



SCIENCE AND PSEUDOSCIENCE IN THE DEVELOPMENT OF EYE MOVEMENT DESENSITIZATION AND REPROCESSING: IMPLICATIONS FOR CLINICAL PSYCHOLOGY

James D. Herbert

MCP Hahnemann University

Scott O. Lilienfeld

Emory University

Jeffrey M. Lohr

University of Arkansas

Robert W. Montgomery

Independent Practice

William T. O'Donohue

University of Nevada-Reno

Gerald M. Rosen

Independent Practice

David F. Tolin

MCP Hahnemann University

Correspondence should be addressed to James D. Herbert, PhD, Department of Psychology, MCP Hahnemann University, Mail Stop 988, 245 N. 15th Street, Philadelphia, PA 19102-1192.

ABSTRACT. *The enormous popularity recently achieved by Eye Movement Desensitization and Reprocessing (EMDR) as a treatment for anxiety disorders appears to have greatly outstripped the evidence for its efficacy from controlled research studies. The disparity raises disturbing questions concerning EMDR's aggressive commercial promotion and its rapid acceptance among practitioners. In this article, we: (1) summarize the evidence concerning EMDR's efficacy; (2) describe the dissemination and promotion of EMDR; (3) delineate the features of pseudoscience and explicate their relevance to EMDR; (4) describe the pseudoscientific marketing practices used to promote EMDR; (5) analyze factors contributing to the acceptance of EMDR by professional psychologists; and (6) discuss practical considerations for professional psychologists regarding the adoption of EMDR into professional practice. We argue that EMDR provides an excellent vehicle for illustrating the differences between scientific and pseudoscientific therapeutic techniques. Such distinctions are of critical importance for clinical psychologists who intend to base their practice on the best available research.* © 2000 Elsevier Science Ltd.

KEY WORDS. EMDR, Pseudoscience, Trauma, Posttraumatic stress disorder.

INTRODUCTION

THE PROFESSIONAL PROMOTION of psychotherapy has been based largely on the often cited *Dodo-Bird verdict* that all treatments are effective and equally so (Luborsky, Singer, & Luborsky, 1975). Based on this belief, the majority of psychological practitioners adhere to the dictum that "Everyone has won, and all must have prizes" (Luborsky et al., 1975); Rosenzweig, 1936; Wampold et al., 1997). As a consequence, eclecticism has gained a new found respectability (Lazarus, Beutler, & Norcross, 1992), and new treatments proliferate at a rapid rate (Figley, 1997).

Empirically oriented clinical psychologists, however, have often been skeptical of overarching claims for psychotherapy (Beutler, 1991), and have been at the forefront of research investigating the effects of specific treatments for specific disorders. For example, Eysenck's (1994) reanalysis of earlier meta-analytic research demonstrated the potency of placebo and other nonspecific effects in most treatments, but also the power of behavioral techniques for a narrower range of disorders. Other observers are skeptical of overarching claims of psychotherapy for pragmatic, rather than empirical, reasons. These individuals (and corporate entities) have responsibility for, and a financial stake in, identifying cost-effective treatments for psychological conditions (Strosahl, 1994, 1995).

The necessity of methodological rigor in the empirical validation of intervention procedures has recently become a visible and contentious issue in professional psychology (Fox, 1996). The American Psychological Association's Division of Clinical Psychology recently published reports of a task force suggesting basic methodological criteria for the empirical validation of psychological treatments, and specified treatments that meet these criteria (Chambless, 1995; Chambless et al., 1996).

The concern for empirical validation has helped to limit the clinical application of new techniques for which validation research has not yet been conducted. Most recently, experimental procedures (Delmolino & Romanczyck, 1995; Jacobson, Mulick, & Schwartz, 1995) have been used to demonstrate the lack of efficacy of facilitated communication, a technique purported to permit nonverbal autistic individuals to communicate with others that was widely promoted to replace more expensive, but effective, behavioral procedures. Although the scientific evaluation of psychological treatments has yielded substantial benefits, it is not without risk. The evaluation of

treatments must rest upon the substantive aspects of the scientific enterprise, rather than on its superficial appearance. If the appearance is emphasized over the substance, the process of inquiry risks becoming pseudoscientific. The costs of adopting pseudoscientific treatments would be substantial. We argue that the professional evaluation and promotion of at least one recent and prominent innovation in psychosocial treatment has often been characterized by pseudoscientific practices.

PROFESSIONAL CONTEXT FOR THE DEVELOPMENT OF EMDR

Clinical Manifestations of Fear and Trauma

The last 10 years have witnessed a rapid expansion in interest surrounding the nature of trauma and anxiety, the psychological repercussions of trauma, and the psychological treatment of those repercussions. Treatments have been applied not only to trauma-related distress, but also to more longstanding difficulties such as specific phobias and other anxiety disorders. Such behavioral interventions as graduated in vivo exposure, exposure and response prevention, and social skills training are treatments of choice across a wide range of anxiety disorders (Barlow, 1993; Chambless, 1995; Chambless et al., 1996). There are several novel treatments vying for the attention of clinicians treating anxiety and trauma that sometimes have been referred to as the *Power Therapies*. This moniker derives from the claim that such treatments work much more efficiently than extant interventions for anxiety disorders (Figley, 1997). The Power Therapies include Thought Field Therapy (TFT; Callahan, 1995; Gallo, 1995), Emotional Freedom Therapy (EFT; Craig, 1997), Traumatic Incident Reduction (TIR; Gerbode, 1985, 1995), and Visual-Kinesthetic Dissociation (VKD; Bandler & Grinder, 1979).

The most visible of these treatments, however, is EMDR. Despite being less than 10-years-old, the commercialization of EMDR has been remarkably successful. According to Shapiro (1998b), the developer of EMDR, over 25,000 mental health clinicians have been trained in this procedure. The dissemination of this technique is rivaled only by the number of conditions to which it has been applied in clinical contexts. EMDR Institute, Inc. distributes promotional literature that alleges effective application of this treatment for the distress associated with myriad conditions, including Posttraumatic Stress Disorder (PTSD), Attention-Deficit/Hyperactivity Disorder, dissociative disorders, self-esteem issues, and personality pathology (EMDR Institute, Inc., 1995, 1997; Fensterheim, 1996). In its most wide-ranging application, EMDR has been used as a means of spiritual development (Parnell, 1996).

A complete understanding of the reasons underlying EMDR's substantial visibility would require a complex sociological analysis beyond the scope of the present article. Nevertheless, we tentatively propose two main causal factors for EMDR's visibility that merit special attention. The first potential factor is that EMDR and cognitive-behavioral treatments share some similarities. Both are structured, prescriptive and time limited. Indeed, Foa and Meadows (1997) characterized EMDR as a cognitive-behavioral treatment in their review of psychosocial treatments for PTSD. These common features also lend themselves to empirical testing, and cognitive-behavioral treatments possess established empirical records as validated treatments for anxiety and mood disorders (Chambless, 1995; Chambless et al., 1996). Indeed, EMDR is now listed as a probably efficacious treatment for civilian PTSD (Chambless et al., 1998) by the American Psychological Association (APA) Division 12 Task Force on empirically supported

treatments because two outcome studies (Rothbaum, 1997; S. A. Wilson, Becker, & Tinker, 1995) suggest that EMDR is superior to waitlist control procedures.

The decision of the APA Task Force has, however, generated considerable controversy. Some argue that this decision is justified given that the criterion of probably efficacious status requires only that a treatment be demonstrated to be more efficacious than no treatment in two studies (Chambless et al., 1998). Others, however, contend that: (a) this criterion is overly liberal because the null hypothesis—namely that a treatment is not more effective than no treatment—is almost certainly false for the vast majority of psychological treatments (Herbert, 1998); and (b) because EMDR may be a variant of standard exposure treatments (see section entitled “Reviews of the Efficacy of EMDR”), there is no compelling evidence to regard it as conceptually distinguishable from other commonly used exposure-based methods (e.g., imaginal flooding; see McGlynn & Lohr, 1998; for additional criticisms O’Donohue, 1998). The merits of these criticisms notwithstanding, it seems likely that the decision of the APA Task Force will further enhance the visibility and public credibility of EMDR.

Another possible reason for the visibility of EMDR is the burgeoning specialty of traumatology. In recent years, there has been an expansion of the signs and symptoms representing post-stress clinical conditions, so much so that the diagnostic criteria for PTSD have become more general and a new stress-related diagnosis (Acute Stress Disorder) has been added to the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). In addition, the context for trauma effects has been expanded beyond natural and man-made disasters (e.g., combat and torture) to include negative life events occurring in the context of child rearing, family life, and marital conflict. As a result, an increasing demand has arisen for the provision of treatment, including EMDR, for individuals suffering from the adverse consequences of stressful life events.

Treatment Rationale

EMDR is based on a theory that relies heavily on physiological concepts closely related to neurological processes. The nature of pathology and effective treatment is predicated on a model called Accelerated Information Processing that is hypothesized to be akin to a psychological immune system (Shapiro, 1995a). Healing is posited to occur after eye movements and other features of the clinical protocol unlock the pathological condition. In Accelerated Information Processing, “The key to psychological change is the ability to facilitate the appropriate information processing. This means making connections between healthier associations” (Shapiro, 1995a, p. 48). Accelerated Information Processing is offered as a “unifying theory that can be seen as underlying all psychological modalities,” but the model is distinct in defining pathology as “dysfunctionally stored information that can be properly assimilated through a dynamically activated processing system” (Shapiro, 1995a, p. 52). Although the model has intuitive appeal, Keane (1998) commented on its limitations:

Unlike exposure therapy which has a long tradition of ameliorating a range of anxiety mediated clinical problems and which is embedded in the rich conceptual tradition of experimental psychology, EMDR falters seriously at the theoretical level....The primary weakness of EMDR stems from a distinct lack of integration with existing models of psychopathology and psychotherapy. (p. 404)

Indeed, explanations for EMDR's reported clinical effects have been addressed by alternative conceptual analyses based on well-established learning processes that subsume exposure and cognitive-behavioral treatments (Dyck, 1993; MacCulloch & Feldman; 1996).

From its inception, EMDR has often been characterized by extremely strong claims, including the purported rapidity, permanence, and generality of its effects (Shapiro, 1995a; Shapiro & Forrest, 1997), and the assertion that these effects are considerably greater than those of extant treatments (Fensterheim, 1996; Shapiro, 1996a, 1996b). For example, the original published account of EMDR (Shapiro, 1989), touted this intervention as a single session treatment for the distress associated with the traumatic memories in PTSD. Such claims are often made on the basis of clinician testimony (workshop training and word-of-mouth) and published case studies. Nevertheless, as the philosopher Hume (1748/1977) noted, extraordinary claims require extraordinary evidence. In the following section, we briefly review the nature of this evidence in the case of EMDR.

SCIENTIFIC AND PROFESSIONAL EVALUATION OF EMDR

Reviews of the Efficacy of EMDR

A literature review of EMDR by Lohr, Kleinknecht, Tolin, and Barrett (1995) concluded that : (a) the protocol frequently reduces verbal report and independent observer ratings of distress; (b) psychophysiological indices show little effect of treatment; (c) there is little evidence that indicates treatment influences behavioral measures; and (d) eye movements do not appear to be an essential component of the treatment. Similar conclusions have been reached independently by others (Acierno, Hersen, Van Hasselt, Tremont, & Mueser, 1994; DeBell & Jones, 1997). Since the review by Lohr et al. (1995), the empirical literature has expanded rapidly and experimental rigor has improved (e.g., Devilly & Spence, 1999; Devilly, Spence, & Rapee, 1998; Muris, Merckelbach, Holdrinet, & Sijsenaar, 1998; Pitman et al., 1996). A summary description of the most recent research on EMDR follows. More extensive analyses of treatment efficacy are found in Lohr, Tolin, and Lilienfeld (1998) and Lohr, Lilienfeld, Tolin, and Herbert (1999).

Wait-list and Attention Controls

Some studies that have compared EMDR with no treatment or with wait-list controls show greater effects of EMDR on self-report measures for specific phobia (Bates, McGlynn, Montgomery, & Mattke, 1996), PTSD (Boudewyns & Hyer, 1996; Rothbaum, 1997), traumatic memories (Shapiro, 1989; Wilson et al., 1995; S. A. Wilson, Becker, & Tinker, 1997), panic disorder (Feske & Goldstein, 1997), and public speaking anxiety (Foley & Spates, 1995). These results, however, are not convincing in that they can be attributed to any number of incidental, nonspecific effects (Lohr et al., 1998, 1999), including expectation for improvement, and therapist attention (see Mahoney, 1978).

Attention controls attempt to equate the amount and general nature of therapeutic contact across experimental conditions in an outcome experiment or in the treatment setting (Mahoney, 1978). Five studies have used procedures that approximate attentional controls in the treatment of PTSD and traumatic memories (Boudewyns,

Stwertka, Hyer, Albrecht, & Sperr, 1993; Carlson, Chemtob, Rusnak, Hedlund, & Muraoaka, 1998; Jensen, 1994; Silver, Brooks, & Obenchain, 1995; Vaughan et al., 1994). Jensen (1994) randomly assigned participants to either customary care control or an EMDR group. The data analysis revealed no differences between the groups on the standardized measures of PTSD symptoms following treatment.

Boudewyns et al. (1993) randomly assigned participants to either EMDR, Exposure Control (EC), or milieu-only control. The EC group was procedurally similar to the EMDR group except for eye movements. Standardized measures showed no differential effects of treatment, and no form of treatment appeared to affect the psychophysiological measures. Although therapist ratings of treatment responders versus nonresponders favored the EMDR group, assessors of treatment outcome were not blind to treatment conditions.

Silver et al. (1995) provided milieu treatment concurrently with either: (a) EMDR, (b) biofeedback, or (c) group relaxation training. A third control group received only milieu treatment. The authors reported that the subjects in the EMDR plus milieu treatment "did better than the control group across all variables and generally at statistically significant levels" (Silver et al., 1995, p. 340). They also reported that EMDR resulted in greater change than the biofeedback and relaxation groups. These conclusions, however, are not justified due to a number of methodological limitations such as nonrandom assignment and inappropriate statistical analyses (see, Lohr, Kleinknecht, et al., 1995), and it is impossible to draw any valid conclusions regarding the efficacy of EMDR per se because its application was confounded by concurrent milieu treatment.

Vaughan et al. (1994) assigned trauma victims to either: (a) a no-treatment control condition, (b) EMDR, (c) Imagery Habituation Training (IHT), or (d) Applied Muscle Relaxation Training (AMT). The results showed that all groups improved significantly compared with the wait list but there were no differences among treatment conditions. Post-hoc multiple *t*-test comparisons suggested that subjects in the EMDR condition experienced fewer flashbacks, nightmares, and avoidance symptoms after treatment relative to all treatment groups. Caution must be exercised in the interpretation of any genuine effect of EMDR for several reasons. First, because neither IHT nor AMT has been identified as a valid treatment for PTSD (Chambless et al., 1998; Foa & Meadows, 1997; Keane, 1998), EMDR was not compared with demonstrably effective treatments. Second, the multiple *t*-test comparisons did not protect for Type I error. Third, statistically significant symptom improvement occurred in all treatment conditions, suggesting the operation of nonspecific effects in both EMDR and the control treatments (Lohr, Kleinknecht, et al. 1995).

Carlson et al. (1998) randomly assigned participants to either: (a) routine clinical care, (b) 12 sessions of biofeedback-assisted relaxation, or (c) 12 sessions of EMDR. The results showed that at posttreatment the EMDR showed greater effects than the two other conditions on self-report, psychometric, and standardized measures, which were maintained at 3-month follow-up. However, assessors were not blind to experimental conditions except for an interview measure at follow-up. There was no differential effect on psychophysiological measures. As biofeedback-assisted relaxation is not a validated treatment for PTSD (Chambless et al., 1998; Foa & Meadows, 1997; Keane, 1998), these results show only that EMDR is more effective than no additional treatment and a treatment of no demonstrated efficacy for PTSD, and that this efficacy was apparent only on verbal-report measures. In summary, these five studies provide little evidence that EMDR provides benefits beyond attention control conditions.

Nonspecific Effect Controls

The nonspecific factors in an experimental treatment procedure include treatment credibility, expectation for improvement, experimental demand, therapist–experimenter enthusiasm, therapist–experimenter allegiance, effort justification (Cooper, 1980), and the incidental effects of any particular treatment (see Lohr et al., 1999). In an attempt to control for nonspecific factors, Hazlett-Stevens, Lytle, and Borkovec (1996) randomly assigned participants with traumatic memories to one of three treatment conditions: (a) EMDR, (b) an identical procedure that employed eye fixation, or (c) nondirective counseling. The results showed that the non-directive counseling condition produced the same effects as EMDR on three out of four measures, suggesting that EMDR may be no more efficacious than nonspecific treatment.

Scheck, Schaeffer, and Gillette (1998) randomly assigned women with traumatic memories to two sessions of either EMDR or an Active Listening (AL; Gordon, 1974) control. EMDR and AL were administered by different groups of therapists. Outcome measures included standardized self-report indices of trauma, depression, and self-concept. Data analyses revealed statistically significant improvement on all measures for both treatment conditions. At posttreatment, the EMDR group was different from the AL group on four of five outcome measures. This comparison, however, is obscured by the therapist by treatment procedure confound. Such factors as therapist allegiance, enthusiasm, or involvement could have contributed to the measured effects of EMDR (Gaffan, Tsaoasis, & Kemp-Wheeler, 1995).

Marcus, Marquis, and Sakai (1997) conducted a similar study that compared EMDR with general outpatient care in a Health Maintenance Organization, and found that those receiving EMDR showed significantly greater and faster improvement on measures of PTSD, depression, and anxiety. However, Marcus et al. (1997) also committed the therapist by treatment confound and risked allegiance, enthusiasm, and involvement artifacts. It was also reported that some subjects in the EMDR condition were receiving HMO treatment (e.g., medication), thus confounding the effect of EMDR (Marcus et al., 1997). In addition, the statistical analyses on difference scores were limited to a large number of multiple *t*-tests that were not adjusted for Type 1 error. Finally, the limitations of the experimental design of both Marcus et al. (1997) and Scheck et al. (1998) do not exclude the possibility that any apparent change following EMDR was mediated by the imagery exposure that is an incidental characteristic of the treatment.

Effective Treatment Comparisons

Treatment efficacy can also be assessed by comparing a novel treatment for a given disorder with an empirically established treatment for that disorder. If the novel treatment demonstrates a stronger, more general and more effect, or if it is more efficient in its effect, then it can be said to have some incremental efficacy compared with other treatments (Critelli & Neuman, 1984; Lohr et al., 1999). EMDR has been compared with a validated treatment for spider phobia (Muris & Merckelbach, 1997; Muris et al., 1998; Muris, Merckelbach, van Haften, & Mayer, 1997) involving imaginal and in vivo exposure. The three studies employed both cross-over and independent groups designs with children or adults. In all three studies, therapists had received formal training in EMDR, and all studies employed both verbal report and behavioral avoidance measures. The results of each of the three studies showed that

both EMDR and exposure reduced verbal reports of fear, but that only exposure treatments resulted in significant reductions of behavioral avoidance. The authors concluded that EMDR confers no additional benefits over exposure treatment for spider phobia.

In discussing a companion study (Pitman, Orr, Altman, Longpre, Poiré, Macklin, Michaels, & Steketee, 1996) examining the efficacy of flooding for PTSD, Pitman et al. suggested that EMDR is the preferable treatment. However, Cahill and Frueh (1997) examined both studies and concluded that several methodological limitations (e.g., different inclusion–exclusion criteria, nonrandom assignment to experiments, treatment–medication confounds) render any conclusions regarding the relative efficacy of the two treatments premature. Indeed, Foa and Meadows (1997) and Keane (1998) concluded that the methodological limitations of EMDR outcome studies make EMDR as yet an unvalidated treatment for PTSD, notwithstanding the conclusions of Chambless et al. (1998) and Feske (1998).

Devilley and Spence (1999) directly compared EMDR with a cognitive-behavioral treatment (Foa, 1995; Foa, Rothbaum, Riggs, & Murdock, 1991) for PTSD. Subjects diagnosed with PTSD were assessed for PTSD symptoms with self-report and clinician-administered questionnaires and then randomly assigned to either EMDR or Cognitive-Behavioral Therapy (CBT). All subjects received nine treatment sessions of either treatment, where CBT consisted of prolonged imaginal exposure, stress inoculation training, and cognitive therapy. Treatments were videotaped for treatment fidelity and subjects were assessed before and after treatment, and at 1-year follow-up. The results showed that CBT was statistically and clinically more efficacious than EMDR at both posttreatment and at follow-up. Although the two treatments were rated as equally distressing, CBT was rated as more credible and generated higher expectancies for change. Effect sizes were similar to those shown by previous research using the same measures.

Component Controls

The theory underlying EMDR's efficacy is based on the importance of eye movements or some other stimulation such as finger taps (Shapiro, 1994a, 1994b, 1995a). However, research has shown that imagery without eye movements (or other external stimulation) results in reliable change on the same outcome measures (e.g., Bauman & Melnyk, 1994; Boudewyns et al., 1993; Boudewyns & Hyer, 1996; Devilly et al., 1998; Dunn, Schwartz, Hatfield, & Weigele, 1996; Feske & Goldstein, 1997; Foley & Spates, 1995; Gosselin & Matthews, 1995; Hazlett-Stevens et al., 1996; Pitman, Orr, Altman, Longpre, Poiré, & Macklin, 1996; Renfrey & Spates, 1994; Sanderson & Carpenter, 1992). Only one study (D. L. Wilson, Silver, Covi, & Foster, 1996) has reported evidence supporting the necessity of eye movements, but this study is seriously flawed on methodological grounds, including assignment to treatment conditions, confounding of treatment conditions with the method of psychophysiological assessment, and inappropriate statistical analyses (see Lohr et al., 1998). Thus, any apparent change following EMDR is most likely a function of the imagery exposure that is common to both treatments (Muris & Merckelbach, 1997). The same shared process appears to be at work when comparing EMDR with in vivo exposure (Muris et al., 1997, 1998).

Moreover, the same studies comparing EMDR with a no movement control show no difference in either immediate (e.g., Boudewyns & Hyer, 1996; Devilly et al., 1998; Foley & Spates, 1995; Gosselin & Matthews, 1995; Pitman et al., 1996) or long-term (Dev-

illy et al., 1998; Devilly and Spence, 1999; Feske & Goldstein, 1997) efficacy. Although rapid eye movements during sleep appear to play a role in the processing of memories (Winson, 1990), the apparent irrelevance of eye movements to the EMDR protocol calls into question the hypothesis that EMDR works by stimulating rapid eye movement sleep:

Further, the effect of eye movements in no way contradicts the potential effects of other stimuli. Clearly, even if treatment effects do prove to be linked to REM, this does not discount other possibilities in the *waking state*, simply because the body in sleep is incapable of manufacturing external auditory tones, lights, or hand-taps. (Shapiro, 1993, p. 420)

In summary, the most recent controlled research on EMDR suggests that the effects of EMDR are limited largely to verbal report indices, eye movements, and other lateral stimulation unnecessary for clinical improvements, and the observed effects of EMDR are consistent with nonspecific factors, such as factors common to exposure treatments. The findings and methodological limitations are summarized in tabular form in Lohr et al. (1998).

The Professional Evaluation of EMDR

It should be noted that some proponents of EMDR (Greenwald, 1997; Rogers, 1996) have argued that EMDR has been held to higher standards of validation than other treatments for the same conditions. However, Lohr et al. (1998) showed that when the same methodological standards used for extant treatments (Foa & Meadows, 1997) are applied to EMDR, there is no compelling evidence that EMDR is more effective than alternative treatments (e.g., exposure or component control procedures). Indeed, the limitations of EMDR theory and research are sufficiently apparent that EMDR is used as an object lesson in basic problems of research methods in a widely adopted introductory psychology text (Bernstein, Clarke-Stewart, Roy, & Wickens, 1997).

Recent critiques of EMDR (DeBell & Jones, 1997; Hudson, Chase, & Pope, 1998; Muris & Merckelbach, 1999) have expressed caution regarding the widespread adoption of EMDR based on the research evidence. Indeed, there is little evidence to support the extraordinary claims of the most vocal promoters of EMDR (Fensterheim, 1996; Shapiro, 1995a; Shapiro & Forrest, 1997) or the enthusiasm of some mental health practitioners who believe in its unique efficacy. Adherents of EMDR, however, have often resorted to a variety of explanations for negative findings. When early studies (e.g., Jensen, 1994; Sanderson & Carpenter, 1992) failed to support the effectiveness of EMDR (or eye movements), Shapiro (1995a) claimed that researchers had not received proper training, and that a fair test of the method had not been accomplished. When researchers received the sanctioned Level I training and conducted controlled studies yielding null results (e.g., Lohr, Tolin, & Kleinknecht, 1995; Pitman, Orr, Altman, Longpre, Poiré, & Macklin, 1996), Level II training became required, and the null results were dismissed as a result of incomplete training (Shapiro, 1995b, 1996b). Thus, the issue of treatment fidelity was used to discount negative findings. It is important to note, however, that no published research demonstrates the necessity of formal EMDR training. Moreover, EMDR training has not been shown to increase adherence and competence regarding the treatment protocol, nor has it been shown to vary systematically with client outcomes. The only empirical findings

regarding these matters show that the correlation between ratings of treatment fidelity and magnitude of EMDR's clinical effect appears to be relatively low (Lohr et al., 1998; Pitman et al., 1996; R. K. Pitman, personal communication, October 21, 1996), although this issue warrants additional research. For a more detailed analysis of treatment fidelity in EMDR research, see Rosen (1999).

The discrepancy between the meager research support and the extensive promotion of EMDR may be due in part to improper allocation of the burden of proof. McFall (1991) argued that the burden of proof of positive effects should rest on those who implement and promote novel therapies. Thus, it is reasonable to expect proponents of new treatments to clearly and convincingly answer such questions as, "Does your treatment work better than no treatment?"; "Does your treatment work better than a placebo?"; "Does your treatment work better than standard treatments?"; and "Does your treatment work through the processes you claim it does?" Affirmative answers to these questions require high quality evidence, and the burden of proof ought not be placed on those who raise the questions. It is our opinion that the proponents of EMDR have not met their reasonable burden of evidence, but have often acted as if they have (Shapiro, 1995a).

DISSEMINATION OF INFORMATION REGARDING EFFICACY OF EMDR

Professional Communication

Despite the unconvincing evidence for incremental efficacy of EMDR, the professional communication of the clinical effectiveness of this treatment has continued unabated. In the definitive book on EMDR, Shapiro (1995a) presented the extant research in a light favorable for commercial promotion, and a subsequent book (Shapiro & Forrest, 1997) describing EMDR as a *breakthrough therapy* has been marketed to the consuming public. Professional communication has been accelerated by the use of the electronic media, such as specialty networks and list-servers (Traumatic-stress@freud.apa.org, EMDR@sjvm.stjohns.edu, and the EMDR Institute, Inc. World Wide Web site). The list-servers provide a means of exchanging information about EMDR. They also provide a forum for individuals who identify themselves as EMDR trainers or facilitators and who advance strong claims regarding EMDR's efficacy and clinical applications.

EMDR in the Media

Advocates of EMDR also have made wide use of both print and broadcast media to promote the technique directly to the public. Although presentations of clinical innovations and psychological research findings via various public media are widespread, the case of EMDR is unique in several respects. Most significantly, extremely strong claims have been routinely made about the effectiveness of EMDR for a wide range of disorders, using descriptors such as breakthrough technique (Shapiro & Forrest, 1997) representing a paradigm shift (Shapiro, 1995a) in psychology. To our knowledge, no other psychosocial treatment has generated the degree of media attention across a wide range of venues in such a short amount of time since its introduction. We recognize that the proponents of EMDR cannot be held accountable for inaccurate or exaggerated media coverage of this technique. Nevertheless, a brief examination of the media coverage of EMDR helps to provide a context for understanding the rapid rise in the popularity of this method.

Following a story that appeared on April 12, 1994 in *The Washington Post*, there occurred widespread national (*New York Magazine*, May 9, 1994; *Newsweek*, June 20, 1994; *Philadelphia Inquirer*, June 26, 1994; Elias, 1994) and international (*Der Spiegel*, May, 16, 1994) coverage of EMDR. In the broadcast media, segments on EMDR have aired on the ABC News magazine *20/20* (July 29, 1994), and on National Public Radio's *Morning Edition* (August 15, 1994). The majority of the popular media stories present EMDR as a clinical breakthrough of impressive, perhaps even miraculous proportions. In many cases, anecdotes of persons cured of various problems are presented as compelling evidence of its effectiveness, whereas the scientific status of EMDR is either distorted or ignored. For example in 1994, the ABC News Magazine *20/20* described EMDR as an "amazing new therapy. . .that rescues people overwhelmed by traumatic memories," and as a "miraculous new therapy. . .that works in cases where years of conventional treatment have failed." The majority of the story focused on three clinical anecdotes of trauma victims successfully cured by EMDR, as well as an interview with Francine Shapiro discussing her discovery of the technique. The only hint of critical comment was two sentences totaling 15 seconds in an 11-minute story. The show's host briefly noted that there were critics of the treatment who questioned its validity. This skepticism, however, was immediately dismissed by the host: "But don't try telling this to Eric. . . [the client]" No airtime was allotted to critics of EMDR, despite the fact that a leading critic was interviewed extensively on camera, and spent several hours reviewing the scientific evidence concerning the technique with the show's producers.

The often sensationalistic coverage of EMDR in the popular media is perhaps understandable. The major purpose of the popular media is entertainment in the service of selling goods and services (Nelkin, 1996). On occasion, however, professional journalists have presented a balanced view of EMDR. For example, the June 20, 1994 *Newsweek* article and a recent news story by Talan (1998) are examples of reasonably balanced presentation of the issues. In the popular media, however, journalistic objectivity is frequently displaced by an emphasis on presenting a story that will sell well to the public.

The public is understandably interested in developments in clinical psychology. Moreover, most psychologists recognize the potential for their work to be exaggerated or otherwise distorted by the popular media. Psychologists do not, of course, have direct control over the content or style of media presentations made by journalists. Nevertheless, they have a responsibility to attempt to ensure that their statements, particularly those concerning novel developments, are objective, balanced, and empirically supported. Unfortunately, it appears that some proponents of EMDR have not approached the media with this reserve. Examples include interviews with EMDR promoters (Coates, 1996) and news stories of magical cures (Oldenberg, 1995).

THE NATURE OF PSEUDOSCIENCE

Many of the proponents of EMDR have made extensive use of information processing meta-language to characterize pathology and the process of therapeutic change (e.g., Shapiro, 1995a). In this way, EMDR is made to appear to be both scientific and scientifically validated. We suggest that the promotion of EMDR provides a good illustration of pseudoscience in general and of how pseudoscience is marketed to mental health clinicians, some of whom may be relatively unfamiliar with the published research on EMDR.

Although philosophers of science have yet to reach complete consensus on the definition of pseudoscience, most definitions share a common core of features. The definition of pseudoscience is probably not a categorical one for which individually necessary and jointly sufficient features can be identified. Instead, the distinction between science and pseudoscience is best viewed as noncategorical or prototypical. The more features of pseudoscience a therapeutic enterprise exhibits, the more suspect it becomes as pseudoscience.

The traditional demarcation between science and pseudoscience hinges on the concept of falsifiability. A theory is scientific if, and only if, its proponents can specify a priori what findings would refute it (Popper, 1965). Thus, the proponents of a scientific position should reasonable and substantively be able to answer the question; "What observable results would lead you to acknowledge that your claim has been falsified?" In scientific psychotherapy, a reasonable answer would be the following: When reasonably well-designed research shows that this therapy is no more effective than no treatment, placebo, or an alternative validated treatment.

Disconfirmation is usually based on the test of predictions that derive from a theory. According to Lakatos (1970), scientific theories are characterized by two crucial components: (a) a hard core of fundamental presuppositions, and (b) a protective belt of auxiliary hypotheses required to test the theory in question. Scientific theories are almost always tested in conjunction with one or more auxiliary hypotheses, that is, hypotheses not directly relevant to, but nonetheless needed to test, the substantive theory of interest (Lakatos, 1970, 1978; Meehl, 1978, 1993). When the results of a test fail to corroborate a theory, the theory is virtually never immediately abandoned. Instead, its advocates typically perform a strategic retreat to the protective belt to modify or tinker with its embedded auxiliary hypotheses (e.g., measure of anxiety was not sufficiently sensitive or intervention was not delivered properly). Sometimes such hypotheses are legitimate alternative explanations, and some strategic retreats can be justified when they increase the theory's content and predictive power (Meehl, 1993).

In the case of pseudoscience, however, auxiliary hypotheses are invoked simply to explain away results that would otherwise place the original hypothesis in doubt. Under these circumstances, auxiliary hypotheses provide a means by which disconfirmation of the experimental hypothesis can be avoided. For example, when controlled tests of EMDR showed no effects of eye movements (Bauman & Melnyk, 1994; Boudewyns et al., 1993; Boudewyns & Hyer, 1996; Foley & Spates, 1995; Gosselin & Matthews, 1995; Pitman et al., 1996; Sanderson & Carpenter, 1992), the null effects were explained away by reinterpreting the EMDR technique as a complex method with many other effective components (Fensterheim, 1996; Hyer & Brandsma, 1997; Shapiro, 1994a, 1995a).

Lakatos (1970) distinguished science from pseudoscience on the basis of progressive versus degenerating research programs. In a progressive research program, theoretical predictions successfully anticipate new data. In a degenerating research program, data tend to precede theory. Pseudoscientific research programs are those that: (a) have degenerated to the point of being incapable of producing corroborated hypotheses, but (b) are nevertheless proclaimed by their proponents as progressive. Despite such proclamations, pseudoscientific theories are much like the Red Queen in Lewis Carroll's, *Alice Through the Looking Glass* (Carroll, 1872), who is always "running just to keep in the same place." Unexpected, disconfirmatory, or both types of findings repeatedly send pseudoscientists into retreat to the protective belt to explain away the anomalies. In the case of EMDR, null results have often been interpreted as a

consequence of inadequate training (Greenwald, 1994, 1996; Shapiro, 1995a, 1996a), invalid application of the protocol by researchers (Shapiro, 1995a, 1998b), or both. When comparable effects are found for control procedures intended to manipulate the effects of eye movement, EMDR's proponents have argued that the control procedure actually is a variant of EMDR (Boudewyns & Hyer, 1996; Hyer & Brandsma, 1997; Renfrey & Spates, 1994; Shapiro, 1995a). As an example of pseudoscientific practice, Shapiro (1998a) interpreted the negative findings comparing EMDR to the component control procedure in Pitman et al. (1996) in the following way:

This [control procedure] duplicated the focused attention, rhythmical aspect, and bilateral stimulation of the guided eye movements all in one condition. It was unsurprising that there were no differences. To complicate it further, the success of focusing on a dot may not even rule out the possibility of bilaterality, since the optic nerve is crossed to both hemispheres—and maintaining the focus demands bilateral muscle stimulation to hold the gaze.

The last sentence of this quotation illustrates the invocation of an ad hoc hypothesis that makes the theoretical rationale for lateral stimulation in EMDR difficult, if not impossible, to falsify.

Bunge (1967, 1991) described several additional key features shared by most pseudosciences. First, pseudosciences typically do not “ground (their) doctrines. . .in our scientific heritage” (Bunge, 1967, p. 36). In other words, pseudosciences tend not to draw or build on existing scientific concepts, but instead purport to create entirely novel paradigms. In the case of EMDR's modification of anxiety, there is little discussion of the learning mechanisms typically thought to be responsible for treatment effects in the anxiety disorders, such as habituation or extinction. There is instead a considerable discussion of neuronetworks, bioelectric valences, and other pseudoneurological concepts (Shapiro, 1995a). Shapiro (1995a) also argued that EMDR is the first paradigm shift in psychology since Freud (pp. v, 12–17). Second, pseudosciences are not self-correcting: A pseudoscientific research program interprets every failure as confirmation and every criticism as an attack (Bunge, 1967). Third, independent evaluations of EMDR's clinical effectiveness (Lohr, Tolin, et al., 1995) or of the methodological rigor of EMDR research (Acierno et al., 1994; Lohr, Kleinknecht, et al., 1995) have often been criticized as erroneous or incompetent (Shapiro, 1996b). Fourth, the primary goal of pseudoscience is persuasion and promotion, rather than truth seeking through the corrective skepticism of the scientific enterprise. In the case of EMDR, the treatment is aggressively marketed to mental health professionals and the general public (EMDR Institute, Inc., 1995, 1996; Shapiro & Forrest, 1997) without reference to evaluation by independent scholars (Acierno et al., 1994; DeBell & Jones, 1997; Foa & Meadows, 1997; Herbert & Mueser, 1992; Hudson et al., 1998; Keane, 1998; Lohr, Kleinknecht, et al., 1995; Tolin, Montgomery, Kleinknecht, & Lohr, 1995).

THE MARKETING OF EMDR PSEUDOSCIENCE

Pratkanis and his colleagues described the commercialization of persuasion (Pratkanis & Aronson, 1991) and the selling of pseudoscience (Pratkanis, 1995) as related, social influence processes. The promotion of pseudoscience involves a number of social psychological principles that have been successfully used by those who sell commodi-

ties (materials, treatments, and ideas) to the public. We contend that many mental health providers, consumers, and health care agents have overestimated the efficacy of EMDR as a result of age-old fallacies of judgment.

Marketing Tactics

Pratkanis (1995) described the way in which pseudoscience is marketed through specific promotional tactics: the creation and use of phantom goals, the construction of vivid appeals, the use of pre-persuasion, the use of the rationalization trap, and the establishment of a professional granfalloon. The initial sales tactic is the creation of phantom goals, and the development of alternative means to attain them. Phantom alternatives, according to Pratkanis and Farquhar (1992), are desirable goals that appear credible but are currently unavailable. In the case of PTSD, the phantom is the cure (Shapiro, 1989) for a relatively refractory condition (Solomon et al., 1992) using a breakthrough (Shapiro & Forrest, 1997) alternative. Shapiro's (1989) original account of treatment that claimed a 100% success rate for traumatic memories in a single treatment session is an example of this tactic.

A related process is the construction of vivid appeals to persuade potential consumers. Vividly presented case studies can be far more convincing than scientific data. As a result, isolated hits typically receive greater weight than the more informative negative results in the laboratory. Authors of uncontrolled case reports have sometimes made extraordinary claims regarding the speed, magnitude, and generality of EMDR's effects. For example, McCann (1992) reported that he not only cured a case of refractory PTSD caused by a catastrophic fire, but that the patient made dramatic life changes after brief EMDR treatment. Marquis (1991) used case studies to argue that EMDR was effective not only for PTSD but for depression, eating disorders, and learning disabilities. Other case reports claim that EMDR is an effective treatment for the distress associated with sexual dysfunction (Wernik, 1993), alcoholism (Shapiro, Vogelmann-Sine, & Sine, 1994), and dissociative disorders (Lazrove, 1994). Such case studies can serve to undermine the persuasive power of adequately controlled experiments that yield unconvincing results. The vivid individual case report can be more compelling to consumers than are substantive, but dry, randomized clinical trials. Some individuals may indeed respond positively after applying EMDR, but it is not difficult to find individuals who respond positively after experiencing most any form of intervention.

The use of prepersuasion is a third means of promulgating pseudoscience. Prepersuasion consists of defining the situation or setting the stage in one's favor. One way in which this is accomplished is by interpreting disconfirmatory results in support of prior expectations. Pratkanis (1995) called this the "illusory placebo effect" (p. 23). In the case of EMDR, ambiguous or negative findings are interpreted in favor of EMDR. The illusory placebo effect capitalizes on auxiliary hypotheses (Meehl, 1978, 1990; Popper, 1965, 1983) in explaining away contrary or undesirable results. For example, Renfrey and Spates (1994) found no differences in outcome between EMDR and a control condition in which subjects tapped their fingers rather than moving their eyes. The appropriate interpretation of this null result is that EMDR is not better than a placebo treatment. Nevertheless, Renfrey and Spates (1994) interpreted these results as evidence that both EMDR and finger tapping are viable treatments. In their review of Renfrey and Spates's study, the EMDR Institute, Inc. (1996) described the control condition as "EMDR using fixed visual attention" (p. 3); that is, as eye movement

treatment without eye movement. Thus, even null results are interpreted as supporting EMDR's efficacy. We agree with Pitman, Orr, Altman, Longpre, Poiré, and Macklin (1996) that when experimental control reveals the null effect of eye movements, the neurological theory of eye movements must be rejected. In addition, we must seriously question the unique nature of EMDR relative to other imagery exposure treatments.

A fourth process involves the use of a rationalization trap. The rationalization trap is based on the principle that quick commitment on the part of the consumer changes the consumer's perspective. Psychologist consumers who might initially have been skeptical are compelled to rationalize the commitment they have made and will alter their beliefs accordingly. During the past few years, the rationalization trap was achieved by requiring all EMDR trainees to make an initially small, but psychologically important, commitment. Prior to the publication of Shapiro (1995a), trainees were required to sign a consent form stating because EMDR is a powerful procedure that could be dangerous in the wrong hands, the trainee must agree not to teach others how to perform the technique. Another consent form states that because of its potential power, EMDR could be dangerous to trainees suffering from certain psychological disorders and that trainees must assume responsibility for any negative effects they might experience during the practice sessions. Shapiro (1995c) justified these forms on the basis of client protection and assurance of treatment fidelity. Although these claims may have some merit, they have the added psychological effect of persuading the trainees (even before the training has taken place) that: (a) EMDR is a powerful, quasi-mystical procedure, and (b) training by official EMDR Institute, Inc. representatives is crucial. They ask the trainee to affirm the conclusion that is at issue: the question of EMDR's efficacy. Bearing this in mind, it is perhaps understandable that Lipke (1994) reported that 77% of the most highly trained participants (Level II), surveyed after completion of training, agreed that extensive training was a vital step in using the technique.

A fifth pseudoscientific process is the establishment of what Vonnegut (1976) called a "granfalloon": a proud and meaningless association of human beings. Granfalloon is easy to create and establish a sense of social identity among the consumers of the persuasive message. Once such a group has been established, individuals become reluctant to express beliefs that are inconsistent with those of the group. In the EMDR granfalloon, trainees have historically signed a vow not to train others (i.e., those not in the granfalloon), after which they observe the EMDR Institute-approved trainer in the company of facilitators, a specially identified group of clinicians who have particular responsibilities at training sessions and whose special status is officially recognized by the EMDR Institute, Inc. (Leeds, 1996). The initial training workshop is followed by Level II training, during which distinctive treatment protocols and special clinical applications are discussed. This process continues when the trainee is invited to become a member of the EMDR Network, an assemblage that provides special privileges such as a newsletter, research summaries, and patient referrals. There follows eligibility to participate in an EMDR electronic mail list (EMDR@sjuvn.stjohns.edu) and membership in the Eye Movement Desensitization and Reprocessing International Association (EMDRIA).

Participants in the workshops also receive certificates: one for "Attendance" after Level I training, and another for "Completion" after Level II training. The certificates are attractive, suitable for framing, and accompanied by a foil seal in the center of which is the name of the developer of EMDR. Such certificates are also known as the "title licenses" that confer

no formal or professional status and have no relationship with state licensing or certification boards (Bryant, 1997). In their book *Crazy Therapies*, Singer and Lalich (1996) noted the use of such certificates as a frequent sales tactic among innovators of newly invented psychological cure-alls, and pointed out the persuasive value such certificates carry for the public.

The granfalloon also functions as a means of acquiring specialized information. Collective compliance with a "no training" contract likely creates a sense of group identity among trainees, and as a consequence, trainees may gain a sense of possessing special knowledge. The group identity of EMDR trainees is solidified through a number of means, such as training in specialized terminology (Shapiro, 1995a) that is unique to those who are members of the granfalloon. Certain fears are known as "process phobias". Eye movements are performed in "saccade sets." Anxiety-eliciting thoughts and memories are referred to as "hot spots" and persistent rumination is referred to as "looping." The therapeutic modeling of adaptive self-statements is called "cognition installation," the linking of one idea to another is called the "cognitive interweave," and the working through of a troublesome problem is called "cleaning it out." Van Rillaer (1991) referred to this pseudoscientific tactic as "dissimulation." It involves the use of obscurantist language to compensate for an absence of content and to discourage would-be skeptics. Shapiro (1995a) employed this tactic most explicitly in the development of the Accelerated Information Processing model underlying EMDR:

[The] valences of the neural receptors (synaptic potential) of the respective neuro networks, which separately store various information plateaus and levels of adaptive information, are represented by the letters Z through A. It is hypothesized that the high-valence target network (Z) cannot link up with the more adaptive information, which is stored in networks with a lower valence. That is, the synaptic potential is different for each level of affect held in the various neuro networks. . . .The theory is that when the processing system is catalyzed in EMDR, the valence of the receptors is shifted downward so that they are capable of linking with the receptors of the neuro networks with progressively lower valences. . . .(Shapiro, 1995a, pp. 317–318)

This explanation of EMDR mechanisms of action is a paradigmatic example of dissimulation as described by Van Rillaer (1991). It is the use of scientific-sounding terms to provide EMDR with the veneer of science, but not the substance (cf. O'Donohue & Thorp, 1996).

Finally, pseudoscience flourishes when skepticism is devalued. Pratkanis (1995) argued that skeptics are often attacked by pseudoscientists through innuendo and character assassination rather than reasoned argumentation. In this way, the debate is quickly removed from the theoretical and empirical issues at hand (e.g., does a given treatment work?) and instead moves to personal arena of ad hominem assault. Critics of EMDR (Jensen, 1994; Lilienfeld, 1996; Lohr, Kleinknecht, et al., 1995; Tolin et al., 1995) sometimes have been attacked with questions concerning their professional training (EMDR Institute, Inc., 1996; Shapiro, 1996c), ulterior motives, and competence (Shapiro, 1995b, 1995c, 1996a, 1996b, 1996c, 1996d). The questioning of professional competence has also been directed at journal editors (Lipke, 1999) who have recommended publication of articles that have questioned the efficacy of EMDR (Jensen, 1994; Lohr et al., 1998).

Common Practices in EMDR Pseudoscience

Unlike science, which actively seeks empirical disconfirmations, pseudoscience seeks verification through uncontrolled but vivid demonstration. Popper (1965) observed

that proponents of pseudoscience tend to search for and attend to confirming findings (alleged proofs), and to avoid and neglect potentially disconfirming findings (disproof). Moreover, Bunge (1967) observed that “the pseudoscientist, like the fisherman, exaggerates his catch and neglects his failures or excuses them” (p. 36).

Shapiro (1995b, 1995c, 1996b) provided such an analysis to justify the application of EMDR to a wide range of clinical problems. Published accounts that cast doubt on the effects of EMDR are ignored or discounted for a variety of reasons. For example, Shapiro (1995a) alleged that the null findings of researchers who have not had training sanctioned by EMDR, Incorporated, Inc. (Jensen, 1994; Montgomery & Ayllon, 1994a, 1994b) are due to invalid treatment application, when in fact no data exist to support this claim. Indeed, Rosen (1999) analyzed in detail the issue of treatment fidelity in EMDR research and has shown that it is has been used unevenly by proponents of EMDR (Greenwald, 1996, 1997; Shapiro, 1995a) as a means of minimizing scientific data that question the efficacy of the treatment and the theory upon which it is based. Moreover, Shapiro’s (1995a, 1996a, 1996b) evaluations of the research literature stand in stark contrast to independent reviews (Acierno et al., 1994; Foa & Meadows, 1997; Hudson et al., 1998; Lohr, Kleinknecht, et al., 1995; Lohr et al., 1998), which indicate that treatment effects are largely limited to verbal reports of distress. The independent reviews also identify inadequate controls for procedural artifacts (e.g., nonspecific effects) and inadequate comparisons with other treatments that severely limit conclusions regarding efficacy.

The most essential feature of science is the maximization of criticism (Bartley, 1984). Good scientific research is an attempt to expose cherished hypotheses to stark criticism in order to gain a better understanding of errors in one’s web of belief. Genuine science is not a craving to be correct, but rather a craving to learn where we are wrong so that our errors can be eliminated. It is through error elimination that knowledge grows. Thus, the best and most efficient way of rooting out error in our beliefs is to expose them to severe criticism and strong empirical tests (Borkovec & Bauer, 1982; Borkovec & Castonguay, 1998; Hazlett-Stevens & Borkovec, 1998; Platt, 1964). Severe criticism is manifested in the use of rigorous methodological controls so that one does not make the mistake of believing that the therapy causes improvement when it does not. For example, a design that does not include a placebo or procedural control may allow the experimenter to believe erroneously that the treatment was uniquely effective, when its effects were in fact due to nonspecific factors (Lohr et al., 1999).

The creative application of scientific skepticism, however, has not frequently characterized the publicity surrounding EMDR. Instead, the emphasis has been on personal anecdote and clinical observation, both of which serve as the mode of communication and a means to increase belief in the communicator. We are left with a process of belief promotion rather than science. It is this context that has led a number of commentators to characterize EMDR as pseudoscience in both contemporary (Lohr, 1996; O’Donohue & Thorp, 1996) and historical (McNally, 1996, 1999) perspective.

It should be noted that many of the criticisms of pseudoscience in this paper are not limited to EMDR or other Power Therapies. Indeed, colleagues and reviewers have correctly pointed out that several mainstream cognitive-behavioral interventions also suffer from a lack of empirical data regarding specific treatment effects and have been vigorously promoted in a fashion that far exceeds the available data. For example, Wessler (1996) characterized Rational Emotive Behavior Therapy (REBT; Ellis,

1993, 1994) as pseudoscientific for some of the same reasons we have characterized EMDR as pseudoscientific:

REBT maintains hypotheses for which there is no empirical support, and its hypotheses are largely untestable. Its founder worked in isolation, particularly developing the parallel process theory of emotion, which has attracted so little attention from serious researchers and theorists in the field that the necessary studies have not been done. What little research has been done does not support REBT theory but this has been ignored. REBT has become, ironically, a set of nonempirical assertions masquerading as a scientific psychotherapy. (Wessler, 1996, p. 52)

A thorough critique of all forms of cognitive-behavioral treatment is beyond the scope of this paper. Although we do not wish to take a stand on the merits of Wessler's criticisms of REBT, it appears likely that the differences between the promotion of EMDR and some forms of cognitive-behavioral treatment are primarily of degree, rather than of kind. However, the discrepancy between the marketing and the data has been particularly wide in the case of EMDR. Although we do not advocate that EMDR be held to higher standards than other treatments, we do suggest that the claims and practices of EMDR proponents merit particular attention due to their extraordinary nature.

ACCEPTANCE OF EMDR BY PROFESSIONAL PSYCHOLOGISTS

In the sale of any commodity, a transaction takes place between two parties: the seller and the purchaser. Although we have emphasized the selling of EMDR, it is also necessary to examine aspects of its purchase. In an ideal scientific world (McFall, 1991), the decision to purchase and use clinical procedures would be determined solely by the content of academic and professional training (knowledge) of the purchaser and by the empirical validation of those procedures (commodity). The clinical armamentarium would then consist of effective and validated assessments and treatments. We do not live in an ideal world, however, and clinicians purchase procedures outside the context of formal training and research. Indeed, the split between scientist and practitioner appears to be ever widening (Fox, 1996), and it is important to identify the processes by which the incorporation of unvalidated procedures occurs. One process is that of clinical and financial expediency. Novel, unique, or intractable cases may require the application of experimental procedures, but they should be explicitly identified as such.

ALTERNATIVE WAYS OF KNOWING IN PROFESSIONAL PSYCHOLOGY

Other processes more subtle and substantive dissociation of the practitioner from the body of empirical science. The dissociation is based partly on the professionalization of psychology and the development of an alternative model of clinical knowledge (Tsoi Hoshmand & Polkinghorne, 1992). This alternative model is based on postmodern epistemology (Kvale, 1992). The increasing influence of postmodern attitudes in academic circles, as well as the reasons underlying this trend, have been documented by Gross and Levitt (1994) and Sokal and Bricmont (1998). Postmodern thinking may no longer be limited, however, to the halls of the academy. Although postmodernism is difficult to define, its central tenets include the propositions that: (a) all knowledge

is contextual and therefore relative, and (b) science represents only one mode of discourse among many, and that scientific claims to knowledge are no more privileged than alternative claims (e.g., assertions based on intuition or personal experience). Most postmodernists therefore believe that the concept of truth is a dangerous and misleading illusion. Because all facts are situated in a specific cultural and historical context, such facts can never attain the status of universal knowledge claims. Postmodern modes of thinking lend themselves in many cases to a willingness to accept claims on the basis of subjective convictions. According to most postmodernists, such convictions are not inherently inferior to beliefs derived from systematic scientific research. As Englebretsen (1995) noted:

Premoderns and moderns based their willingness to accept or reject a speaker's claim on their judgment of how well it seemed to fit the facts of the case and to what extent it was logically consistent with the speaker's other claims or assumptions. By contrast, postmoderns 'play the believing game,' accepting the speaker's claim according to the degree of sincerity the speaker exhibits. Truth and coherence are no longer allowed to bully us in our communicative efforts. (p. 52)

Some postmodern thinkers in psychology have further suggested that psychotherapeutic procedures should be based as much on validation through practice (Kvale, 1992), that is, on a tacit learning of what works by means of experience, as on research findings derived from controlled outcome studies (see also Schon, 1983). Tsoi Hoshmand and Polkinghorne (1992) similarly argued that clinical reflection and intuition (i.e., "practicing knowledge") should be placed on a par with scientific knowledge in the formal training of psychotherapists. They noted that "in relating theory to practice, research traditionally served as gatekeeper for entry into a discipline's body of knowledge," and that "In practicing knowledge, however, the test for admission is carried out through the use of reflective thought" (Tsoi Hoshmand & Polkinghorne, 1992, p. 62; see also Polkinghorne, 1992). Remarkably, such discussions contain virtually no mention of the factors (e.g., absence of immediate and consistent feedback) that often prevent psychotherapists from learning from experience, or of the social cognitive errors (e.g., selective recall, availability biases, and confirmation biases) that tend to create an illusion of such learning in its absence (Dawes, 1994; Dawes, Faust, & Meehl, 1989).

Are we stretching matters too far to suggest an analogy between postmodern thinking and the premature and uncritical acceptance of EMDR by many practitioners? Regrettably, we do not think so. The disturbingly rapid embrace of EMDR by thousands of clinicians prior to the publication of adequately controlled research suggests a willingness to place personal experience over scientific evidence, to value anecdote and clinical surmise over experimentation. Meehl (1993) warned of this ominous trend in much of modern clinical psychology. His comments serve as a needed reminder to those who might be inclined to dismiss EMDR as an isolated example of pseudoscience:

My teachers at Minnesota (including Hathaway, Paterson, Skinner, and Feigl). . . shared what Bertrand Russell called the dominant passion of the true scientist—the passion not to be fooled and not to fool anybody else. Only Feigl was a positivist, but all of them asked the two searching questions of positivism: "What do you mean? How do you know?" If we clinicians lose that passion and forget those questions, we are little more than be-doctored, well-paid soothsayers. I see disturbing signs that this is happening and I predict

that, if we do not clean up our clinical act and provide our students with role models of scientific thinking, outsiders will do it for us. (Meehl, 1993, pp. 728–729)

IMPLICATIONS FOR PROFESSIONAL PSYCHOLOGY

If EMDR were the only treatment being commercially promoted, the task of empirical evaluation would be large but not insurmountable. It would take time and professional resources to rectify the commercial excesses, but the effort would be worth the outcome. For example, several years elapsed following the introduction of facilitated communication for the treatment of severe autistic and developmental disorders before its empirical debunking was convincing (Delmolino & Romanczyck, 1995; Jacobson et al., 1995). There are, however, a large number of largely or entirely unvalidated therapies being actively marketed to those providing traumatology services, including TFT (Callahan, 1995; Gallo, 1995), TIR (Gerbode, 1985, 1995), VKD (Bandler & Grinder, 1979), and Critical Incident Stress Debriefing (CISD; Mitchell, 1988). These interventions represent a cottage industry that is being actively promoted to the mental health profession via workshop training that is outside the context of substantive evaluation (Figley, 1995, 1997; Figley & Carbonell, 1996). These techniques either have not been empirically investigated using controlled studies (Gist, 1996; Gist, Lubin, & Redburn, 1998; Hooke, 1998) or have been found to be no more effective than control procedures (Lohr et al., 1998, 1999). Moreover, two of these procedures are now being promoted and marketed for the treatment of emergency service personnel (Solomon, 1996). The promotion involves a psychological service that combines CISD, a procedure that appears to have little or no effect on subsequent trauma symptoms (Gist et al., 1997, 1998; Harris, 1997), with EMDR, a procedure that has been found to be no more effective than control conditions with which it has been compared (Foa & Meadows, 1997; Keane, 1998; Lohr et al., 1998, 1999; Muris & Merckelbach, 1999).

How are psychologists to understand the phenomenon of EMDR? We suggest that the field of psychotherapy has been insufficiently rigorous regarding the evidentiary credentials of psychotherapeutic procedures (Borkovec & Castonguay, 1998; Hazlett-Stevens & Borkovec, 1998). EMDR appears to possess the outward form of science but little of its substance. The appearance of science, such as case studies reported in peer reviewed journals, selective publicity of weak tests of effectiveness, scientific-sounding jargon, and seemingly cautious promotion (“only clinicians with sanctioned training should use it”) serve to obscure EMDR’s lack of scientific substance and have persuaded many of its scientific legitimacy. Although there is little evidence to support the strong claims of EMDR’s proponents, this treatment has resulted in a significant financial return. Twenty-five thousand trained mental health clinicians (EMDR Institute, Inc., 1997; Shapiro, 1998b) at a several hundred dollars per capita amounts to a significant sum.

PRACTICAL CONSIDERATIONS FOR PROFESSIONAL PSYCHOLOGISTS

When experimental research consistently demonstrates that EMDR without eye movement or lateral stimulation is as effective as the full treatment procedure, it is no longer reasonable for clinicians to learn the clinical intricacies of their hand movements (or the use of automated flashing light bars and sound generators) while misin-

forming their clients that they can expect accelerated information processing as a consequence. Nonetheless, workshop training in the full EMDR method continues at an extraordinary pace (Rosen, 1996), with large numbers of mental health clinicians learning hand movements and other methods of tactile stimulation. In the context of these paradoxical circumstances, we offer the following recommendations to practicing clinical and counseling psychologists, and other mental health professionals.

First, we recommend that psychologists remember the history of failed therapies (Rosen, Lohr, McNally, & Herbert, 1998). These are therapies that at first induce high levels of expectation and miraculous cures, but ultimately fail the test of time (Walsh, 1923). We recommend a rereading of Frank's (1961) classic text, *Persuasion and Healing*, and other works (e.g., Walsh, 1923) on placebo effects and the history of failed cures. We recommend discussing with colleagues the decision rules by which the clinician decides when to ignore and apply new treatment procedures. Add to these rules the caveat that if a procedure is heavily promoted through extraordinary claims, those claims must be accompanied by equally extraordinary empirical evidence. The nature of the evidence should not be based on clinical testimony or on vivid case studies. Instead, the evidence should rest upon strong and sophisticated control conditions that can identify the effects of procedural artifacts and nonspecific factors (Borkovec & Castonguay, 1998; Lohr et al., 1999). In one of the earliest texts on the practice of psychotherapy, Walsh (1912) encouraged the same caution:

We have had ever so many more experiences of disappointment after the introduction of remedies which cured at the beginning of their history, than we have had of remedies that maintain themselves after prolonged experience. It is the attitude of skepticism and suspended judgment until after a remedy or method of treatment has been tried on many different kinds of cases in varying circumstances that constitutes the only sufficient safeguard against repeating the unfortunate errors of old times. . . (p. 51)

It is true that the attitude of skepticism carries the necessary risk of delaying the implementation of new and efficient treatments. However, an attitude of uncritical acceptance carries greater risks, both for the client and the profession (Jacobson et al., 1995; Valenstein, 1986). In closing, we would like to distill our analysis of EMDR by referring to the late astrophysicist Sagan's (1996) book, *The Demon Haunted World*. In discussing skepticism as the central value of the scientific enterprise, Sagan wrote: "Keeping an open mind is a virtue—but, as the space engineer James Oberg once said, not so open that your brains fall out" (p. 187). We believe it is an admonition that contemporary professional psychologists should heed seriously.

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