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# Treatment of Specific Phobias with Eye Movement Desensitization and Reprocessing (EMDR): Protocol, Empirical Status, and Conceptual Issues

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**Abstract**—This paper considers the current empirical status of Eye Movement Desensitization and Reprocessing (EMDR) as a treatment method for specific phobias, along with some conceptual and practical issues in relation to its use. Both uncontrolled and controlled studies on the application of EMDR with specific phobias demonstrate that EMDR can produce significant improvements within a limited number of sessions. With regard to the treatment of childhood spider phobia, EMDR has been found to be more effective than a placebo control condition, but less effective than exposure *in vivo*. The empirical support for EMDR with specific phobias is still meagre, therefore, one should remain cautious. However, given that there is insufficient research to validate any method for complex or trauma related phobias, that EMDR is a time-limited procedure, and that it can be used in cases for which an exposure *in vivo* approach is difficult

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to administer, the application of EMDR with specific phobias merits further clinical and research attention. © 1999 Elsevier Science Ltd. All rights reserved.

Behavioral therapy has proven to be of great practical value in the treatment of fears and phobias. This approach involves systematic desensitization, imaginal exposure, and real-life exposure. Research on specific phobias has shown equivalent effectiveness for systematic desensitization and flooding in imagery (e.g., Marks, Boulougouris, & Marset, 1971), while imaginary procedures were generally found to be less effective than exposure *in vivo* (e.g., Barlow, Leitenberg, Agras, & Wincze, 1969). It is a widely accepted notion that exposure *in vivo* (i.e., graded and prolonged exposure to the phobic stimuli) is the treatment of choice for specific phobias (e.g., Emmelkamp, Bouman, & Scholing, 1989).

A typical example of the exposure *in vivo* procedure is the treatment of spider phobia, which can be roughly described as follows. First, the client is introduced to a spider in a sealed container at what the client considers to be a safe distance. After much of the client's anxiety has subsided, the client is asked to either approach the container or pull it closer. After the client looks at the container closely, it is opened. Next, the client touches the spider with a pencil, later with a finger, and finally allows the spider to creep on the client's bare fingers and hands. Further, the client is encouraged to practice approaching the phobic objects between sessions while refraining from avoidance and escape behaviors as much as possible. Exposure *in vivo* is often combined with other techniques, including modelling by the therapist, cognitive interventions to correct catastrophic misinterpretations (e.g., De Jongh et al., 1995), and applied tension to prevent fainting in the case of blood-injury-injection phobias (Öst & Sterner, 1987).

It appears that certain types of circumscribed phobias can be effectively treated in one session, often lasting no more than 3 hours (Öst, 1989, 1997). These rapid treatment results may leave the impression that specific phobias *in general* can be successfully treated within a few sessions. However, single-session treatments of 3 hours or less have been found effective only in relation to a limited range of monosymptomatic phobias, particularly snake, spider, and injection phobias (see Öst, 1997 for an overview). This raises the question as to whether the available outcomes can be generalized toward more complex phobias. As a matter of fact, there are a variety of phobias for which controlled outcome studies are totally lacking, such as phobias of choking, vomiting, and driving. Clinical observations suggest that other specific phobias, such as thunderstorm phobia and extensive claustrophobia, generally require more elaborate treatment (see e.g., Emmelkamp et al., 1989 for a case report

on behavioral treatment of a fear of swallowing that lasted 33 sessions).<sup>1</sup> With respect to this issue, Öst (1997) concluded: "Thus, there is a great need for further research on most types of specific phobias, both in order to evaluate current treatments for those phobias for which outcome studies are lacking and to develop new treatment methods" (p. 245).

A new treatment procedure that has recently been proposed for individuals suffering from specific phobias is Eye Movement Desensitization and Reprocessing (EMDR; Shapiro, 1995). EMDR is recommended as a structured, noninvasive, and time-limited method, that can be applied either as a specific intervention or in the broader context of other treatment approaches. A number of controlled studies show that EMDR accelerates recovery from pathologies that have arisen from disturbing life events, in particular Posttraumatic Stress Disorder (PTSD; Shapiro, 1999 [this issue]). The primary goal in this treatment paradigm is to process the memories of the initial events that set the pathology in motion, rather than extinction of the conditioned responses through a strategy of gradual or prolonged exposures to the feared stimuli. If an adequate literature would indicate that EMDR treatment for specific phobias is in some way equally effective as exposure *in vivo*, there may be a number of advantages in applying EMDR. For example, it is possible to use EMDR in circumstances under which real-life exposure is difficult to pursue or the phobic stimuli are hard to obtain. Certainly not all therapists will have small and large dogs, rats, wasps, or snakes readily available in their offices. Related to this point are the costs of treatment. For instance, it may be more useful to apply EMDR than exposure *in vivo* in a case of flight phobia for which, as part of their treatment, clients have to take costly flights (Öst, 1997).

This paper is devoted to the treatment of specific phobias with EMDR, and is structured as follows. First, the use of the EMDR protocol with specific phobias will be described. Next, the current empirical evidence on the application of EMDR with specific phobias is addressed. Finally, some conceptual issues in relation to EMDR treatment are addressed, including the most central question as to what EMDR could contribute to the treatment of specific phobias.

## EMDR TREATMENT OF SPECIFIC PHOBIAS

EMDR has been empirically validated for PTSD (e.g., Carlson, Chemtob, Rusnak, Hedlund, & Muraoka, 1998; Marcus, Marquis, & Sakai, 1997; Rothbaum, 1997; Scheck, Schaeffer, & Gillette, 1998; Shapiro, 1996, 1999 [this issue]; Wilson, Becker, & Tinker, 1995, 1997). However, the effects of EMDR on PTSD may not generalize to other anxiety disorders, as there are a number

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<sup>1</sup> Emmelkamp et al. (1989) formulate a set of criteria that makes successful behavioral treatment in a few hours of specific phobias less likely: connections with other complaints, a stimulus that is not well-defined, and not being sufficiently motivated to endure short periods of strong anxiety (p. 85).

of important conceptual differences. One important distinction between PTSD and specific phobia is that the same anxiety-provoking event is unlikely to recur in PTSD. This has implications for treatment. For example, if a client has been raped, generally not many clinicians will feel the urge to prepare the client for a next rape, nor would the client want to learn to participate in one. In contrast, the phobic client must learn to engage in situations in which the phobic stimuli may be present. This certainly applies to individuals who developed a phobia after a powerful conditioning experience, such as a very painful medical procedure or an otherwise horrid event. The following case report illustrates this:

Ms. A., a 19-year-old woman, presented with a choking phobia. Her fear of swallowing food began at age 14 when she choked on a piece of candy (meringue) during a children's party. The candy remained stuck in her throat. Fortunately, someone at the party was eventually able to dislodge it. After this incident, Ms. A. kept feeling as if the candy remained in her throat. She was admitted to a hospital for observation, where she stayed 2 weeks for physical examinations and a number of psychotherapy sessions. However, she remained fearful after her stay in the hospital. Her daily meals consisted of baby food combined with fluids. When outside her home, she feared that flies would enter her throat and suffocate her. At work, she kept her mouth tightly closed to prevent dust from coming into her mouth. Moreover, she experienced nightmares about choking on food, and eating food containing splinters of glass that caused her to choke on her own blood. Even the word "swallowing" became extremely fear-provoking. The client's total score on the Symptom Check List-90-R (SCL-90-R; Arrindell & Ettema, 1986; Derogatis, 1977) was 344 ("very high").

It is clear that even if the memories of this traumatic event are successfully processed and emotionally integrated, Ms. A. will still have to learn to ingest solid food. Consequently, the application of only the standard EMDR protocol for treating PTSD (Shapiro, 1995) in such cases will not be sufficient. In contrast to its application with PTSD, the treatment of specific phobias with EMDR should not be concluded until the client is prepared for future interactions with (formerly) anxiety-eliciting stimuli or situations. This may involve acquisition of adaptive coping skills, such as mental strategies to handle "fear of fear" and techniques to relax or to distract oneself. In addition, clients should be able to put what they have learned into practice and be given the opportunity to further increase self-confidence through overcoming their fears and perceiving further progress.

Two sessions of EMDR were needed to alleviate Ms. A.'s fearful emotions related to her traumatic memories of the children's party. At this point she felt able to swallow solid food again. A SCL-90-R filled out 1 week after the second session showed a total score of 135 ("above average"). Because she had restricted her consumption to soft food and fluids for several years,

three sessions were devoted to the practice of eating to help her to get fully used to the consumption of solid food. At a 6-month follow-up, it appeared that these improvements were maintained.

EMDR treatment of specific phobia is based on a standard three-stage protocol (for a description see Shapiro, 1995, pp. 222–226). Specifically, after identifying the pertinent targets, a three-pronged approach of past, present, and future is used that incorporates the following steps: (a) alleviating the distress related to one or more old memories, (b) deconditioning the effects of present stimuli that trigger the fear response, and (c) preparing the client for future confrontations with the conditioned stimuli. Table 1 presents an outline of the EMDR protocol for specific phobias. An important component of the phobia protocol is that, after the incorporation of a positive template for future action (step d, Table 1), clients are asked to close their eyes and visualize an entire sequence of a future action (e.g., an upcoming dental treatment: making an appointment, awaking, going to the dentist, taking a seat in the waiting room, etc.) like a videotape that runs through a VCR. Clients are instructed to stop, open their eyes, and inform the clinician the moment any disturbance arises during the running of the videotape. The clinician's intention is to reprocess client's mental images as disturbances arise. Clients are then requested to rerun the mental videotape until all anxiety-eliciting aspects are reprocessed and the entire movie can be visualized from start to finish without distress.

One point deserves special attention. According to Shapiro (1995, p. 222), it makes conceptual sense to differentiate between two types of specific phobias for which different protocols have been established: one for *simple phobias* and the other for *process phobias*. Simple phobias are defined as marked fears of objects and circumscribed situations (e.g., spiders) that are cued when the client is exposed to them. Fear is generally elicited in a variety of unplanned circumstances, independent of the client's behavior. Process phobias are defined as excessive fears of situations or procedures in which the client must actively participate. Examples of process phobias include medically related phobias and flight phobia. In these cases, the client must actively decide and act in order to be exposed to the phobic stimuli. Consequently, it would be necessary to address more aspects of the phobic process, such as the fearful anticipating of events. It is, however, the opinion of the authors that this distinction between simple phobia and process phobia is not always useful. In clinical practice, whether or not phobic objects or situations are actively anticipated often depends on the individual client or the situation, rather than on the type of phobia. For example, it may not always be necessary for clients to actively engage with the object; that is, to go up and draw it close, poke it, touch it, or let it crawl on them. Conversely, if a spider-phobic individual has to visit places where the phobic object is likely to be (e.g., a spider-ridden

TABLE 1  
PHOBIA PROTOCOL

- 
- A. Teaching self-control procedures to handle fear of fear
  - B. Identifying the targets
    - 1. Ask the client to describe:
      - a. Any ancillary events that contribute to the phobia
      - b. The first time the fear was experienced
      - c. The most representative or most frightening experience
      - d. The most recent time it was experienced
      - e. Any associated present stimuli
      - f. The physical sensations or other manifestations of fear, including hyperventilation
  - C. Desensitization and reprocessing
    - 1. Use standard protocol for Target A (but without body scan).
    - 2. Target the other targets, if necessary (check whether or not different negative and positive belief statements are needed).
  - D. Installation of a positive template for the future
    - 1. Ask client to mentally progress in time to identify a mental image of a desired future situation with a positive behavioral response.
    - 2. Infuse an appropriate positive belief statement about self by keeping in mind this belief statement while engaging in sets of stimulation. This is continued as long as the client reports a strengthening of validity.
  - E. Run a mental videotape
    - 1. Have client visualize the entire sequence of a future action (e.g., from present session to a next possible confrontation with the feared stimuli or situation).
    - 2. Ask client to identify any disturbing aspects, and target these where it seems appropriate.
  - F. Body scan
 

That is, holding in mind both the target event and the positive self-belief while mentally scanning the body.
  - G. Preparation for future confrontations
    - 1. Check if the following is (still) necessary:
      - a. Teaching to apply self-control techniques or relaxation techniques
      - b. Any other exercises (or homework assignment) in which the client learns to confront the situation in real to allow relearning to occur
  - H. Closure
- 

house), the individual has to plan and to anticipate a possible encounter. In that case, the simple phobia would turn into a process phobia. Because it will not always be possible to predict exactly how someone with a simple phobia will act in relation to the phobic stimulus, it seems most practical to use the protocol for process phobia (Table 1) in the majority of the cases.

## EFFICACY OF EMDR IN THE TREATMENT OF SPECIFIC PHOBIAS

Although numerous EMDR-trained clinicians have reported powerful clinical effects with EMDR in the treatment of specific phobias, the empirical

support for its efficacy remains scarce. This section provides an overview of the relevant research. For reasons of clarity, reports on treatment of anxious individuals who clearly did not meet the diagnostic criteria for specific phobia (e.g., test anxiety among students in Bauman & Melnyk, 1994 and in Gosselin & Matthews, 1995) have been left out.

In the first uncontrolled study on the use EMDR with phobias, Marquis (1991) employed EMDR to treat 78 clients who suffered from a wide range of psychological disorders. EMDR was found to be effective with all of the 10 clients who suffered from a specific fear or phobia (i.e., flying, high places, and animals). Unfortunately, as correctly noted by several authors (e.g., Acierno, Hersen, Van Hasselt, Tremont, & Meuser, 1994; Herbert & Mueser, 1992), this study has a variety of methodological shortcomings. The critique mainly pertains to the fact that EMDR was complemented by a variety of other interventions, the use of self-report measures and nonstandardized therapist ratings to determine treatment progress, and the lack of information regarding the assessment of clients' psychopathology.

Kleinknecht (1993) used EMDR successfully in the treatment of a woman with a 16-year history of blood and injection phobia. After four brief sessions, involving less than 1 hour treatment time, the patient succeeded in receiving injections and having blood drawn. Two other case studies with blood-injury-injection phobia (Lohr, Tolin, & Kleinknecht, 1995) showed a general decrease in Subjective Units of Discomfort Scale (SUD) ratings, and a substantial decrease in scores on the SCL-90-R (Derogatis, 1977) and several standard medical fear measures following treatment. However, only minor changes were noted for heart rate and blood pressure. After their EMDR treatment, that lasted no longer than 1 hour, one person voluntarily participated in a blood draw for cholesterol testing 3 weeks after treatment and reported an absence of anticipatory anxiety before the procedure. Six months later, however, she again experienced a high level of fear during a second blood draw. The second subject, who was not able to recall an incident that could explain the onset of the fear, subjected herself to a skin surgery involving many painful (anaesthetic) needle injections. Although she experienced fear, the anxiety ratings were much lower than those prior to treatment. Remarkably, in a review concerning the empirical validity of EMDR, the investigators strongly trivialized their results by stating: "if there were real effects of the EMDR procedure, they were limited to SUD ratings" (Lohr, Kleinknecht, Tolin, & Barrett, 1995, p. 291). It should be noted that both reports on the treatment of blood-injection phobic subjects (Kleinknecht, 1993; Lohr, Tolin, & Kleinknecht, 1995) provided little information about the application of the procedure. This makes it difficult to determine the extent to which the investigators administered the entire procedure, or whether they truncated the standard EMDR protocol. For example, no information was presented on the cognitive part of the standard protocol (i.e., the selection of appropriate cognitions, and

the installation of a positive belief statement). Therefore, it remains unclear whether the belief ratings were high enough to justify conclusion of treatment.

Young (1994) reported success in treating two female multiple personality disorder clients with severe, persistent phobias. One client suffered from a snake phobia, the other had an extreme fear of moths (in combination with fear of seeing a full moon outdoors). Both clients could recall traumatic experiences in their childhood in relation to their phobias and achieved significant beneficial results in one and two sessions, respectively. The results were maintained at 6-month follow-up. Although the results were positive, the description of the procedure suggests that the author did not apply the standard EMDR protocol. Here the client, for instance, was asked to focus on his emotions rather than on the target memory: "She was asked to picture herself with a snake with the associated feelings of terror and helplessness" (p. 130).

Muris and Merckelbach (1995) used EMDR with spider phobics. Two adult spider phobic subjects were first treated with an hour-long session of EMDR. Improvements were found on both self-report measures of spider fear and a behavioral measure post-EMDR treatment. Next, they received 2.5 hours of *in vivo* exposure, after which the subjects were able to actually touch the spider. The authors indicated having used the phobia protocol, but they also noted that there was not enough treatment time to apply the entire protocol. The effects, however, are comparable with a case study by Muris and De Jongh (1996) on a young girl with spider phobia. Her fear was established following a traumatic encounter with a spider when she was 2 years old. After 1 hour of EMDR treatment, her score on a standardized self-report measure of spider fear (the short version of the Spider Phobia Questionnaire for Children; SPQ-C; Kindt, Brosschot, & Muris, 1996) went from 12 (maximum is 15) to 2. There was also a significant progress on a behavioral approach test. Before treatment, the child did not dare to touch a jar with a spider inside. After EMDR treatment, she was able to touch the spider with a pencil. Next, she received 1 hour of *in vivo* exposure, after which she was able to have the spider walk on her bare hand.

In a case report by De Jongh and Ten Broeke (1994), a female client achieved relief from her vomiting phobia. She experienced anxiety about the possibility of needing to vomit when she found herself in a situation from which it would be difficult to escape (i.e., being on a boat, saying "I do" at the registry office, getting pregnant, dancing with someone, or going out for a meal with someone). After a single EMDR session, her anxiety dissipated and the symptoms did not return. The results were supported by a drop in SCL-90-R total scores (Arrindell & Ettema, 1986) from 144 ("above average") to 106 ("low"), improvements that were maintained at 4-month follow-up (103).

The same authors described the successful treatment of a mouse phobia (Ten Broeke & De Jongh, 1993), and two clients with dental phobia (De Jongh, Ten Broeke, & Van der Meer, 1995; De Jongh & Ten Broeke, 1996).

With regard to the mouse phobia, previous behavior therapy with *in vivo* exposure had not resolved the fear of mice in a 63-year-old woman. One session of EMDR resulted in a significant reduction of fear when confronted with a mouse. At 6-month follow-up, her fear of mice had not returned.

One dental phobia case involved the treatment of a male client who developed a phobic response after experiencing an extremely painful extraction while he was in a foreign country (De Jongh, Ten Broeke, & Van der Meer, 1995). He avoided further dental treatment for 12 years. A behavioral management approach with five sessions of gradual exposure and teaching of coping skills failed to produce much improvement. In contrast, one session of EMDR resulted in a strong reduction of fear. At his next dental appointment, treatment could be continued with a level of distress acceptable to the patient. The other case report on dental phobia concerned a woman who avoided dentists for over 30 years (De Jongh & Ten Broeke, 1996). The fear was established when she was 8 years old and a dentist had tied her arms with towels to the dental chair to restrain her during drilling. She also developed panic disorder later in life. A year of behavior therapy provided no relief from her symptoms. After one session of EMDR, the patient felt competent enough to go shopping for the first time after a long period. After a second session of EMDR, she was able to start dental treatment. At 2-year follow-up she was still free of panic attacks and had completed her dental work.

Acierno, Tremont, Last, and Montgomery (1994) utilized a single-subject multiple-baseline design to investigate the relative efficacy of EMDR and a control condition of imaginal exposure named "eye focus desensitization." The subject suffered from an inability to attend funerals or remain in dark rooms, which, according to the authors, was the result of "a complicated combination of Columbian culture lore, childhood aversive learning trials, exceedingly infrequent natural exposure to fear-related stimuli, and pervasive adult avoidance" (p. 275). The subject showed no relief with EMDR (11 sessions) beyond the control treatment (6 sessions), while large behavioral improvements were noted after *in vivo* exposure (6 sessions). Notably, the therapist in this study had no formal training in EMDR and used a protocol contrary to the standard procedure (e.g., instructions to return to an image of the phobic situation for each set, relaxation instructions in between sets, repeated associations of the disturbing image with the negative belief statement, no linking of a positive self-assessment with the targeted information).

Lohr, Tolin, and Kleinknecht (1996) employed EMDR with two male subjects with traumatically induced claustrophobia using a within-series phase-change design. The first subject developed a fear of enclosed situations after being assigned to a compartment below the water line on an aircraft carrier when he was a naval recruit. The other subject's original precipitating experience was his detainment in an underground tunnel by Soviet troops in East

Berlin. Both subjects suffered from a severe fear of panic. Four treatment sessions resulted in a substantial decline in disturbance ratings associated with their previously anxiety-evoking images of the conditioning event. A 6-month posttreatment contact revealed a number of behavioral changes since the completion of treatment (e.g., voluntarily use of an elevator, participating in social gatherings and a musical concert). The authors, however, concluded: "While SUD ratings may have psychometric validity, it is also the case that they appear to be the only measures that change when EMDR is applied" (p. 86).

In the first controlled experiment of EMDR with phobias, Sanderson and Carpenter (1992) used a single session cross-over design on 58 (29 mainly spider phobics and 29 controls) subjects. They found no significant differences in effectiveness between a "simplified" (p. 269) version of EMDR (i.e., 7 sets of restricted eye movements of 20 seconds each) and "image confrontation" (i.e., imagining the feared object or situation with eyes shut on a daily basis for a period of 1 month). As Greenwald (1994) pointed out, here also the EMDR procedure had been seriously distorted. For example, the untrained researchers used only limited number of restricted eye movements, asked the subjects to focus on no more than one single circumscribed target, and omitted the generation of dysfunctional beliefs concerning the target.

Bates, McGlynn, Montgomery and Mattke (1996) randomly assigned spider phobic individuals to a "20-sweep EMD/R procedure" ( $n = 7$ ) and an assessment-only control condition ( $n = 7$ ). Their data indicated that EMDR did not affect spider-phobic students' fear of spiders. The experimental therapist had no formal training in EMDR, but was trained by a researcher who also had no training (p. 559). From the description of the procedure, it can be concluded that the investigators were virtually ignorant of the EMDR procedure (pp. 559–560). For example, lack of procedural fidelity was evident in the choice of the negative cognition (i.e., "I am scared"), which is not an irrational belief, but rather a description (see Shapiro, 1995). Further, restricted sets of only 20 eye movements were used and the order of the assessment was inaccurate according to the standard practices. Specifically, the free association element was eliminated, the client was inappropriately instructed to "relax" between sets, and the subjects were asked to maintain the "most fearful image." Furthermore, the feared image, negative belief statement and physical sensations were combined in each set, the positive cognition was interjected prematurely, and no preparation, installation, body scan, closure, or revaluation phases were incorporated. Despite this long list of shortcomings, the procedures were described as "faithful EMD/R treatment to spider-fearful students" (Bates et al., 1996, p. 567). Moreover, the researchers concluded that "the negative results contribute to growing doubt that EMD/R qualifies empirically as a bona fide behavior-therapy approach" (p. 568).

In another controlled study of EMDR with spider phobic adults (Muris & Merckelbach, 1997), 24 subjects were randomly assigned to either EMDR

treatment, imaginal exposure or a no-treatment control group. Both the EMDR and the imaginal exposure group received a 1-hour treatment, while the control group waited for 1 hour. All procedures were followed by *in vivo* exposure. EMDR resulted in strong changes on subjective measures of disturbance and credibility of a positive belief statement. However, with regard to approach behavior, EMDR subjects did not fare better than those who underwent imaginal exposure. Only after the subjects had received an exposure *in vivo* treatment, lasting 2.5 times longer than the EMDR treatment, were further and significant improvements found. Unfortunately, the design of the study does not allow a direct comparison between the effectiveness of EMDR and exposure *in vivo* (see also Lohr, Tolin, & Lilienfeld, 1998 for their critical comments). Since all subjects reached a comparable level of self-reported spider fear and approach behavior (regardless of whether they had initially received EMDR, imaginal exposure or no treatment) this study demonstrates the robust effects of exposure *in vivo* with this type of animal fear.

Two controlled studies on EMDR with spider phobic children conducted by the same research group seem to indicate that EMDR is an effective treatment for childhood spider fear, but of limited value compared to the results of as powerful a procedure as exposure *in vivo* (Muris, Merckelbach, van Haften, & Mayer, 1997; Muris, Merckelbach, Holdrinet, & Sijsehaar, 1998). In the first study, one session of exposure *in vivo* treatment ( $n = 11$ ) was compared with one session EMDR ( $n = 11$ ) in a cross-over design (Muris et al., 1997). Both treatments lasted 1.5 hours. EMDR resulted in a sharp decrease in short version of the SPQ-C. Exposure *in vivo* was found to be superior to EMDR in reducing avoidance behavior. With regard to skin conductance level, however, no differences were found between EMDR and *in vivo* exposure. The second study compared the effects of EMDR ( $n = 9$ ), exposure *in vivo* ( $n = 9$ ), and computerized exposure ( $n = 8$ ) in a between-subjects design with spider-phobic children (Muris et al., 1998). All treatments lasted 2.5 hours. Next, all subjects received a 1.5 hours session of exposure *in vivo*. EMDR resulted in significant improvements on self-report measures and appeared to be significantly more effective than the computerized exposure treatment. Again, exposure *in vivo* was found to produce the best treatment results. Their findings, however, are compromised by the fact that the full phobia protocol was not applied. For example, none of the subjects were exposed to the running of a mental video tape designed to treat anticipatory anxiety. Moreover, the authors of the first study note that, as a result of time restrictions, less than three targets (past, present, future) were desensitized among approximately three quarters of their subjects.

## CONCLUSIONS AND DISCUSSION

Research on the application of EMDR with specific phobias demonstrates that EMDR can produce significant improvements within a limited number of

sessions. With regard to the relative efficacy of EMDR it has been found that EMDR is more effective in treating childhood spider phobia than a control condition consisting of a computerized exposure treatment (Muris et al., 1998). The findings of a few controlled outcome studies, however, suggest that spider phobia is more responsive to exposure *in vivo* than to EMDR (Muris et al., 1997; Muris et al., 1998). Unfortunately, the overall picture regarding the effectiveness of EMDR is largely obfuscated by the fact that researchers in many of the studies were, variously, untrained in the method, used only a restricted number of directed eye movements, or inaccurately implemented the procedure (e.g., Acierno, Tremont, et al., 1994; Bates et al., 1996; Sanderson & Carpenter, 1992). Adherence to the standard phobia protocol (Shapiro, 1995) is limited and has improperly been utilized in most of the controlled outcome research. This sets serious limitations on the credibility of the results as, with any therapeutical approach, there may be a direct connection between the degree of procedural fidelity and the likelihood of attaining successful treatment results. Therefore, in the future, researchers whose intention it is to investigate the effectiveness of EMDR as a treatment method for specific phobias should refrain from the use of truncated protocols or other invalid procedures, and apply the entire protocol specifically established for that population.

In attempting to understand why spider fearful subjects responded more favorably to *in vivo* exposure than to EMDR, it should be noted that the behavioral index (i.e., the scores on a behavior approach test) may have been biased in favour of the exposure group as a consequence of the design of these studies (Muris et al., 1997; Muris et al., 1998). That is, subjects in the exposure group already had had a real-life confrontation with the (same) spider, whereas subjects treated with EMDR were requested to touch a spider for the first time. There should be little disagreement that *in vivo* exposure (including the effect of modelling with the therapist showing approaching behavior) would be more effective under such circumstances.

Since the controlled outcome research on EMDR with specific phobias is almost entirely based on the application of EMDR with spider-phobic individuals, conclusions about the efficacy of EMDR should be made in light of this limitation. In this respect, spider phobia may not be a representative type of phobia in its responsiveness to EMDR. This may further relate to the origin of this phobic condition. EMDR is conceptually guided by the assumption that present dysfunctions are both derived from and driven by earlier life experiences. The treatment aims to resolve the memories of a precipitating event that is perceived as subjectively traumatic, such as a car accident, an extremely painful dental treatment as a child or an episode of choking on food. Clearly, clients with phobias of driving, dentistry, or choking, by definition do not fulfil the criteria of PTSD with respect to flashbacks and recurrent upsetting memories. However, many of them re-experience parts of their "nightmare" whenever they are confronted with their phobic stimuli. In such instances, the previously stored memory is associatively activated by a present situation.

Anytime the affective state associated with the disturbing event is triggered, there is a comparable level of fear and a similar perception of danger as during the actual event. The role of this dynamic may be relatively great in phobias with a trauma-related etiology, but may be less pronounced in conditions like spider phobia. This would be in line with the fact that direct conditioning experiences are rarely found in the etiology of this type of animal phobia; spider phobics generally have no recall of traumatic experiences associated with spiders that could explain the onset of their fear (Davey, 1992; Kleinknecht, 1982). Consequently, it may be difficult to find a target that would evoke enough disturbance to set the EMDR reprocessing in motion. The notion that spider fear may be atypical in its responsiveness to EMDR is supported by the finding that the severity of spider fear is highly associated with disgust and contamination sensitivity (Mulken, de Jong, & Merckelbach, 1997). This may indicate that people dislike spiders (and blood; see Page, 1994) because they provoke disgust, and not because they relate to something traumatic.

Indeed, it is our clinical impression that phobic disorders without a known traumatic component in the etiology of the complaints generally tend to respond less strongly to EMDR than those with a clear conditioning event that can be held causally responsible for the onset of the fear. This is in accordance with experiences of others. For example, Lohr et al. (1996) argue that, because of their frequent traumatic acquisition, medical fears in particular would be those to which EMDR might be most directly extended. The notion that EMDR works best for phobias with traumatic origins is supported by the data from Sanderson and Carpenter (1992). They found that the SUD scores of a subgroup of clients with a trauma-related phobia showed significantly greater reduction after EMDR than the group as a whole.

It should be borne in mind that controlled outcome research evaluating exposure *in vivo* in the treatment of more complex (e.g., trauma-related) phobic conditions is scarce. Virtually all current knowledge on the treatment of specific phobias is based on research that focused on monosymptomatic phobias without an aversive life event in the etiology of the condition (e.g., snake phobia, spider phobia, flying phobia, and height phobia; Öst, 1997). It appears that these types of specific phobia can be successfully treated with prolonged exposure to the conditioned stimuli (CS) in a few hours of treatment. In contrast, other types of specific phobias (e.g., phobias of choking, accidents, and dentistry) seem to fit less easily in a short-term exposure *in vivo* approach (see McNally, 1994; Kent, 1997; Kuch, 1997). For example, Smith, Kroeger, Lyon and Mullins (1990) found that approximately 25% of a sample of dental phobics did not respond to systematic desensitization and withdrew again from dental treatment. One explanation for the differential effects might be that phobias with a trauma-related etiology have a number of commonalities with PTSD. Exposure to the CS may be less effective with such conditions, as it will not disconfirm the expected occurrence of the unconditioned stimulus (UCS),

but rather activate a representation of that UCS. In this respect, it has been speculated that repeated exposures to the CS might even strengthen the CS–UCS association (Bayens, Eelen, Van den Bergh, & Crombez, 1992). In fact, a distinction between CS-exposure and UCS-exposure can be found in cognitive-behavioral treatment procedures for PTSD on the one hand and specific phobia on the other. While effective treatment protocols for PTSD target the representation of the UCS (i.e., the memories of the traumatic event), exposure to the CS (i.e., a fearful object) appears most helpful in treating specific phobias. In PTSD, repeated exposure to the memory of the trauma is expected to result in habituation as it constitutes an opportunity for corrective information to be integrated, thereby modifying the fear structure (Rothbaum & Foa, 1996). Hence, it would be enlightening to experimentally investigate whether trauma-based phobias would respond most favorable to an UCS reevaluation intervention, such as imagery exposure or EMDR (see Davey, 1997), while other types of phobia would respond better to exposure *in vivo*.

Besides trauma-related phobias, the application of EMDR may prove preferable in cases for which an exposure *in vivo* approach is expensive (e.g., flight phobia), more difficult to administer (e.g., thunderstorm phobia), or intrinsically harmful (e.g., wasps, and certain kinds of aversive medical procedures). For example, contrary to the treatment of spider phobia, in which the client is encouraged to have a spider walk on his hand, it would be difficult to ask clients to expose themselves to a wasp in the same manner. Because such a procedure would be highly unpredictable to carry out, it may seriously prevent client's engagement in treatment or increase the risk of drop out before the treatment can be concluded successfully. To this end, EMDR might be a useful alternative. However, while such treatment delivery issues are important, it should be noted that systematic desensitization or imaginal exposure would share the same virtues in this regard. Accordingly, future studies should investigate the specific benefits and limitations of using EMDR instead of other *in vitro* procedures with a broad range of specific phobias.

Taken together, any definitive conclusion regarding EMDR's efficacy in the area of specific phobias would be far too premature. The amount of controlled outcome studies evaluating the application of EMDR with specific phobias is small and the quality of the empirical research is meagre. Although one should remain cautious and discerning in regard to the application of EMDR with specific phobias, it should be acknowledged that controlled studies of any method on the more complex, multisymptomatic or trauma-related phobias are lacking and therefore greatly needed. Until then, it will be difficult to draw any firm conclusion concerning the effectiveness of psychotherapy in the treatment of specific phobias in general, whether it concerns exposure or EMDR.

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