
Exploring Change Mechanisms in EMDR Applied to "Small-t Trauma" in Short-Term Dynamic Psychotherapy: Research Questions and Speculations



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This article represents a process of preliminary search and discovery regarding the active mechanisms in Eye Movement Desensitization and Reprocessing (EMDR) when used in Short-Term Dynamic Psychotherapy (STDP). Patients' ($N = 7$) responses to EMDR interventions were categorized as either "trauma" or "resolution" responses and examined in relationship to (a) the number of EMDR sets, (b) patient Global Assessment of Functioning Rating (GAF) scores, and (c) raw change in Subjective Units of Distress (SUD) ratings of severity of traumatic memory and Validity of Cognition (VoC) ratings of positive cognitions before and after EMDR sessions. Further subcategorization and development of the broad categories of trauma and resolution were recommended and may be useful in shedding light on how change happens in EMDR. This study was exploratory and attempted only to identify possible variables for further study. However, the results show potential relationships among variables that merit further refinement and study. Research questions generated from this study are discussed. © 2002 Wiley Periodicals, Inc. *J Clin Psychol* 58: 1531–1544, 2002.

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This article represents a discovery-oriented approach to identifying possible change mechanisms in Eye Movement Desensitization and Reprocessing (EMDR; Shapiro, 1995) when used in an integrative, anxiety-regulating form of Short-Term Dynamic Psychotherapy (STDP; McCullough, 1993, 1994; McCullough-Vaillant, 1997).

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STDP treatment follows the fundamental structure of psychodynamic psychotherapy (i.e., analysis of defenses blocking conflicted feelings), but uses interventions from other orientations to resolve conflicted affects and speed up the therapy process. STDP attempts to resolve core affective conflicts, or "affect phobias," that arise when feelings are made unacceptable, foolish, or taboo. For example, patients may be too afraid to be assertive, too ashamed to cry, too vulnerable to be close, in too much pain to grieve, and so on. By conceptualizing these maladaptive patterns as affect phobias (i.e., fear of an emotional responses because of conflicted feelings associated with them), then interventions can be used that have abundant research support for curing phobias [e.g., exposure (to conflicted feelings) and response prevention (of defensive avoidance) to achieve systematic desensitization of the feared but adaptive affects].

Eye Movement Desensitization and Reprocessing was the name given to EMDR treatment before it was entirely clear what mechanisms were involved. Since then, alternating sounds to the ears or taps to the hands also have been shown to resolve traumatic memories. Thus, it seems that alternating bilateral stimulation may be the main agent of change (see Stickgold, 2002). Furthermore, Shapiro (1995) repeatedly emphasized that EMDR not only involves "desensitization," but more fundamentally, "reprocessing" is taking place. In contrast to "affect phobias" needing to be desensitized in STDP, the traumatic responses in EMDR do not appear to occur in order to inhibit some other form of adaptive affect, but are strong and painful reactions to traumatic memories. Thus, desensitization may not be the main change agent in EMDR.

Some research suggests that traumatic memories are encoded differently in the brain than normal memories (e.g., Rauch et al., 1996; Shin et al., 1999), and thus might require different treatment interventions for their resolution. Put very simply, STDP may predominantly desensitize or break connections (the conditioned association between anxiety and feelings such as grief, anger, or closeness) while EMDR may predominantly reprocess or build new associations (i.e., new meanings, integrating memory, etc.) that resolve the intense affects associated with traumatic memories.

The power of EMDR was demonstrated dramatically when a patient whom the author had been treating for a year with STDP was able to resolve, in only three 90-min sessions, long-standing PTSD symptoms associated with a multicar crash. Before EMDR was used, this patient had made many positive changes during STDP work (e.g., cessation of suicidal behavior, improvement of self-esteem, marital improvement, and improvement with family of origin issues). In addition, STDP had helped resolve aspects of the traumatic memory associated with dynamics in his family of origin (e.g., people refusing to help him in times of great need). However, his PTSD symptoms of flashbacks, nightmares, and dissociative experiences continued to impair his functioning. Whenever STDP exposure to feelings was employed for these persisting symptoms ("large-T trauma" according to Shapiro), he seemed retraumatized and his PTSD symptoms worsened. In one case, he was so upset after a session that he punched out a car window on his way home. At that point, the author sought consultation on this case, and subsequently became trained in EMDR.

The fact that three sessions of EMDR completely eliminated his large-T trauma or PTSD symptoms (with improvement maintained for two years at this writing) was remarkable, and led the author to explore EMDR with other cases. Traumatic affects (intense levels of negative or inhibitory feeling such as anxiety, guilt, shame, pain, anger, distress, or anguish) also occur in long-standing problems such as personality disorders, which Shapiro refers to as resulting from "small-t traumas." Because the author's practice involved many patients with Axis II pathology, she began to employ EMDR whenever a patient affective reaction sounded traumatic (exaggerated, intense) and was resistant to change

or heightened from exposure. Although these small-t trauma symptoms did not appear to resolve as rapidly or dramatically as the large-T trauma case, they often seemed to improve with repeated EMDR sessions. Therefore, the positive experience with EMDR led to this exploratory study of the underlying change processes.

At the time this study began, the author knew of no studies conducted on EMDR response microprocesses. Therefore, clinical observation and intuition was used to identify possible change process variables. During EMDR sessions, the author had noted that patient improvement seemed to be associated with the number of trauma-related responses the patient was making in contrast to the number of resolution-related responses that emerged. Therefore, the preliminary hypothesis was: The ratio of resolution responses to trauma responses is related to improvement in large-T and small-t trauma reactions.

Method

Participants

Seven patients were selected who received EMDR during outpatient STDP treatment, and for whom there was complete EMDR data (five females, three males). One male patient (Case 1) was the severe PTSD case described earlier. The other six patients had small-t trauma reactions, but did not meet diagnostic criteria for PTSD. These patients all had Axis I disorders (typically mood disorders) as well as Axis II diagnoses (Predominantly Cluster C disorders of Avoidant, Dependent, Obsessive, but also some Narcissistic or Borderline disorders or traits). Five had a Global Assessment of Functioning Rating (GAF; Endicott, Spitzer, Fleiss, & Cohen, 1976) between 50 and 65 (moderate impairment in functioning), and two had a GAF between 40 and 50 (serious impairment in functioning; Cases 3 and 7). The average GAF score was 59.5 (range 40–70).

Measures

The process variables were the patient responses separated by the therapist into the following four categories: (a) *T response: Trauma or small-t trauma responses*: “I’m overwhelmed. I just can’t cope.” “I keep doing the same stupid thing.” “Why bother trying.” “I remember how ugly my house was.” “My mother always turned her back to me when I needed her.” “The screaming in my house was horrible.” “I can’t bear what I feel now.” “I don’t want to deal with this.” (b) *R response: Resolution/coping responses*: “I see myself not so upset by it. It seems further away.” “I don’t have to do what I have always done.” “I could just say no.” “I feel freer somehow.” “I deserved better.” “My body is calm for some reason.” (c) *R + T response: Combination resolution/trauma responses*: “I’m less upset, but it still bothers me.” “I remember how terrible it was, but it is beginning to feel lighter.” “I was so pathetic back then, but it was the only way I knew to cope.” (d) *O response: Other or neutral responses*: “Nothing much.” “I see my brother there, but I don’t know why I thought of him now.” “Sometimes I remember going to town with my father.” “I am looking at the kitchen floor of the house I grew up in but I’m not sure why.” “Nothing new is coming up.”

There were two outcome variables derived from raw change in patient self-report ratings before and after EMDR: (a) a 0 to 10 Subjective Unit of Distress (SUD) rating of the degree of severity of the traumatic memory and the associated self-statement and (b) a 1 to 7 Validity of Cognition (VoC) rating of the validity of the positive cognition.

Procedure

The primary mode of treatment was STDP with EMDR included. During the first session in STDP treatment, the core affective conflicts were determined. During exposure to these core affective conflicts, when patient responses suggested the possibility of small-t trauma [i.e., (a) were exaggerated or intense, (b) were nonresponsive to exposure, or (c) seemed worsened or "sensitized" by exposure], EMDR would be used (e.g., "When he did that I just exploded!" "I can't bear it!" "I am overwhelmed!" "There is so much pain in my gut." "I can't stand it when that happens." "It just drives me crazy." "I am the loneliest person in the world.")

EMDR Protocol. The EMDR protocol was followed carefully (Shapiro, 1995). Before and after the EMDR session, the patient rated SUD and VoC. The therapist placed a chair at the patient's left side (due to the office arrangement) and used her left hand for finger passes. The patient was asked to identify the bodily feelings of the traumatic memory, then to hold that feeling in the body and follow the therapist's finger passes with the eyes. "Passes" refers to the number of back and forth finger movement in one set. "Sets" are repeated groups of finger passes.

At the end of a set of eye movements (or in some cases, alternating hand taps) the therapist would say, "See what's there." Following the patient's response, the therapist wrote what the patient said (as briefly and quickly as possible after their response—about 5 seconds). Then, the therapist would say "Stay with that," and start the eye tracking of finger passes again. Later, the therapist separated the patient responses into the four categories described earlier and then examined their frequencies within and across sessions and in relationship to the independent variables—the SUD and VoC ratings.

Results

Because of the exploratory nature of the data, the results can be interpreted only as possible indications for further study. The raw data of individual cases are presented so that the reader can examine potential relationships within and across cases. In addition, synopsized clinical data are included to demonstrate the main themes of the EMDR procedure, the SUD and VoC ratings as well as brief examples of patient responses to EMDR categorized as trauma or resolution responses. A table for each case includes qualitative and quantitative data by session (Tables 1–7). The information in each table is as follows:

The basic demographics of each case are given in the title of the table. The first column of the table refers to the session number in short-term dynamic psychotherapy. The second column refers to the number of the EMDR intervention. For example, in Case 2, EMDR was used for the second time in Session 25 and for the third time in Session 26 (Data from the first EMDR session were incomplete and thus not included here.) Note that in Case 6, only five of 19 EMDR sessions are listed due to space limitations. Therefore, five EMDR sessions were selected randomly to explore possible changes over time; one early, two middle, and two late in treatment. The third column lists the total number of EMDR sets presented in that session. For example, the number of sets ranged from 10 in Case 2 to over 70 in both Cases 1 and 3 (The longer sets require longer sessions—generally two sessions back-to-back.) Columns 4 through 7 list, respectively, the number of responses made during that set that were categorized as trauma (T) responses, resolution (R) responses, combined resolution and trauma (R + T) responses, and other (O) responses. For example, in EMDR Session 1 for Case 1, there was a total of 42 sets. The

Table 1
Case 1: PTSD Patient, 37-Year-Old Married Male, GAF 48

Session No.	EMDR No.	No. of Sets	T	R	R + T	O	Ratio R + (R + T)/T	Raw Change in	
								SUD	VoC
74	1	42	28	8	6	0	$(8 + 6)/28 = .5/1$	9	6
75	2	56	16	20	15	5	$(20 + 15)/16 = 2.2/1$	9	6
76	3	77	26	23	20	8	$(23 + 20)/26 = 1.65/1$	9	6

(1) Traumatic memory: Multicar crash/I did wrong in rescuing people (Pre/post-SUD: 10 to 1). Positive Cognition: I am deserving (Pre/post-VoC: 1 to 7). T Response: I remember all the blood. Horrible! R Response: I did it for myself.

(2) Traumatic memory: Multicar crash/I'm bad (Pre/post-SUD: 10 to 1). T Response: Right back there. Girl dies. I hate people. R Response: Lighter feeling in my chest.

(3) Traumatic memory: Child dying/I am insignificant (Pre/post-SUD: 10 to 1). Positive Cognition: I deserve respect (Pre/post-VoC: 1 to 7). T Response: No one helped. They turned their backs. R Response: I must not give up who I am.

patient's responses (whatever statement the patient made after each set of finger passes were complete) were recorded; 28 were categorized as T responses, 8 were R responses, 6 were R + T responses, and none were categorized as O responses. Column 8 gives the ratio of any resolution response per one trauma response. $[R + (R + T)/T]$. Categories R and R + T were combined because clinical observation suggested that resolution responses, alone or combined, appeared to contribute to patient improvement. Thus, the data in this column read as follows: For Case 1, EMDR Session 1, there were 14 responses that included resolution responses $[R = 8 + (R + T) = 6$ for a total of 14] and 28 trauma responses. The ratio of resolution responses per trauma responses would be 14:28, or .5:1.

Column 9 lists the amount of raw change in the SUD ratings of the disturbance associated with the traumatic memory and in the VoC ratings of the positive cognitions focused on in the EMDR session.

The main themes of each EMDR session are listed below the tables and numbered according to the relevant EMDR session. This includes abbreviated topics for both the positive cognitions and the targeted traumatic memory and associated self-statements (referred to for brevity as "Traumatic Memory"). These are followed by the self-report 0 to 10 SUD rating of the degree of distress related to that traumatic event and the 1 to 7 VoC rating of the validity of that positive cognition given by the patient before and after

Table 2
Case 2: 64-Year-Old, Divorced Female, GAF 68

Session No.	EMDR No.	No. of Sets	T	R	R + T	O	Ratio R + (R + T)/T	Raw Change in	
								SUD	VoC
25	2	10	2	8	0	0	$(8 + 0)/2 = 4/1$	5	6
26	3	11	6	5	0	0	$(5 + 0)/6 = .9/1$	4.5	4

(2) Traumatic memory: Husband beating me/I am nothing, wrong (Pre/post-SUD: 10 to 5). Positive Cognition: I am a presence, significant. (Pre/post-VoC: 1 to 7). T Response: He laughed at me. R Response: say, "To hell with you."

(3) Traumatic memory: Being beaten/I'm weak, a wimp. (Pre/post-SUD: 7 to 2.5). Positive Cognition: I am strong, supported. (Pre/post-VoC: 1 to 5). T Response: I am crouching against the wall. R Response: I stand and leave with dignity.

Table 3

Case 3: 26-Year-Old, Married Female, GAF 60

Session No.	EMDR No.	No. of Sets	T	R	R + T	O	Ratio R + (R + T)/T	Raw Change in	
								SUD	VoC
4	1	40	25	0	13	2	$(0 + 13)/25 = .5/1$	2	1
7	2	73	33	30	6	4	$(30 + 6)/33 = .9/1$	8	2.5
12	3	63	40	18	4	1	$(18 + 4)/40 = .55/1$	8	5
13	4	51	26	11	10	4	$(11 + 10)/26 = .8/1$	8	2

(1) Traumatic memory: Mother screaming/I'm bad, worthless (Pre/post-SUD: 10 to 8). Positive Cognition: I'm OK just like I am (Pre/post-VoC: 2 to 3). T Response: So much to do. I can't relax. R Response: I want to play. Be free.

(2) Traumatic memory: Mother screaming/I'm inadequate (Pre/post-SUD: 10 to 2). Positive Cognition: I'm OK just like I am (Pre/post-VoC: 2 to 4.5). T Response: Scared to be like everyone else. R Response: It'd be good to slow down.

(3) Traumatic memory: Mother will attack/I'm in danger/can't cope (Pre/post-SUD: 8 to 0). Positive Cognition: I'm tranquil, at ease (Pre/post-VoC: 2 to 7). T Response: What if I don't make it? R Response: Feeling calm.

(4) Traumatic Memory: Mother angry/I'm not good/worthy (Pre/post-SUD: 8 to 0). Positive Cognition: I'm strong (Pre/post-VoC: 1 to 3). T Response: No place to rest. Need to escape. R Response: I can stop running and laugh, play.

the EMDR session. Included under each table also is a brief example of the T and R responses that occurred during that specific EMDR intervention.

Table 8 summarizes the averages and ranges for the main variables. The mean number of EMDR sets was 37.05 (range 10–77). The mean number of T responses per session was 18.7 (range 2–50). The mean number of R responses per session was 10.25 (range 0–30), and R + T responses per session was 6 (range 0–20). Responses which were not clearly related to trauma or resolution (O response) averaged 1.3 per session (range 0–8). The mean ratio of any resolution response per a single trauma response $[R + (R + T)/T]$ was 1.29 (range .02–1.65). The mean of the raw change in SUD ratings of severity of traumatic memory was 4.8 (range 0–9), and the mean of the raw change in the validity of positive cognition ratings VoC) was 3.1 (range 0–6).

Table 9 presents the exploratory Pearson correlations of the process variables (number of sets, and trauma and resolution responses) and outcome variable ratings [raw change in ratings of traumatic memory self-statements (SUD) and positive cognitions before and after EMDR (VoC)] to examine possible relationships for further study.

Table 4

Case 4: 38-Year-Old, Married Male, GAF 50

Session No.	EMDR No.	No. of Sets	T	R	R + T	O	Ratio R + (R + T)/T	Raw Change in	
								SUD	VoC
45	1	17	7	2	7	1	$(2 + 7)/7 = 1.5/1$	0	0
52	2	30	17	7	0	6	$(7 + 0)/17 = .4/1$	3	1
55	3	10	8	0	2	0	$(2 + 0)/8 = .25/1$	2	2

(1) Traumatic memory: Father beating me/I did something wrong (Pre/post-SUD: 5 to 5). Positive Cognition: I deserve this (good thing) (Pre/post-VoC: 4 to 4). T Response: Rebellious—so not to please. R Response: Doing what I want to do.

(2) Traumatic memory: In danger/Can't protect self. (Pre/post-SUD: 8 to 5). Positive Cognition: I feel safe (Pre/post-SUD: 3 to 4). T Response: Hopeless about separating from father. R Response: Calmer, less anxiety.

(3) Traumatic memory: Father beating him/I am powerless (Pre/post-SUD: 8 to 6). Positive Cognition: I feel comfortable. (Pre/post-VoC: 3 to 5). T Response: I'll never work this out. R Response: I must be accepted for who I am.

Table 5
Case 5: 48-Year-Old, Unmarried Female, GAF 55

Session No.	EMDR No.	No. of Sets	T	R	R + T	O	Ratio R + (R + T)/T	Raw Change in	
								SUD	VoC
70	1	25	12	6	7	0	(6 + 7)/12 = 1.1/1	2	5
74	2	30	10	18	2	0	(18 + 2)/10 = 2/1	7	5

(1) Traumatic memory: Mother dying/not speaking to her/I'm bad (Pre/post-SUD: 7 to 5). Positive Cognition: I'm lovable (Pre/post-SUD: 1 to 6). T Response: I feel like giving up. Throwing in towel. R Response: Feeling better. I'm past it.

(2) Traumatic memory: Mother dying/not speaking to her/I don't matter (Pre/post-SUD: 8 to 1). Positive Cognition: I'm worthwhile (Pre/post-VoC: 2 to 7). T Response: What's the point of trying? R Response: Laughing, feel different. Rush of energy.

The number of sets showed a high-moderate correlation to change in SUD ratings of traumatic memories ($r = .58$), but little relationship to change in VoC ratings of positive cognition ($r = .17$).

Next, the absolute number of responses was correlated with changes in ratings. The number of T responses did not correlate with the amount of raw change in SUD ratings ($r = .11$) or with the amount of raw change in VoC ratings ($r = .18$). However, the number of R responses showed the highest correlation to the amount of SUD change ($r = .81$) and a moderate association with the VoC change ($r = .50$). The R + T response category showed a low-moderate relationship to SUD and VoC change ratings ($r = 40$, $r = .21$, respectively). The hypothesis regarding the association between the ratio of resolution responses per single trauma response had modest findings; a low-moderate correlation to change in traumatic memory SUD ratings ($r = .30$) and a moderate correlation to change in VoC ratings of positive cognitions ($r = .50$). Significance is not reported due to the exploratory nature of the data.

Table 6
Case 6: 50-Year-Old, Divorced Female, GAF 70

Session No.	EMDR No.	No. of Sets	T	R	R + T	O	Ratio R + (R + T)/T	Raw Change in	
								SUD	VoC
4	1	30	22	2	4	2	(2 + 4)/22 = 1.3/1	0	0
8	3	25	14	4	4	3	(4 + 4)/14 = .96/1	3	3
9	4	34	15	14	4	1	(14 + 4)/15 = 1.2/1	5	2.5
18	13	33	12	11	9	1	(11 + 9)/12 = .6/1	4	0
19	14	33	5	17	7	4	(17 + 7) = 5/1	7	5

(1) Traumatic memory: Father yelling/I can't protect self (Pre/post-SUD: 10 to 10). Positive Cognition: I'm in control (Pre/post-VoC: 2 to 2). T Response: So scared. R Response: I'm arguing back.

(3) Traumatic memory: Left alone/I am not whole/So lonely (Pre/post-SUD: 10 to 7). Positive Cognition: I'm OK on my own (Pre/post-VoC: 1 to 4). T Response: I feel crushing pain. R Response: I have a support group.

(4) Traumatic memory: Left alone/I am ashamed, aching, longing (Pre/post-SUD: 10 to 5). Positive Cognition: I am secure, content (Pre/post-VoC: 2 to 4.5). T Response: Pain in body, so lonely. R Response: I'll take care of myself.

(13) Traumatic Memory: Left along/I'm never important (9 to 5). Positive Cognition: I'm free, self-possessed (3 to 3). T Response: Feel kicked in stomach. R Response: Reveling in who I am.

(14) Traumatic Memory: Father's ridicule/I'm stupid (Pre/post-SUD: 8 to 1). Positive Cognition: I'm proud, smart, respected (Pre/post-SUD: 2 to 7). T Response: I feel dismissed, devalued. R Response: Joy, freedom! Kicking back.

Table 7

Case 7: 33-Year-Old, Unmarried Male, GAF 40

Session No.	EMDR No.	No. of Sets	T	R	R + T	O	Ratio R + (R + T)/T	Raw Change in	
								SUD	VoC
34	1	51	50	1	0	0	(1 + 0)/50 = .02/1	0	0

(1) Traumatic memory: Parents screaming/ I'm worthless (Pre/post-SUD: 10 to 10). Positive Cognition: I'm OK (Pre/post-VoC: 2 to 2). T Response: There's no hope for me. Absolutely none. R Response: Maybe there is some strength in me somewhere.

Discussion

This study examined potential change process variables in EMDR, but because of the exploratory nature of this study the results are sample specific and can be interpreted only as "possible indications." Patient improvement on SUD and VoC was hypothesized to be related to the ratio of R to T responses, but this hypothesis only was moderately supported ($r = .30$, $r = .50$, respectively). Instead, the largest probable predictor of improvement in SUD ratings of traumatic memories was the total number of R responses ($r = .81$). In contrast, the total number of T responses did not appear related to SUD improvement ($r = .11$). This suggests that the "trauma" and "resolution" response variables possibly may represent different change mechanisms within this sample.

Six of the seven cases showed improvement in SUD and VoC ratings across sessions (Cases 1–6). In all but Case 4, who showed the smallest improvement, T responses were more frequent in the beginning of EMDR sets and sessions whereas R responses were more prevalent toward the end. The average ratio of resolution statements per single trauma statement averaged .8:1 in the first EMDR sessions and increased to an average of 2.1:1 in the last reported EMDR sessions. There was not a direct linear progression, but rather a trend toward increasing R responses. These data add possible support to the author's subjective impression that improvement might be related to the ratio of T to R responses.

In addition, a larger number of R responses occurred with more EMDR sets or sessions. It is possible that patients receiving more EMDR interventions may show greater improvement. Indeed, Case 1 with PTSD averaged 57.3 sets per session and 17 R responses, and had strong SUD and VoC changes. The Axis II cases (2–7) averaged 33.2 sets per

Table 8

Mean and Range for Exploratory Variables in EMDR Interventions

Variable Names	Sets per Session	Mean and Range of Patient Responses to EMDR Intervention				Mean of Raw Change in Ratings	
		Trauma Responses (T)	Resolution Response (R)	Resolution + Trauma (R + T)	Other (O Response)	SUD Traumatic Memory	VoC Positive Cognitions
Mean	37.05	18.7	10.25	6.0	2.1	4.8	3.1
Range	10–77	2–50	0–30	0–20	0–8	0–9	0–6

Table 9
Exploratory Pearson Correlations of EMDR-Response Variables with Raw Change in Ratings of Positive Cognition and Self-Statements Associated with Traumatic Memories From Before and After an EMDR Intervention

	Patient Responses to EMDR Intervention				
	Sets per Session	Trauma Responses (T)	Resolution Responses (R)	Resolution & Trauma (R + T)	Resolution to Trauma Ratio [R + (R + T)]/T
Raw Change in SUD Ratings	.58	.11	.81	.40	.30
Raw Change in VoC Ratings	.17	.18	.50	.21	.50

session and only 9 R responses—almost half as many as Case 1 with less strong changes in SUD and VoC. However, there is much variation across cases. Case 5 showed much improvement in only two EMDR sessions while Case 6 required a total of 19 EMDR sessions before strong improvement occurred.

Although no separate behavioral measures were taken, the author noted concomitant behavioral changes outside of the session corresponding to EMDR self-reported improvement in each of the six improved cases. These behavioral changes included better ability to handle conflict with others, actions taken that required greater self-confidence, and improved self-care (e.g., allowing rest and play time), and have been maintained for the past year. Further study is needed on patient characteristics, number of EMDR sets required for resolution of the traumatic memory, and associated behavioral changes.

Limitations

This article represents a process of search and discovery. It is not formal, controlled research, and the results must be considered only exploratory. Due to the preliminary nature of the study and the presence of a number of confounds (a small and diagnostically mixed sample, EMDR mixed with another treatment, targeting of vaguely defined, small-t traumas), these conclusions only can be drawn tentatively. The categorization of the data (as trauma, resolution, etc.) was derived from subjective impression, and reliability of the categories was not established. Patients were not selected randomly, but because they had received EMDR as a part of an active, focused, STDP therapy from a single therapist. In addition, there are limitations of statistically analyzing a small sample with multiple measures (at least five subjects per variable are recommended) and an unequal number of EMDR sessions per patient (range 1–19). Therefore, it may be possible that the relationships noted may be skewed or derived by chance. Most correlations were of one subjective process with another. Consequently, these correlations are not interpretable, except as “possible indications.” Future research needs to include standardized measures and employ residual gain scores of SUD and VoC (rather than raw change scores) to control for initial rating level. Thus, these results are sample specific, not representative of all patients receiving EMDR, and cannot be generalized. The study’s value is primarily in suggesting directions for further research, not in its specific findings.

Research Questions and Future Directions

Several issues emerging from this exploratory process suggest research questions and merit further discussion: (a) further development of the variables; (b) the mechanisms of

change—desensitization, reprocessing, and cognitive restructuring; (c) the influence of STDP on the EMDR process; and (d) the influence of patient characteristics on response to EMDR.

Development of the Variables

The variables in this study were developed from clinical intuition. Thus, “trauma” and “resolution” are only one way to categorize the complex responses elicited by EMDR. The T response categorization included (a) defense mechanisms (reaction formation, intellectualization, etc.), (b) destructive or maladaptive thoughts (“I can’t stand to think of that”) or feelings (“My gut hurts”), (c) images of the trauma (“I see the flames and hear the screams”), and (d) negative self-statements (“I hate myself”). Each of these response categories could represent a different aspect of the traumatic memory and could respond differently to intervention.

The R response category included more positive or constructive responses, such as (a) resolution responses (“It doesn’t bother me like it used to” or “I’m strangely calm now”), (b) “acceptance” of the trauma (“There is tragedy in every life”), (c) coping (“I don’t have to act like it is still happening”), and (d) problem solving (“I can see that I need to stand up to him when he bullies me”). Very different processes may be involved: Coping/problem solving might be more related to the desensitization function of EMDR (i.e., the decreased intensity and increased manageability of the old traumatic material and reactions), and resolution/acceptance might be related to the reprocessing function (putting the traumatic memory in perspective or in a new context). Further qualitative research is needed to separate potential subcategories of change mechanisms.

Research is needed on the manner in which change takes place within EMDR sets. Clinical observation of the cases in this study showed a trend of an initial flow of predominantly trauma responses, followed by an increasing emergence of resolution responses. When another aspect of the trauma arose, this pattern repeated itself. Overall, there appeared to be an increase in resolution responses as sets and sessions progressed. Further research is needed on the patterns of change in responses to EMDR interventions within and across sets, following the development of carefully operationalized response variables.

Some future research questions that might be addressed are: Can patient responses made during EMDR sessions be reliably categorized into trauma and resolution, or are other categories (e.g., coping, acceptance, etc.) better? Is there a change in the ratio of trauma and resolution responses within and across EMDR sets? Is there a relationship between trauma or resolution responses (or their subcategories) to (a) patient subjective improvement on SUD or VoC ratings, (b) objective behavioral indices, or (c) changes in standardized outcome instruments before and after EMDR?

Mechanisms of Change: Reprocessing Versus Desensitization

In STDP, desensitization means breaking the conditioned association of inhibitory affects (anxiety, guilt, shame, emotional pain) from adaptive affects (e.g., grief, anger, tenderness, sexual desire). In EMDR, the function of reprocessing sometimes has been seen as a more potent desensitization, but the underlying mechanisms appear to be quite different. The intense levels of anxiety, shame, or pain associated with traumatic memory are reduced or eliminated and put in perspective—not by breaking of connections with underlying feelings, but by making new cognitive connections, associations, or meanings. It is noteworthy that both EMDR and STDP appear to work with what can be called “inhib-

itory affects” of anxiety, guilt, shame, and emotional pain, but there appears to be significant differences in the forms of these affects and how they are dealt with.

Both Shapiro (1995) and McCullough (e.g., 1993, 1994, 1998) view conflicted affects (“neuroses”) as conditioned reactions to a present affect state and responsive to behavioral techniques. In contrast, in EMDR, the focus is directly on modulating these intense inhibitory feelings (e.g., excessive degrees of anxiety, guilt, shame, emotional pain/anguish). These PTSD symptoms are seen not as conditioned associations to underlying feelings but as a more intense form of actual emotion of the initial trauma experience that needs a different form of intervention (Shapiro, 1995). Another distinction is that in EMDR the patient appears unable to “defend” against the onslaught of feeling, as in Freud’s “traumatic anxiety.” In STDP the Axis II, Cluster C patient, for example, is typically too defended or too able to block the experience of underlying feeling; the anxiety is a “signal anxiety” used to repress feeling. Further research is needed on the types and functions of affects in STDP versus EMDR. For example, can signal and traumatic affects be differentiated in videotape observation? Do these affects in fact reliably differ between PTSD and a highly defended Axis II-disordered patient? And, how might the reprocessing of EMDR impact on these two types of affective responding in contrast to the exposure methods of STDP?

On the other hand, EMDR appears to have some degree of “desensitizing” effects because it involves repeated exposure to the traumatic images. However, when “exposure” in imagery is used on traumatic affects, it often is not sufficient to resolve the problem (see Lyons & Scotti, 1995). In fact, in the PTSD case discussed earlier, the exposure seemed to “retraumatize” the patient. Further, the increase and maintenance of anxiety identified during initial sessions of exposure techniques (Chaplin & Levine, 1981; Foa & Chambless, 1978; Lyons & Scotti, 1995) are not duplicated in this process analysis of EMDR’s effects. In the present study, resolution statements often were made within the first few minutes of EMDR processing, were frequent during initial sessions, and were not dependent upon continuous trauma accessing but rather upon spontaneous associations. Likewise, STDP appears to have some “reprocessing” effects because new associations are made, but this is done by verbal interaction between therapist and patient, not by alternating bilateral stimulation.

Consequently, the active mechanisms in STDP and EMDR may have overlapping components, but in some major areas appear to utilize quite different mechanisms. Both attempt to bring maladaptive feelings within normal limits. Both result in more positive affects being “freed up.” However, STDP seems more often to “free up” or desensitize *activating* affects (grief, anger, tenderness, pride, etc.), thus breaking connections. EMDR more often “transforms” *inhibitory* affects (e.g., fear, anxiety, shame, pain) by allowing the brain to make new connections and process new information. Brain imaging of changes in neurological processes pre- and posttreatment offers promise for teasing out these differences.

Some research questions to be addressed regarding the mechanisms of change are: What are the effects of the trauma responses following EMDR (e.g., does the experiencing of the traumatic memory in small segments lead to a partial desensitization of the traumatic memory)? Are there components of traumatic memory that differentially respond to desensitization versus EMDR reprocessing? What are the similarities and differences in the types and functions of feelings focused on in EMDR and STDP? What are the neurological correlates of change in resolved PTSD versus resolved affect phobia? Brain activation in response to traumatic memories versus brain activation of inhibited or conflicted affects needs to be assessed before and after EMDR and STDP treatment. There is growing research that the dorsolateral and orbitofrontal cortex is involved in inhibiting or

regulating affective responses (see Schore, 1994, for an extensive review). These structures (among others) might be differentially employed in STDP (desensitization) versus EMDR (reprocessing) aspects of treatment (e.g., overregulation in affect phobias and underregulation in large-T and possibly small-t trauma. However, these are only initial speculations. It will be important first to identify the active change mechanisms involved in both STDP and EMDR, as they may be partially overlapping and thus confound brain imaging findings.

EMDR and Cognitive Restructuring

EMDR “reprocessing” has been called a form of cognitive restructuring because patient responses demonstrate the making of new links or cognitive associations. However, the process of building these new cognitive links are quite different than cognitive therapy. In EMDR, the therapist does not verbally interact with the patient to restructure cognitions (as in CBT) or to restructure defenses, affects, or images of self and other (as in STDP). As noted earlier, EMDR patients are observed to resolve traumatic memories—without direct therapist intervention and without formal cognitive restructuring. For example, in the PTSD case discussed earlier, cognitive restructuring did not resolve his flashbacks. Pointing out the catastrophizing about police sirens and disputing the logic of his excessive arousal did not eliminate his PTSD symptoms. Only after EMDR were his PTSD symptoms eliminated—apparently accomplished by alternating bilateral stimulation that prompts neurological reprocessing to occur.

Some research questions concerning EMDR and cognitive restructuring might be: What are the similarities and differences in therapist interventions used to achieve cognitive changes in CBT versus EMDR? What are the similarities and differences in underlying mechanisms involved in cognitive “reprocessing” in EMDR versus cognitive “restructuring” in CBT?

Influence of STDP on EMDR

The EMDR data in this study were collected from patients who also were receiving STDP treatment. Therefore, the affect focus may be intensified in EMDR, and the deep uncovering work in STDP may impact the EMDR processing. Thus, the response categories may differ from the types that would emerge in other EMDR applications. In the cases in this study, there seems to be much overlap between these small-t traumas and the core conflicted affect pattern that is the major focus of short-term treatment. (In contrast to large-T trauma, the small-t traumas in Axis II pathology generally do not represent a single dramatic event, but a pattern of painful early-life experiences that happen repeatedly over many years' time.) In the cases in this study, when EMDR interventions focused on the core affective issue in the patient's life, it appeared to lead to strong improvement, but the data in this study do not adequately address that issue. This would need to be empirically tested by employing EMDR with and without STDP.

Two cases may possibly suggest this synergy. First, Case 2 had reported that her EMDR sessions seemed to be helped by the intensive STDP work on early-life family problems. Second, Case 6 had reported a persistent “gut-wrenching” loneliness for 50 years. An unattainable desire for connection/closeness with her neglectful mother was her “core affective conflict” uncovered in STDP. Focus on false sense of self and loneliness/longing for connection in a previous 70-session STDP treatment resolved Axis II diagnoses (dependent disorder with narcissistic traits) and greatly improved her life functioning.

However, the feeling of chronic painfulness only was slightly reduced. Two years later, she returned for specific treatment for the intense “gut-wrenching” loneliness. We targeted the “gut-wrenching” feeling in many examples throughout her life from her childhood until the present. The severity of this chronic symptom did not shift significantly during the first 10 EMDR sessions, but then began decreasing and disappeared entirely after a total of 19 EMDR sessions. She no longer needed therapy, and to her amazement and mine, reported coping with formerly difficult relationship situations with greater ease. This improvement has been maintained now for almost two years.

Research questions for the influence of STDP on EMDR are: Does the effectiveness of EMDR vary according to the centrality of the affect focus (e.g., whether the focus is a “core conflict” in STDP)? Do EMDR responses differ across different forms of treatment (e.g., cognitive therapy vs. STDP)? Are there differential EMDR responses to large-T trauma versus small-t trauma?

Patient Characteristics

There may be individual differences in type and degree of pathology and response to EMDR. In Case 1 with PTSD, there was total resolution of the traumatic memory, and the SUD and VoC ratings reflected very strong change (SUD change = 9, VoC change = 6). In contrast, Cases 2 to 7 with Axis II disorders showed improvement, but less strongly and more incrementally across sessions than Case 1 (SUD average change = 4.03, VoC average change = 2.29; $n = 6$).

Another difference was in length of sets. Case 2, with one of the higher GAF scores in this sample (68), responded positively after 10 and 11 sets, some of the shortest sets in the sample, yet she made changes in her life that have been maintained for over one year. In contrast, Case 7, with the lowest GAF score of the group (40), did not respond after 51 sets in one session. His functional impairment was so great that he was hospitalized shortly afterwards. The EMDR Resource Development and Installation protocol might have been useful here to build up easier access to positive affects first (see Korn & Leeds, this issue). In addition, Case 3 (GAF 50) showed only small improvement from his EMDR sessions that were in the middle of a difficult STDP treatment for long-standing Axis II problems. He reported that EMDR brought up painful new issues to be worked on rather than immediately resolving his problem. Much more study is needed to identify patient characteristics indicating differential responsivity to EMDR.

Research questions on patient characteristics could include the following: Does capacity for resolution responses vary with type or degree of pathology (e.g., represented by GAF level of function or presence/absence of an Axis II disorder)? Research could examine differential patient responding to EMDR at different GAF levels, for example, 61 to 70 (mild impairment), 51 to 60 (moderate impairment), or 41 to 50 (serious impairment). Research also is needed on the relative speed of recovery in cases of PTSD versus Axis II disorders. What is the relative contribution of changes in VoC ratings of positive cognitions versus SUD ratings of traumatic memories to overall improvement in psychotherapy on standardized measures?

Conclusions

EMDR is a therapeutic modality with abundant clinical support and growing empirical support (Shapiro, 1996, 1999). It is becoming evident that it is a powerful new treatment that has the potential to reduce patient suffering in an accelerated fashion. To explore

underlying change mechanisms, this study used a discovery-oriented approach to examine patient responses to EMDR when incorporated in STDP. Several issues emerging from this exploratory process suggest further research. First, the further development and study of categorization of patient responses to EMDR sets (e.g., trauma, resolution, etc.) may shed light on how EMDR leads to change. Second, continued examination of three processes—desensitization, information reprocessing, and cognitive restructuring—has the potential to differentiate mechanisms of change. Third, integrating EMDR with the affect focus of STDP may have the potential to increase effectiveness of the EMDR process. Finally, further study of how patient characteristics lead to differing responses to EMDR has the potential to better guide implementation of EMDR.

References

- Chaplin, E.W., & Levine, B.A. (1981). The effects of total exposure duration and interrupted versus continuous exposure in flooding therapy. *Behavior Therapy, 12*, 360–368.
- Endicott, J., Spitzer, R.L., Fleiss, J.L., & Cohen, J. (1976). The Global Assessment Scale: A procedure for measuring overall severity of psychiatric disturbance. *Archives of General Psychiatry, 33*, 766–771.
- Foa, E.B., & Chambless, D. (1978). Habituation of subjective anxiety during flooding in imagery. *Behavior Research and Therapy, 16*, 391–399.
- Lyons, J.A., & Scotti, J.R. (1995). Behavioral treatment of a motor vehicle accident survivor: An illustrative case of direct therapeutic exposure. *Cognitive and Behavioral Practice, 2*, 343–364.
- McCullough, L. (1993). An anxiety reduction modification of Short-Term Dynamic Psychotherapy (STDP): A theoretical “melting pot” of treatment techniques. In G. Stricker & J. Gold (Eds.), *Handbook of integrative psychotherapies* (pp. 139–150). New York: Plenum Press.
- McCullough, L. (1994). The next step in Short-Term Dynamic Psychotherapy: A clarification of objectives and techniques in an anxiety-regulating model. *Psychotherapy, 31*, 642–654.
- McCullough, L. (1998). Short-Term Psychodynamic Therapy as a form of systematic desensitization: Treating affect phobias. *Clinical Psychology Review, 4*, 35–53.
- McCullough-Vaillant, L. (1997). *Changing character: Short-term anxiety regulating psychotherapy for restructuring defenses, affects, and attachments*. New York: Basic Books.
- Rauch, S.L., van der Kolk, B.A., Fisler, R., Alpert, N., Orr, S., Savage, C., Fischman, A., Jenike, M., & Pitman, R.K. (1996). A symptom provocation study of posttraumatic stress disorder using positron emission tomography and script-driven imagery. *Archives of General Psychiatry, 53*, 380–387.
- Schore, A.N. (1994). *Affect regulation and the origin of self: The neurobiology of emotional development*. Hillsdale, NJ: Erlbaum.
- Shapiro, F. (1995). *Eye movement desensitization and reprocessing (EMDR): Basic principles, protocols and procedures*. New York: Guilford Press.
- Shapiro, F. (1996). Eye movement desensitization and reprocessing (EMDR): Evaluation of controlled PTSD research. *Journal of Behavior Therapy and Experimental Psychiatry, 27*, 209–218.
- Shapiro, F. (1999). Eye movement desensitization and reprocessing (EMDR): Clinical and research implications of an integrated psychotherapy treatment. *Journal of Anxiety Disorders, 13*, 35–67.
- Shin, L.M., McNally, R.J., Kosslyn, S.M., Thompson, W.L., Rauch, S.L., Alpert, N.M., Metzger, L.J., Lasko, N.B., Orr, S.P., & Pitman, R.K. (1999). Regional cerebral blood flow during script-driven imagery in childhood sexual abuse-related PTSD: A PET investigation. *American Journal of Psychiatry, 156*, 575–584.
- Stickgold, R. (2002). EMDR: A putative neurobiological mechanism of action. *Journal of Clinical Psychology, 58*, 61–75.