, they should be interpreted with caution, given the limitations of this study. We do not view EMDR as a stand-alone treatment for panic disorder, and particularly panic disorder with agoraphobia. We certainly did not view our clients as having been cured after five sessions of EMDR. However, we believe that these results are encouraging enough to emphasize the need for controlled outcome studies of EMDR's efficacy.

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