EMDR in the Treatment of Chronic Pain

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Chronic pain presents a persistent and significant clinical challenge. Research examining commonly used psychotherapeutic treatments suggests that the results are not always well maintained, and that pain often is unrelieved. Continued exploration of new and more effective approaches is necessary. This article outlines an application of Eye Movement Desensitization and Reprocessing (EMDR), developed to improve coping and reduce chronic pain and suffering. The effectiveness of the EMDR Chronic Pain Protocol was investigated with three adult chronic pain sufferers. Intervention effectiveness was measured at baseline, during, and postintervention, with a two-month follow-up. All clients reported substantially decreased pain levels, decreased negative affect, and increased ability to control their pain following treatment. These results indicate that EMDR may be efficacious in the treatment of chronic pain and that further research is warranted. © 2002 Wiley Periodicals, Inc. J Clin Psychol 58: 1505–1520, 2002.

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Chronic pain is estimated to affect 70 to 80% of adults at some time (Deyo, Cherkin, Conrad, & Volinn, 1991) and is associated with a range of psychological and psychosocial problems including anxiety, depression, unemployment, marital breakdown, and suicide (Adams, 1997; Hitchcock, 1994; Liebeskind, 1991). Until the latter half of the 20th century when the first psychological theory of pain gained acceptance, there were no mainstream psychological treatments for chronic pain. Proposed in 1965, Melzack's Gate Control Theory (GCT) was the first theory to recognize that the brain and psychological processes are actively involved in the experience of pain. GCT provided the impetus for extensive research and development of psychological theories and treatments. It is now generally accepted that chronic pain is caused by a combination of physical and psychological factors and that the best approach is multidisciplinary and includes psychological treatment (Fordyce, 1976; Gatchel & Turk, 1996; Turk & Meichenbaum, 1989).

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Since the 1970s, psychological treatment of pain has been dominated by a combination of operant conditioning (OC) techniques and cognitive behavior therapy (CBT). OC/CBT approaches are based on the premise that pain and suffering are exacerbated by learned maladaptive thoughts and behaviors and that changing these can reduce the problem (Gatchel & Turk, 1996; Hagglund & Fillington, 1998). Improved coping rather than pain relief is the primary goal of treatment (Gatchel & Turk, 1996, p. 29). There is extensive research that suggests that approaches based on OC/CBT are efficacious (e.g. Morley, Eccleston, & Williams, 1999; Nicholas, Wilson, & Goyen, 1991; Turner, Clancy, McQuade, & Cardenas, 1990; Williams et al., 1996). Such treatments have been found to significantly increase coping and decrease distress. Outcome has been evaluated on measures of psychological distress, such as anxiety and depression, coping, increased activity levels, and reduced reliance on medication.

However, various problems have been noted with OC/CBT treatment and research (e.g. Bradley et al., 1987; Gamsa, 1994; King, 1998; Morley et al., 1999; Turk & Rudy, 1991). High drop-out and relapse rates have been reported (Turk & Rudy, 1991), suggesting that effects are not well maintained. For example, Crook, Weir, and Tunks (1989) reported that 82% of patients were still suffering from pain at a 2-year follow-up. Bradley et al. (1987) reported a dropout rate of 25% and a failure to maintain treatment gains for many patients. In a review article, Turk and Rudy (1991) cited dropout rates of 5 to 46%. Identified methodological problems include selection bias (Crombie & Davies, 1997), measurement problems (Gamsa, 1994; Wilson, 1990), and lack of statistical power (Morley et al., 1999). While more recent studies have reported maintenance of treatment gains at follow-up (Williams et al., 1996), a recent meta-analysis noted that most studies suffer from lack of statistical power (Morley et al., 1999). The authors concluded, "In comparison with best practice in the psychotherapy outcome literature the design and implementation of psychological treatment trials for chronic pain has considerable scope for development" (p. 10).

Extensive medical mismanagement further complicates the situation. Medical mismanagement can exacerbate pain, create emotional distress, and result in disability (Pither & Nicholas, 1991). Examples include misdiagnosis, which has been found to be as high as 47% (e.g., Rao, Rhea, Novelline, Mostafavi, & McCabe, 1998), and undermedication, which was identified in over 50% of cases (e.g., Hitchcock, 1994).

Pain theories and treatments are subject to continuous review and revision. One of the problems noted with GCT is that it fails to explain pain which occurs in the absence of a physical location, such as phantom limb pain (Melzack, 1996). Cognitive Theory, which is one of the theoretical bases of CBT, is challenged by the increasing recognition of the role of emotion in chronic pain (Craig, 1999). LeDoux's (1989) work with fear responses has been pivotal in elucidating the role that emotion plays in determining responses to stressful situations. Emotion is often a core component of pain (LeDoux, 1997; Lenz et al., 1997; Ray & Zbik, 2001), and recent theories of pain recognize the importance of emotional factors in chronic pain. Melzack's Neuromatrix Theory (1996), Rome and Rome's (2000) "Limbically Augmented Pain Syndrome," and Price (1999) all assigned a central role to emotion. The acknowledgment of the importance of emotional factors in pain is not new. However, current theories recognize the role of emotion in pain as more than a simple consequence of negative cognitions and as requiring an appreciation of neurological processes. For example, Price suggested a definition of pain which distinguishes between the physical sensations of pain, the perception of pain (unpleasantness), and the emotional reaction to pain. Rome and Rome proposed a tiered model wherein secondary affects (pain-related and non-pain-related) serve as a gain mechanism to amplify the affective (and possibly the nocioceptive) component of the conscious perception of pain.

These theories also acknowledge the effects of pain on the central nervous system and the role of memory and learning, including previous trauma. For example, Rome and Rome (2000) suggested that repetitive affective stimulation can lead to sensitization of the lateral pain system through cortical projections to the somatosensory cortices, thus providing the "ouch" portion of the pain experience. Projections from the spine to the brain, the medial (limbically connected) pain system, including the prefrontal cortex, are thought to provide the "yuck" component of the pain experience. Rome and Rome considered behavior sensitization, long-term potentiation, and time-dependent sensitization to be mechanisms of neuroplasticity, which serve as amplifiers for biologic reactivity to repetitive/low intensity stimuli. Ray and Zbik (2001) suggested that unresolved traumatic memories may augment the pain experience through affective "loading" of the pain signal (p. 193). This is particularly important since a history of trauma has been found to be highly correlated with chronic pain (Linton, 1997; Wurtele, Kaplan, & Keairnes, 1990).

The increasing appreciation of the role of emotional factors in chronic pain, together with the recognition of neurological aspects, has implications for how chronic pain can be treated. Several authorities have suggested that psychological interventions that work directly through emotions may be very effective (Barber, 1997; LeDoux, 1996; Melzack, 1990; van der Kolk, 2000; Ray & Zbik, 2001). The magnitude of the problem of chronic pain, the problems associated with traditional theories and treatments, together with new developments in theoretical models, indicate that continued exploration of new approaches is warranted.

One promising method is Eye Movement Desensitization and Reprocessing (EMDR). EMDR was initially introduced into the professional literature as a treatment for trauma (Shapiro, 1989, 1995) and has been recognized as efficacious in the treatment of post-traumatic stress disorder (Chambless et al., 1998; Chemtob, Tolin, van der Kolk, & Pitman, 2000). EMDR presents itself as a possible treatment for chronic pain for a number of reasons: (a) EMDR has been found to be effective with trauma, which is recognized as being one of the primary risk factors for chronic pain (Sanders, 2000); (b) chronic pain itself represents a kind of "small-t" trauma, due to the major life-changing events that are typically associated with it such as inability to work, significant loss of income, marital/family stress, etc.; (c) the emotional focus of EMDR appears to be consistent with what we now believe to be the neurophysiological mechanisms of pain, particularly in terms of the involvement of the amygdala, the hippocampus, and the prefrontal cortex; (d) EMDR results in a significant reduction in disturbing feelings and sensations (McCann, 1992; Shapiro, 1989; Wilson, Silver, Covi, & Foster, 1996); and (e) there have been several case reports of EMDR helping to facilitate pain relief (Grant, 2000; Hekmat, Groth, & Rogers, 1994; McCann, 1992; Wilson, Becker, & Tinker, 1997).

Description of EMDR

EMDR is an integrative, psychotherapeutic approach that consists of a desensitization procedure coupled with various interventions designed to bring the client into a more adaptive cognitive and emotional state (Shapiro, 1998). The method is comprised of various elements of traditional approaches together with innovative aspects. Traditional elements include the targeting of present stimuli (behavioral), attention to negative and positive self-attributions (cognitive), recognition of developmental issues (psycho-dynamic), and attention to bodily sensations (somatic). Nontraditional elements include dual focus of attention and bilateral sensory stimulation. Interventions are targeted through somatic, emotional, and cognitive modalities.

In what has been described as an Accelerated Information Processing Model (Shapiro, 1995, 1998), and later an Adaptive Information Processing Model (Shapiro, 2001), Shapiro suggested that EMDR stimulates the information processing system to facilitate a more adaptive resolution of distressing material. Although recent neurological discoveries suggest several hypotheses, the mechanisms by which this is facilitated are yet to be elucidated.

In the basic EMDR trauma protocol (Shapiro, 1995, 2001), treatment begins with thorough assessment and preparation. This includes the identification and prioritization of incidents and issues requiring reprocessing. EMDR utilizes a three-pronged protocol that addresses the past incident that led to the current disturbance, present circumstances that elicit distress, and future events that will require new skills and attitudes.

In the processing of a traumatic event, the patient is asked to focus on the event, with its associated distressing thoughts and feelings. The patient begins by identifying an image that represents the incident, and a related "negative cognition." The negative cognition is the client's current self-appraisal related to the incident, such as "I'm helpless." A "positive cognition" also is obtained, in which patients express a desired self-attribution. An example of a positive cognition is "I can manage my pain." The client's confidence in the positive cognition is assessed by instructing them to rate the felt validity of the statement on the Validity of Cognition Scale (VoC, Shapiro, 1989), where 1 represents "not true" and 7 "completely true." Following this, the patient is asked to identify the emotions that are elicited by the incident. The level of emotional distress is measured using the Subjective Units of Distress Scale (SUDS, Wolpe, 1958), where 0 represents "no distress" and 10 represents "the worst distress possible." Next, the patient is asked to identify the body location of the emotional distress.

The desensitization phase of EMDR follows the previously discussed assessment of the traumatic incident. The patient is instructed to focus on the image, negative cognition, and body sensations while attending to short periods of bilateral stimulation known as "sets." Bilateral stimulation is provided according to standard EMDR protocols (Shapiro, 2001) and includes eye movements, auditory tones, or tapping (Shapiro, 1994). At the end of each set, patients are asked "What do you notice now?" Generally, the new material becomes the focus of the next set of bilateral stimulation. This process continues until the patient reports no distress related to the original incident (i.e., SUDS = 0).

In the next phase of EMDR, bilateral stimulation is used to increase the strength of the positive cognition designated to replace the original negative self-belief and to consolidate the client's cognitive insights. This process continues until the patient reports high confidence in the validity of the positive cognition (i.e., VoC = 6 or 7). The EMDR session concludes with a "body scan" to ensure that all physical tension has been relieved. Any sensations found in the body scan are targeted with more bilateral sets; this continues until the tension is relieved.

In subsequent sessions, the therapist checks with the client to assure that the treatment gains have been maintained by accessing the previously processed targets and ascertaining the present emotional, cognitive, and physiological responses. The goal of EMDR therapy is to produce the most substantial treatment effects possible in the shortest period of time while maintaining client function and preventing emotional overload.

EMDR Chronic Pain Protocol

Because of the medical issues surrounding chronic pain and to be consistent with parameters set by the International Association for the Study of Pain (1995), a five-step, "task-oriented" approach was developed (Grant, 1999).

The five tasks of pain management are:

1. Insure pain is within tolerable levels of severity.
2. Review medical diagnosis and patient's attitude to the diagnosis.
3. Identify and prioritize targets for EMDR reprocessing.
4. Facilitate relaxation and change in pain sensations.
5. Develop psychological pain-management resources.

The first two tasks are designed to ensure medical aspects of treatment are adequate. Tasks 3 to 5 involve facilitating changes in pain sensations and developing new coping strategies.

Pain Assessment

The evaluation of pain is an essential part of the assessment process. It involves taking a subjective measure of pain levels, evaluating the patient's attitude to his or her pain, and ensuring that the pain is being adequately managed. Patients with excessive levels of physical discomfort are frequently anxious and dysphoric, which may mitigate against their engagement in treatment (Gatchel & Turk, 1996). Patients in extreme pain, with significant emotional distress may be unable to perform the focusing and concentration that psychological pain management requires. Given the correlation between trauma and chronic pain, the assessment phase also should include screening for trauma.

Review of Diagnosis

The client's diagnosis and the degree to which he or she accepts it are evaluated. It is generally agreed that a comprehensive history should be taken prior to commencing psychological treatment of pain (Salerno & Willens, 1996; Turk & Meichenbaum, 1989). Given the extent of medical mismanagement, this should include a review of previous medical investigations and treatments, the existence or otherwise of a medical diagnosis, and the psychological effects of medical treatment. Diagnosis often is an overlooked variable in the experience of pain. The presence or absence of a clear medical diagnosis, together with the patient's attitude toward it, must be considered. While the presence of a diagnosis has been found to be a strong predictor of recovery (Brown, 1998), there is no adequate medical explanation in up to 85% of cases of chronic pain (Deyo et al., 1991). Patients who are anxious because their diagnosis is uncertain may have limited motivation for psychological treatment. Once it is established that the patient's pain is within tolerable limits and diagnostic issues have been addressed, it is appropriate to commence psychological interventions to change their pain experience.

Identification of Treatment Targets

The third task of treatment begins with the identification and prioritization of specific issues to be addressed in treatment. Chronic pain sufferers are invariably seeking pain relief, better control over their pain, and relief from suffering associated with pain. It is thus necessary to elicit each patient's priorities and to develop a treatment plan that will adequately address the patient's individual needs. Many patients' pain may be directly or indirectly related to traumatic or stressful events or situations. However, because of avoidance, denial, or simple lack of understanding, the patient may not consciously associate

their pain with any particular traumatic event or situation. A careful and thorough history taking often is necessary to elicit traumatic, stress-related antecedents of chronic pain disorders.

The primary target for EMDR processing is the original incident in which the injury occurred or the first time that the pain was experienced. The basic EMDR trauma protocol (Shapiro, 2001) is used in this application. EMDR also can be used to target the sensation of pain and distress about symptoms and related disabilities (Grant, 1999).

Facilitation of Relaxation and Change in Pain Sensations

When EMDR is used to transform the pain experience, the patient is asked to focus on the pain while attending to short sets of bilateral stimulation known as "sets." Following each set, the patient reports what, if any, changes have occurred, and the therapist facilitates the cognitive interpretation of these changes. Patients typically report an increase in relaxation and a change in pain sensations. Although the change in sensation is often a decrease in pain severity, it also may be a change in location, type, or quality of the pain, or a sense of relief or relaxation.

Development of Psychological Pain-Management Resources

The final task is to cognitively integrate the reported changes in physical sensations. The therapist asks specific questions that were designed to facilitate cognitive associations (Grant, 1999). For example, a client is asked "What does this feeling of relief remind you of?" A patient who noticed that his pain felt softer might liken the feeling to cotton wool. This imagery is then reinforced by instructing him to "think of that" while attending to further bilateral stimulation.

The cognitive integration of the reported changes is used as a pain management resource by teaching the client to use antidote imagery with bilateral stimulation. For example, patients are instructed that when they have pain in the future they should recall their antidote imagery and simultaneously attend to bilateral stimulation, then try and adopt an attitude of just letting whatever happens happen as they were instructed to do in the therapy session. The bilateral stimulation may be self-generated (e.g., hand tapping) or externally generated (e.g., listening to a recording of stereo audio tones).

In the present study, it was hypothesized that if EMDR reduces emotional distress in pain sufferers (as it does with trauma victims), it also may help to alleviate chronic pain. This hypothesis was tested by treating three long-term chronic-pain sufferers with EMDR.

Method

Procedure

Three women with chronic pain received nine weekly one-hr sessions of EMDR. Measures of pain and coping were taken at pretreatment, after five sessions, at posttreatment, and at a two-month follow-up.

Participants

The three participants answered an advertisement in a local newspaper. Criteria for inclusion in the study was that participants had pain for over six months, were accepting of their medical diagnosis, and described their pain levels as tolerable.

"Jocelyn" was a 27-year-old, single, Caucasian woman. She gave a four-year history of chronic pain, primarily in her back, neck, and right hip following a motorcycle accident. In addition to her pain, she complained of various symptoms of emotional distress including feelings of sadness, crying easily, and feeling self-critical. Her medical diagnosis was soft-tissue damage, and she was accepting of this. There was a compensation case pending as a result of her accident. She had sought treatment in the form of physiotherapy, which she found helpful. Surgery was contraindicated.

"Kylie" was a 54-year-old, married, Caucasian woman. She gave a ten-year history of pain in her right hip after breaking her leg. She described the pain as fluctuating in intensity depending on her activity levels. She stated that sometimes when the pain was bad she just wished her leg could be cut off. She described various symptoms of psychological distress associated with her pain including irritability, sleep disturbance ("I'm lucky to get four hours a night"), feelings of fatigue, and loss of motivation. She was accepting of her medical diagnosis. Although her pain was aggravated by certain physical activities such as bending or sitting in one position too long, Kylie was leading a fairly active life, working up to 50 hr per week. She stated she'd seen various specialists over the years, and that the only thing that seemed to help was taking pain-killers when the pain got too bad.

"Tanya" was a 28-year-old, Caucasian woman, separated with two children. She described a two-year history of chronic pain in her jaw, the left side of her neck, and her left shoulder and arm. The pain made her unable to lift her arm and severely restricted her ability to use her arm, including not being able to wash her hair. She recalled that at one stage she had required her daughter's assistance to get dressed. She had been diagnosed as suffering from "capsulitis," an inflammation of the capsule of the joint that would require surgery. She described various emotional symptoms of distress associated with her injury including feeling anxious, sad, and depressed much of the time, feeling fear, with decreased energy and motivation. Tanya was basically accepting of her medical diagnosis and had resigned herself to the prospect of surgery. She was taking antiinflammatory medication and mild painkillers. She had undergone numerous treatments for her pain including acupuncture, physiotherapy, and massage—all without success.

Measures

A battery of self-report questionnaires was administered by an associate at baseline, during treatment, following treatment, and at a two-month follow-up. The questionnaires used were the Short-Form McGill Melzack Pain Questionnaire (SFMPQ; Melzack, 1987) and the Coping Skills Questionnaire (CSQ; Rosenstiel & Keefe, 1983). These instruments were chosen for their ease of use and combined ability to measure both sensorial and emotional aspects of the pain experience. Verbal reports, including changes in medication usage and activity levels, also were noted.

The SFMPQ was developed for clinical use with acute pain syndromes, but it also provides a reliable measure of the quality and intensity of chronic pain. It incorporates both the sensory and the affective aspects of pain. The questionnaire includes a list of 15 pain descriptors (the Pain Rating Index, or PRI) and a measure of present pain intensity (PPI). Patients are asked to select from the list of 15 descriptors those which describe their pain. They also rate the intensity of each selected descriptor (mild = 1, moderate = 2, severe = 3) for a possible score of 77. The PPI score (0–5) can be added to the descriptor score to give the PRI, a measure of pain severity. Scores from the SFMPQ are significantly correlated with the McGill Pain Questionnaire (the MPQ), which has been

widely used in clinical practice and is considered the "gold standard" for pain measurement (Davis, 1989; Salerno & Willens, 1996).

The CSQ is a 48-item, self-report scale developed to assess the use of cognitive and behavioral pain-coping strategies. Each item is rated on a 7-point scale according to frequency of use in recent pain episodes (0 = never do it; 6 = always do it). Two additional items at the end of the questionnaire ask the subject to rate their perceived level of control over the pain (0 = no control; 6 = complete control). Coping strategies are classified as either adaptive or passive strategies. Adaptive strategies are those wherein the patient utilizes cognitive or behavioral strategies to change the way they feel (e.g., reinterpreting pain sensations). Passive strategies are when the patient relies on outside sources for help, such as hoping that a medical cure will be found or relying on medication. Scores on three subscales, "catastrophizing," "ability to control pain," and "ability to decrease pain," are reported.

Process Measures. Two measures, the SUDS and the VoC, were used during the EMDR treatment process to measure the patients' response to treatment. SUDS measures were used in this study as a measure of current pain intensity. SUD measures are rated on a Likert scale of 0 (*no pain*) to 10 (*worst pain possible*). The VoC ratings were taken during the assessment phase in each session, and represented the strength of the patients' confidence in a desired belief about their ability to cope with their pain. The VoC measures are rated on a Likert scale of 1 (*not true*) to 7 (*completely true*). Measures of changes in emotional distress levels were obtained through self-report.

Procedure

Treatment consisted of nine weekly sessions of EMDR, lasting one hr, with an EMDR-trained therapist with extensive experience with chronic pain. These sessions were administered using a treatment manual (Grant, 1999) outlining an application for using EMDR with pain. This application integrates the five tasks of the EMDR Chronic Pain Protocol (Grant, 1999) with Shapiro's (1995) basic EMDR protocol for traumatic memories.

In this case study, the pain of two participants had commenced with a traumatic event while the pain of the third individual had evolved over time as a result of physical overuse. Participants were asked to remember the first time they experienced the pain and associated negative thoughts and feelings. In addition to targeting the memory of the etiological event, when available, the experience of pain also is targeted. This was done by instructing the participant to draw an image of how their pain felt. Drawing is a projective technique thought to access material which may be unconscious or outside awareness (Edwards, 1992). Instructing the patient to draw their pain is designed to help create a meaningful "target" for desensitization for those persons whose pain is not consciously associated with a specific traumatic event.

A pain-related negative cognition was identified; then a positive cognition was obtained by asking participants to make a statement about how they would like to feel about their ability to cope with their pain (e.g., "I can control my pain"). The clients' confidence in their positive cognition was assessed by instructing them to rate the felt validity of the statement on the VoC scale. The participants also rated the severity of their pain using the SUD scale.

Following this assessment, participants were instructed to focus on the pain memory or their present pain while attending to a set of bilateral stimulation and to "just notice" any changes that occurred. At the end of each set, participants were asked "What do you

notice now?" When a positive response was made, they were instructed to notice that, and further sets of bilateral stimulation were introduced. This was repeated until a satisfactory degree of pain relief was reported.

The client then was assisted to develop a positive image by being instructed to notice the changes in sensation and think of something that the feelings of relief reminded them of. For example, a feeling of softness might generate an image of a cloud or cotton-wool. This was reinforced with more sets of bilateral stimulations until a reasonably stable set of positive feelings and images were described. Processing continued as long as therapeutic change occurred. Where subjects described "no change" or negative feelings following the bilateral stimulation, prompts in the form of questions and direct suggestions were used to help elicit positive changes.

Jocelyn

Jocelyn was ready to start desensitization by her second session. She described her pain as "hot and dull" and drew it as a small, dark, jagged shape. Her negative cognition was "I can't control the pain," with a SUD (pain level) rating of 5 of 10. Her positive cognition was "I can control my pain," with a VoC of 2 of 7. After the first set of eye movements, she stated that the pain had softened. Following the second set, she reported that the pain felt smaller. After the third set, she stated that the pain had "moved and gone deeper." In the following few sets, she continued to report various shifts and changes in her pain.

By the 16th set, she described the pain as having the appearance of a black tarlike substance and "wasted away." Her SUD rating was 0 of 10. She then was encouraged to practice controlling her pain by self-use of bilateral stimulation while remembering the image of the tarlike substance and her pain wasting away. At the next session, she stated that the pain relief she had experienced previously had lasted for approximately 24 hr, and that when her pain did return it seemed less intense. For the remainder of the session, her use of this skill was reinforced, after which she worked on another area of pain. Her VoC score for positive cognition went from 2 of 7 to 6 of 7. Following treatment, Jocelyn also reported emotional changes such as feeling less sad, less teary, and less self-critical.

At two-month follow-up, Jocelyn stated that she still suffered pain (Figure 1), but that now when she had pain she would stop and relax whereas before she used to ignore the pain until it became unbearable. She indicated that she was managing her pain better through improved pacing and stress management rather than relying on imagery or home use of bilateral stimulation. Her responses to the CSQ (Figure 2) indicated her perceived ability to control the pain increased (from 3 of 6 to 5 of 6) and her perceived ability to decrease the pain increased (from 3 of 6 to 6 of 6). At the two-month follow-up, her ability to control the pain was still greater than pretreatment (4 of 6) as was her ability to decrease the pain (5 of 6). Jocelyn's level of "catastrophizing" had decreased from a pretreatment high of 12 to a low of 3 by the two-month follow-up. Her perceived ability to control her pain and to decrease her pain went from 0 of 6 to 6 of 6. She indicated that the improvement in her mood and her attitude toward herself had continued.

Kylie

After completion of the assessment phase, Kylie was instructed to draw her pain, a picture of the trapped nerve in her spine. Her negative cognition was "I'm helpless." Her positive cognition was "I can learn to control my pain." After several sets of eye move-
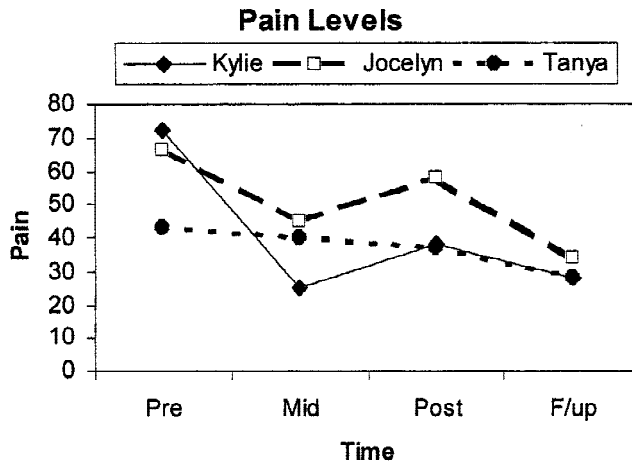
Pain Levels

Figure 1. Change over time in the total Pain Severity score for the three participants.

ments, she reported a noticeable decrease in her pain. Once she had achieved an SUD score of 0, she was instructed to "think of something that could take the pain away" while attending to bilateral stimulation. She described getting an image of a balloon that could inflate and push the trapped nerve out of the place where it was trapped in her spine. She indicated that she felt this imagery could really help control her pain. She was instructed to practice thinking of this during several more sets of eye movements and to practice at home using the bilateral stimulation to help if necessary. By her third session, she stated she was able to relax and imagine the balloon easily at home. She stated that now when she feels the pain it acts as a reminder for her to rest and practice thinking of the balloon. She described how she had learned to rock herself (in a favorite chair) to recreate the bilateral stimulation while thinking of her antidote imagery. She continued to work long hours, and to practice the strategies she had learned. Following treatment, she reported she could sleep better, felt less irritable, and had more energy and motivation. Her pain continued (Figure 1), but at a two-month follow-up, she reported better sleep and generally being able to cope with the demands of her busy life. Her responses to the CSQ (Figure 2) indicated increased ability to control her pain and decreased catastrophizing.
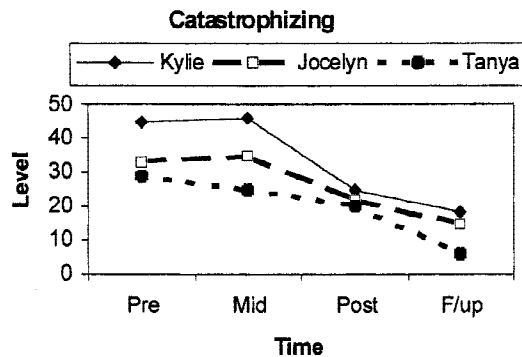
Catastrophizing

Figure 2. Change over time in levels of "catastrophizing" for the three participants.

Tanya

When asked to describe her pain according to how it felt, Tanya began by saying her shoulder pain was a stabbing sensation that vibrated all the way down to her wrist. She pictured this pain as a dagger. The pain in her jaw she described as a tight feeling, like a stuck spring. She stated her pain had started after a stressful period in her life involving the forced temporary institutionalization of her disabled son. When asked to think of the first time she felt the pain, she could not recall a specific incident, but she had a mental image of her son being held in a locked room by government authorities and her being unable to do anything to help him. Her negative pain-cognition was "I'm inadequate." Her positive cognition was "I can learn to manage it," although she was not very confident about her ability to do this as indicated by a VoC of 2 of 7.

Tanya was instructed to focus on the pain, together with the image of the first time she felt the pain and her negative cognition while attending to the eye movements. Following a few sets, she reported less pain and feeling as though something had released in her neck. Reprocessing was discontinued at this point because of time constraints, and she was asked to relate that to an image. She said it made her think of a spray can of lubricant that could make everything loose. She then practiced thinking of this while attending to several sets of bilateral stimulation. Once she was able to report a reasonably strong and stable effect, she was offered the choice of using this imagery to control her pain if she had the need to before her next treatment session.

At the following session, Tanya reported that the pain relief had continued for several days and that when her pain did eventually return it was not as severe or as disabling as prior to the EMDR. She reported she had been able to wash her hair without assistance for the first time in over a year and that she had also been able to hang out a load of washing without pain. She stated that she felt so much better she had not needed to use the imagery to control her pain. In the following weeks, she continued to receive EMDR to facilitate further pain reduction and reinforce her anti-pain imagery. Tanya's pain was never completely reduced, but by the end of treatment she described greatly reduced pain and increased use of her left arm (Figure 1). Her positive cognition was "I can manage my pain," and her VoC for this was 6 of 7. She also reported feeling less depressed, less emotional, and that she had more energy and motivation.

Results

Pain. Following the intervention, Joyce's pain as measured by the SFMPQ decreased from 72 to 38 (Figure 1). At a two-month follow-up, she described the pain as still being a problem, but stated that she no longer thought about it as much and that it no longer seemed to occupy such an important place in her life. Tanya's pain decreased from 43 to 28. She also regained full movement in her arm to the extent that she was able to perform most domestic tasks, including washing her hair. She no longer needed surgery. Kylie's pain decreased from 66 to 58. At a two-month follow-up, further reductions in pain levels were reported for all subjects (28, 28, and 34, respectively). At follow-up, two of the three women reported discontinuing the antidote imagery because of improvements.

Coping. Scores on the CSQ showed a reduction in use of maladaptive strategies and passive coping strategies following EMDR; there was no change in cognitive coping strategies, which were not used much by the women. Each participant reported improvement (Figures 2, 3, and 4) on the three CSQ subscales, "catastrophizing," "ability to control pain," and "ability to decrease pain." Kylie indicated at follow-up that her improve-
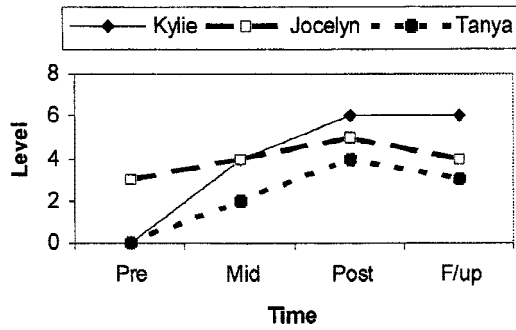
Figure 3.   Change over time in ability to control pain for the three participants.
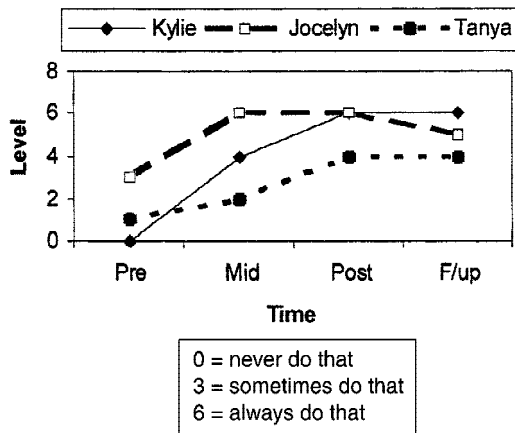

Figure 4.   Change over time in ability to decrease pain for the three participants.

ment had been maintained and stated "This is the only time I've ever felt I had anything that could control this [pain] in any way shape or form." Tanya also reported feeling less distressed about the memory of the authorities taking away her son and had confidence in her ability to control her pain.

Affective Distress. Each woman reported decreases in affective distress. Jocelyn described "feeling less sad, less teary, and less self-critical." Tanya stated that she felt "less depressed, less emotional, with more energy and motivation." Kylie indicated that she "felt less irritable, and had more energy and motivation."

Discussion

There were substantial decreases in pain levels and pain-related negative affect as well as large increases in perceived ability to cope with pain following EMDR for these three participants.

Results on the CSQ indicated a reduction in use of maladaptive strategies, such as "catastrophizing," and passive strategies, such as praying. This could indicate that sub-

jects felt more confident in their ability to control their pain as their pain levels decreased and remained lower, during and after treatment. This suggests that some kind of learning occurred, perhaps as participants experienced their pain differently, and as a result, made positive cognitive self-appraisals. If this is the case, this would be consistent with Shapiro's (2001) Adaptive Information Processing Model, in which clients may move to a more adaptive level through stimulation of their own learning processes.

All three patients reported substantial decreases in pain experience. For example, after EMDR treatment, Tanya was able to wash her hair—a task she had previously been unable to perform. Although each continued to suffer from some degree of pain following the intervention, the treatment did result in significant alleviation of the somatic aspect of their pain, something which is a desired outcome of treatment for most pain sufferers but which traditional approaches have not always adequately addressed.

An attempt was made to follow-up the three participants two years later to assess whether treatment effects were maintained. Only Tanya could be contacted. She reported continued reduction in pain levels and improvement in mobility, and stated that she was frequently pain-free for days at a time and often did not think about it. Tanya also reported increased confidence in her ability to manage pain and a decrease in the emotional distress associated with the original traumatic situation.

There are several possible explanations for the pain reduction shown in this study. Ray and Zbik (2001) suggested that EMDR may work by desensitizing emotional aspects of the pain experience. This hypothesis is consistent with recent memory research that has demonstrated the neurophysiological involvement of the limbic system in nociception. EMDR appears to separate the connections between traumatic memories and painful associations, allowing individuals to experience their memories with less distress and attendant behavioral shifts. Altering the emotional dimension of pain might thus involve changes in the way pain is "remembered" and reproduced within the nervous system. Future research is needed to investigate the relationship between reprocessing etiological memories, decrease in emotional distress, and improvement in the experience of chronic pain.

Tanya's maintenance of treatment gains at two years suggests that, for this patient, changes following EMDR treatment were stable. This is consistent with the type of effect reported following EMDR treatment of trauma. Ray and Zbik (2001) hypothesized that once a patient establishes a more normalized response to pain or stress through desensitization of distressing emotions, they do not revert to a limbically augmented reaction unless further traumatization occurs. EMDR treatment, with its focus on the emotional as well as somatic and cognitive components of experience, which appears to promote more stable changes, may have a significant advantage over traditional approaches which do not address the affective dimension of pain.

Alternatively, the changes reported following EMDR treatment may be due to relaxation. Relaxation training by itself has been reported to facilitate reduction in pain intensity and levels of psychological distress (Turner, 1982). Although there is no formal relaxation training within EMDR, Wilson et al. (1996) found that there is a relaxation effect from EMDR. However, this would not account for the permanent changes in physical discomfort reported by subjects since relaxation training alone does not increase the ability to control pain. Moreover, improvements following relaxation training alone are normally short-lived unless coupled with regular practice (Turk & Rudy, 1991; Turner, 1982). Therefore, it does not appear that the changes seen could be attributed to a relaxation component of the treatment.

This case study is limited by the small number of participants and the absence of a non-EMDR control group. Chronic pain is a multidimensional problem with many different presentations requiring individualized treatment inputs. The three subjects dis-

cussed here are not representative of the whole chronic-pain population, and it remains to be elucidated which types of patients might benefit from this form of treatment. Another limitation is that only one of the subjects could be contacted for purposes of long-term follow-up, and the follow-up for the other two subjects was only two months. However, given the recurrent nature of chronic pain (Morley et al., 1999; Turk & Rudy, 1991) and the absence of any requirement for the use of ongoing self-help strategies, the change seems unlikely to be as a result of a short-term treatment effect.

It would have been desirable to obtain more than one baseline measurement; however, the three subjects reported pain duration of two to ten years prior to commencing treatment. The reliance on self-report measures to indicate changes in pain and coping is another possible weakness. However, by definition pain is a subjective experience and difficult to quantify. Demand characteristics were controlled for by having data collection carried out by a person other than the therapist.

The aim of this study was to explore the possibility that EMDR might be effective in the treatment of pain and to provide some parameters for future researchers to consider. The results suggest that EMDR can be effective in the psychological treatment of chronic pain. Specifically, it appears that EMDR improves coping and facilitates relatively permanent reduction of pain and pain-related attitudes and beliefs. Overall, the results suggest that EMDR is consistent with the type of treatment approach indicated by recent neurological/psychological formulations of chronic pain. Further investigation of EMDR as a treatment for chronic pain is warranted with a larger sample and additional controls to investigate the relationship between reductions in emotional distress and changes in pain and pain coping following EMDR.

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