

Some effects of EMDR on previously abused child molesters: Theoretical reviews and preliminary findings

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Abstract

Ten child molesters with reported histories of childhood sexual abuse underwent eye movement desensitization and reprocessing (EMDR) trauma treatment as an adjunct to standard cognitive-behavioural therapy-relapse prevention (CBT-RP) group treatment. Trauma resolution produced significant pre/post changes on all relevant subscales of the Sexual Offender Treatment Rating Scale (SOTRS). One unanticipated benefit was a consistent and sustained decline in deviant sexual arousal compared to the control condition. As measured by the SOTRS, decrease in arousal was also correlated with a decrease in sexual thoughts, increased motivation for treatment, and increased victim empathy. Deviant arousal is strongly associated with sexual recidivism. Clinical observations support the notion that those sexual offenders with histories of childhood sexual abuse may be left with aberrant sexual arousal, which is one pathway to sexual offending. The adaptive information processing model offers an explanation of the decreased and sustained deviant arousal observed in this study. This preliminary evidence supports a call for further research into this phenomenon.

Keywords: *Child molester, EMDR, sex offender treatment, deviant arousal, phallometry*

Introduction

Child sexual abuse (CSA) occurs at disturbing rates. The review by Walker, Carey, Mohr, Stein, and Seedat (2004) of 11 international studies of CSA

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shows prevalence rates of 5.8–34% in girls, and 2–11% in boys. In view of such frequency, it is unfortunate that a recent longitudinal study (Marques, Wiederanders, Day, Nelson, & van Ommeren, 2005) indicated that the model used in the majority of sex offender treatment programs (Freeman-Longo, Bird, Stevenson, & Fisk, 1995) is achieving disappointing treatment outcomes with this difficult population.

As indicated in the following section, the primary treatment methods currently used, which were inaugurated two decades ago, emphasize self monitoring as a means of relapse prevention. These methods have met with limited success. More recent models (Ward & Siegert, 2002) emphasize the etiology of sexual offending pathways, including the dynamics of childhood sexual trauma in the development of sexual offending behaviour. Trauma sequelae may include attachment/trust ruptures (James, 1989), unprocessed rage (Schwartz, 1994), retarded social/emotional development, and abnormal sexuality and/or arousal (Finkelhor, 1986; Money, 1986). While female victims of CSA may experience more sexual anxiety, male CSA victims often exhibit higher levels of eroticism (Fiering, Taska, & Lewis, 1999). Consistent with these models, the adaptive information processing (AIP) model (Shapiro, 1995, 2001, 2002) holds that experiences associated with the traumatic event, including affect, cognitions, images, and bodily sensation, become dysfunctionally stored and essentially isolated within memory networks. Current situations are viewed as triggers that potentially evoke involuntary physical and emotional responses.

Eye movement desensitization and reprocessing (EMDR; Shapiro, 2001) is a treatment used to target and process these dysfunctionally stored memories, resulting in the elimination of associated sensations and transforming cognitive and affective components into an adaptive form. The neurobiological underpinnings of EMDR processing have been posited as a shift from implicit sensory information to consolidated explicit memories (Siegel, 2002; van der Kolk, 2002), and from hippocampally-mediated episodic to neocortically-mediated semantic memory systems (Stickgold, 2002). Memory research (Christman, Garvey, Propper, & Phaneuf, 2003; Kuiken, Bears, Miall, & Smith, 2001–2002) has supported these latter conjectures. In addition, neurobiological findings have indicated significant pre–post differences after only a few treatment sessions (e.g., Bossini, Fagiolini, & Castrogiovanni, *in press*; Lansing, Amen, Hanks, & Rudy, 2005; Levin, Lazrove, & van der Kolk, 1999).

Although deviant arousal has been identified as a primary indicator of recidivism (Hanson & Bussiere, 1998), it has proved difficult to alter with currently accepted treatment models (Laws & Marshall, 1991, 2003; Marshall, 1999). The preliminary findings of our study suggest that adding EMDR to the treatment of those offenders with a history of CSA may result in sustained reduction of deviant arousal without the need for continued maintenance procedures. These preliminary findings warrant further

research, as they could translate into reduced sexual recidivism rates, at least for those offenders with histories of CSA.

The authors acknowledge that the current research was not initially designed as a controlled study to address deviant arousal. The findings were serendipitous, coming from an evaluation of the addition of a trauma-processing component to a standard cognitive-behavioural therapy-relapse prevention (CBT-RP) program. Our observations and recommendations stem from:

- findings of sustained decreases in deviant sexual arousal responses following the processing of the childhood trauma
- the idea that CSA can result in durable disturbances in sexual processes (Fiering et al., 1999; Finkelhor, 1986; Money, 1986)
- research indicating that deviant arousal is correlated with sexual re-offence (Hanson & Bussiere, 1998)
- the prediction of the AIP model (Shapiro, 1995, 2001) that EMDR processing alleviates bodily sensations (e.g., chronic pain, sexual arousal) associated with the original traumatic event.

Sex offender treatment

Since 1980, CBT and RP models have formed the primary structure for 90% of sexual offender treatment programs (Freeman-Longo et al., 1995). These are generally described as comprehensive treatment models designed to help clients maintain behavioural changes through their understanding of the sexual abuse cycle and relapse process. Generally accepted treatment objectives include denial reduction, identification of internal and external risk factors, social competence training, assertiveness training, problem solving, reconditioning of deviant sexual preferences, restructuring of cognitive distortions, and development of victim empathy (Becker & Murphy, 1998; Pithers, 1990; Salter, 1988), with the latter three being almost invariably present in all North American treatment programs (Marshall, 1999).

Hanson and Bussiere's (1998) study cites deviant sexual interest in children as measured by phallometry as the largest single predictor of sexual recidivism. In the Sex Offender Treatment and Evaluation Project (SOTEP) longitudinal study (Marques et al., 2005), arousal to children was the only in-treatment measure differentiating between those who did and those who did not recidivate. Hanson and Morton-Bourgon's (2005) meta-analysis of recidivism also identified deviant sexual interests as one of two broadly accepted factors associated with sexual recidivism.

Arousal reconditioning is a common component of adult sex offender treatment programs (Marshall, 1999).

Some commonly employed techniques include olfactory aversion therapy, masturbatory reconditioning, verbal or masturbatory satiation,

minimal arousal conditioning, and vicarious sensitization (for an overview see Laws & Marshall, 2003; Marshall & Laws, 2003). Perhaps with the exception of Marshall's (2006) single case study using a combination of olfactory aversion and masturbatory reconditioning techniques, there is little available research support for sustained changes in adult clients consequent to the application of these behavioural approaches (Laws & Marshall, 2003).

Hanson et al. (2002) performed a meta-analysis of 42 worldwide sex offender treatment studies involving 9,454 participants. Their results showed lower recidivism rates (12.3%) for treated offenders than for the comparison group (16.8%). (Note that recidivism indicates re-arrest and undoubtedly does not encompass all incidents of sexual re-offence.) One of the most comprehensive and well-designed longitudinal studies is SOTEP, which explored the effectiveness of intensive CBT-RP treatment on sexual re-offence. The final conclusion from those investigators was that their findings "generally do not support the efficacy of the RP model" (Marques et al., 2005, p. 79).

There is an ongoing appeal in the mental health field for treatment models that are both effective and durable in helping alleviate this socially, emotionally, and financially pernicious problem (e.g., Burton & Smith-Darden, 2000; Hanson et al., 2002; Launay, 2001; McGuire, 2000; Polizzi, MacKenzie, & Hickman, 1999; Ruddijs & Timmerman, 2000). Continuing the work toward better understanding and treatment of sexual offenders, Ward and Hudson (2000) developed the self-regulation model of the relapse process, grounded in both theoretical concepts and empirical research. Ward and Siegert (2002) built on those concepts to develop the pathways model, which combines the strongest elements of extant multi-factorial theories (e.g., Finkelhor, 1984; Hall & Hirschman, 1991; Marshall & Barbaree, 1990). The pathways model attributes clinical phenomena evident in sexual offenders to four interactive psychological mechanisms: intimacy and social skills deficits; distorted sexual scripts; emotional dysregulation; and offence-supportive beliefs. They also identify an etiological pathway, incorporating these four mechanisms with deviant sexual scripts, which usually reflect a history of sexual abuse or premature sexual exposure.

Traumagenics: Expanded treatment models

Some theorists and practitioners have suggested expanding standard treatment models to include etiological mechanisms. Schwartz (1994), for instance, drew upon Masters and Johnson's treatment program for sex offenders and suggested a move beyond mechanistic reductionism by augmenting the elements of typical relapse prevention programs with the inclusion of trauma resolution. This model holds that the trauma survivor is

left with unprocessed rage that he or she may direct internally and/or externally. Thus, trauma in the form of sexual abuse may cause one to repeat that behaviour on others. Garland and Dougher (1990) labelled this the “abused abuser hypothesis” (see also Groth & Burgess, 1977). Money (1986) describes this phenomenon as a replication of the juvenile sexual experience, wherein the offended male child remains sexueroerotically boyish throughout life, and is paraphilically attracted to juveniles of the same age as their own when they became a victim of child molestation. Solomon’s (1980) opponent-process theory of learning describes developed attraction to what was initially perceived as aversive. The compulsive behaviour, including related masturbatory practices (Laws & Marshall, 1990), becomes a means of self-medicating in the face of difficult feelings. Sex may become bonded with intimacy, thereby leaving sexual contact as the offender’s primary means of experiencing closeness, and children may be perceived as more trustworthy and less judgmental than peers.

The idea of trauma-bonded sexuality aligns with Finkelhor’s (1986) concept of traumatic sexualization – one of four traumagenic dynamics of the impact of childhood sexual abuse. James (1989) suggested that trauma ruptures attachment, thereby violating basic trust and interfering with empathic abilities. Ward and Siegert (2002) identify insecure attachment as a primary cause of interpersonal functioning problems, thought to be a contributing factor in some pathways to offending. Other studies in the literature highlight the idea that trauma can result in a perpetual state of hypervigilance against threat, which impedes the development of social skills and may trigger primitive defence mechanisms such as aggression (Chemtob, Roitblat, Hamada, Carlson, & Twentyman, 1988). Trauma may also disintegrate any sense of future (Fletcher, 1996; Terr, 1991), thus fostering a propensity for the pursuit of instant gratification. These characteristics are among those that are prevalent in profiles of sexual offenders, and these trauma effects may become the central core around which behaviours and even personality are organized (van der Kolk, 1996).

It appears that offenders with childhood histories of sexual victimization often have distorted memories or have effectively numbed the associated feelings. Accessing material regarding their sexual offending is thereby difficult, if not impossible. Consistent with the adaptive information processing model (Shapiro, 1995, 2001), various kinds of childhood interactions (e.g., related to the desire for love or attention, or sexual arousal) have resulted in many offenders having memories that distort the facts of their own victimization, causing them to deny to themselves (and others) that any harm was done, or to believe that they as children were responsible for the abuse. The offender then generalizes this onto others, including his victim(s). In other words, he develops the offence-supportive belief that if his victimization did not harm him, then his offending does not harm his victim(s). It seems to follow, then, that there is no deterrent to

experiencing and re-experiencing the sexual stimulation associated with past or potential victims, given that the offender perceives no real harm. For others, the belief that they were responsible for their own victimization causes them to transfer responsibility for any of their adult offences onto their victims. This ability to say and believe, "S/he made me do it," may not be a conscious choice, but a manifestation of the perspective in the stored memory of their own childhood abuse (Shapiro, 1995, 2001). In the sex offender literature Laws and Marshall (2003), for example, recognize this in their idea that these cognitive distortions, common in sexual offenders, may in fact be implicit (Ward, 2000) as well as explicit theories. Based in social psychology research, the idea is that early life experiences result in implicit theories and beliefs that influence perceptions and subsequent behaviour (Dweck, Chiu, & Hong, 1995).

Eye movement desensitization and reprocessing

Eye movement desensitization and reprocessing (EMDR) was initially developed as a treatment for victims of emotional trauma (Shapiro, 1989, 1995, 2002). It is an eight-phase treatment that includes gathering the client's history (Phase 1), preparing the client for the intensity of trauma therapy (Phase 2), assessing the level of distress and components of the targeted trauma memory (Phase 3), and employing some form of bilateral stimulation to desensitize and reprocess the traumatic memories (Phases 4–6). During this phase of treatment, standardized procedures guide the focus of attention as the client is instructed to attend to different aspects of the memory network. Initially, the client concentrates on the disturbing memory, including the accompanying cognitions and emotions. The therapist provides bilateral stimulation in the form of visual tracking, auditory stimulus, or tactile stimulation. Treatment progress is assessed using the Subjective Units of Disturbance Distress Scale (SUDS; Wolpe, 1982) and the Validity of Cognition Scale (VOC; Shapiro, 1989). The final phases of treatment provide closure for the client and provide the opportunity to re-evaluate the status of the traumatic memory. Processing targets for comprehensive treatment include the memories that set the groundwork for the dysfunction, the triggers of current disturbances, and "templates" for appropriate future functioning.

The adaptive information processing (AIP) model (Shapiro, 1995, 2001) offers an explanation for the negative effects of unresolved experiences, including those involving dysfunctional and deviant behaviour. AIP suggests that the intense affect associated with the initial experience interferes with the brain's ability to process the information to an adaptive resolution. Consequently, perceptual information associated with the traumatic event, including affect, cognitions, images, and bodily sensations, becomes dysfunctionally stored and essentially isolated within the memory network. Similar events encountered subsequently serve to trigger this

material, thus causing the individual's view of the present to be influenced by affective and cognitive distortions. This model is consistent with the ideas that early life experiences create beliefs, perceptions, and implicit theories that guide expectations and future behaviour (Dweck et al., 1995; Ward, 2000). EMDR's eight-phase treatment protocol (Shapiro, 1995, 2001, 2002) accesses and processes this traumatic material, thus facilitating appropriate storage of the memory within integrative memory networks (Siegel, 2001; Stickgold, 2002; van der Kolk, 2002) and effectively resolving the trauma.

Since its introduction, EMDR has garnered a great deal of attention from scientists and professionals alike. Randomized studies of EMDR have prompted mental health agencies around the world to recommend EMDR in the treatment of trauma (Bleich, Kotler, Kutz, & Shalev, 2002; Clinical Resource Efficiency Support Team, 2003; Department of Veterans Affairs & Department of Defense, 2004; Dutch National Steering Committee, 2003; French National Institute of Health and Medical Research, 2004; National Institute for Clinical Excellence, 2005). Notably, the American Psychiatric Association (2004) recently identified EMDR as one of the most highly regarded treatments for post-traumatic stress disorder (PTSD). Recent meta-analyses (e.g., Bradley, Greene, Russ, Dutra, & Westen, 2005; Hertlein & Ricci, 2004; Maxfield & Hyer, 2002) have also indicated the EMDR is effective, and hence would appear to be a reasonable option for sex offenders to address the trauma of childhood victimization. Ricci (2006) illustrates EMDR as a useful trauma treatment with a child molester, as evidenced by increased motivation for treatment and empathic response.

Purpose of the study

The goal of this study was to examine the therapeutic effects of adding a trauma-based component to standard CBT-RP sex offender treatment. The experience of the first two authors in working with sexual offenders has revealed that even those with a strong motivation for therapy are often slow to make progress. We hypothesized that unresolved childhood trauma inhibits the child molester from fully engaging in the emotionally based work necessary to internalize the concepts of standard CBT-RP treatment. We also observed situations wherein the offender developed a solid relapse prevention plan, yet continued to stumble over persistent emotional challenges which overwhelmed him and triggered the offence cycle. Building upon ideas about addressing the etiological mechanisms of sexual perpetrators, the first author (Ricci, submitted) hypothesized that adding EMDR as a trauma resolution component to standard CBT-RP treatment would:

- increase treatment motivation
- enhance empathic capacity

- increase internal locus of control
- increase tolerance for emotions that can trigger the sexual offending cycle.

Method

Design

Ten sexual offenders in a CBT-RP treatment program were tested before and after EMDR treatment on:

- the Trauma Symptom Inventory (TSI; Briere, 1995) to assess changes in trauma symptomatology
- the Sex Offender Treatment Rating Scale (SOTRS; Anderson, Gibeau, & D'Amora, 1995)
- polygraph examinations to detect possible sexual re-offence
- induced sexual arousal, measured by penile plethysmography (PPG).

For eight participants, PPG measures were also obtained 6–12 months after treatment. Finally, PPG data were obtained from an ad-hoc sexual offender control group representing all remaining child molesters in the same treatment program. Eight members of the control group had reported histories of childhood sexual victimization; 14 did not. A comparative analysis of these two control group subsets was conducted. Data for the control group were amassed during the same time period for comparison with the EMDR treatment group.

Participants

Participants were drawn from a client base of 52 adjudicated sexual offenders from three separate treatment sites in the Eastern United States where clients were undergoing CBT-RP group outpatient treatment. Adolescent clients and those adult clients with convictions of rape or hands-off offences (e.g., exposure) were excluded. Of the remaining 32 clients, 18 had reported histories of childhood sexual abuse. Time constraints permitted selection of 10 of those clients to undergo EMDR treatment: their primary clinicians considered these clients to be most in need of intervention. Selections were made based upon:

- an inability to discuss the specifics of their sexual offending without becoming stalled in treatment
- clinical concern that treatment gains were cognitively rather than emotionally based – that is, that there was no internalization of victim

harm or re-offence risk awareness, and therefore no internal locus of control

- clinical concern that emotional triggers were repeatedly activating lapse behaviours and hence increasing re-offence risk.

These individuals were thus a more difficult or CBT-RP treatment resistant client group.

Each participant signed an informed consent form approved by an institutional review board. The consent outlined the purpose of the project, procedures, risks, benefits, confidentiality, and freedom to withdraw at any point without consequence. Project clearance was also obtained from the state Department of Correction's research committee.

The CBT-RP treatment program from which the participants were drawn operates several treatment sites in the Eastern United States. Its overall adult client base's age range was 18–86 years of age, with an average age of 37.5 years; 96% of the clients identified themselves as Caucasian, 3% as African-American, and 1% as "other." Clients ranged from skilled technicians and professionals with substantial incomes to individuals meeting poverty criteria. The mean number of contact and non-contact sexual offences per individual receiving treatment was 100, with 33% of the clients having participated in previous services for their sexual offences. Approximately 15% of the client base from which the participants were drawn received psychotropic medication. Fewer than 1% received medication prescribed to address directly the problems of sexual offending and deviant sexual arousal. Profiles of the 10 participants indicated that they were representative of this larger client base. The remaining 22 program participants from the same treatment sites were used as a control comparison group.

Measures

The Trauma Symptom Inventory (TSI). The TSI (Briere, 1995) is a checklist by which the clinician assesses patients' symptoms within 10 clinical domains: anxious arousal, depression, anger/irritability, intrusive experience, defensive avoidant, dissociation, sexual concerns, dysfunctional sexual behaviour, impaired self reference, and tension-reduction behaviour. The TSI was normed on male and female adult populations and has been identified as a measure for ages 18 and above. Three embedded validity scales, for detecting under- or over-endorsement and inconsistent responses, have shown high reliability (mean $r = .86$) and reasonable convergent, predictive, and incremental validity relative to the Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979), the Symptom Checklist (Foy, Sippelle, Rueger, & Carroll, 1984), and the Brief Symptom Inventory (Derogatis & Spencer, 1982). Finally, the construct validity of this measure is high (Briere, 1995).

The Sex Offender Treatment Rating Scale (SOTRS). The SOTRS (Anderson et al., 1995) is designed to assess both process and outcome measures for cognitive-behavioural sex offender treatment. Six subscales of the SOTRS are specific to the cognitive-behavioural treatment of sexual offenders. "These include insight (understanding of offense), deviant thoughts (offense related impulses), awareness of situational risks (challenges the capacity for self-control), motivation (as for personal change through treatment), victim empathy (emotional impact of sexual offenses), and offense disclosure" (pp. 223–224). A six-point Likert scale is used to rate behavioural dimensions, with higher numbers representing improvement.

Polygraph examination. Polygraph examinations were used to detect sexual re-offence. These were administered by a polygraph examiner who has been state certified to test sexual offenders. Relevant polygraph questions explored for any sexual contact or attempted sexual contact with minors.

Penile plethysmography (PPG). PPG for males is a technology that measures erectile responses (Rosen & Keefe, 1978) by attaching to the penis an electronic sensor called a penile transducer (Bancroft, Jones, & Pullan, 1966; Barlow, Becker, Leitenberg, & Agras, 1970; Laws, 1977). The instrument detects changes in tumescence in response to erotic stimuli in the form of slides and audiotapes. Many researchers consider erectile response a useful measure for purposes of assessment and treatment (Abel, Becker, Murphy, & Flanagan, 1981; Avery-Clark & Laws, 1984; Card & Dibble, 1995; Laws, 1989). Penile tumescence is said to be the most reliable of the physiological measures (Rosen & Keefe, 1978) and the only physiological response specific to sexual arousal in men. Evaluative research has shown that properly administered PPG possesses psychometric properties equal to or exceeding those shown for traditional measurement techniques (Murphy & Barbaree, 1988). The test–retest reliability coefficient for baseline measurement of penile circumference is reported to be .94 (Farkas et al., 1979). Deviant sexual arousal has been shown to be strongly associated with recidivism (Hanson & Bussiere, 1998).

The Monarch 21 Adult Projective Audio Visual Set, Version 7 (Behavioral Technology, Inc., Salt Lake City, UT) was used to assess all participants. It contains commercially available standardized stimuli used in a variety of clinical and research settings (e.g., Card & Dibble, 1995; Card & Farrall, 1990; Schober et al., 2005). All child models depicted in this standardized stimulus set are clothed. Also utilized are both audio and visual stimuli and monitors of physiological responses designed to detect suppression or faking. The test taker is fitted with finger and chest cuffs designed to monitor galvanic skin response and respiratory patterns respectively. He is seated in a privately positioned chair where he places a Barlow gauge around his penis. The Barlow gauge is calibrated to a full

range of 4.5 centimeters before each assessment, representing an estimate of the range from flaccidity to full erection. This corresponds to a set of 100 scaled units, where 0 represents the measured flaccid or non-response, and 100 represents a hypothesized maximal response. This range is an effort to capture all data from the lowest to the hypothesized largest tumescent response. In reality, the majority of clients' complete tumescence will be less than full-scale or 100 units. In a sample of 724 males Howes (2003) found that 3.257 centimeters was the mean circumferential change from flaccidity to full erection. Interpretation, therefore, makes use of the client as his own control (Card, 2000; Howes, 2003).

The test taker next views 22 recorded segments of still slides depicting males and females from infancy through to adulthood, accompanied by audio representations of sexual scenarios related to the images. All child models are clothed in a minimum of bathing suits or underwear. There are some nude or semi-nude slides of adults. There is only one model shown in the picture at any one time. The test series contains no visual image considered pornographic. Throughout the audio and visual presentation several developmental (Tanner, 1978) references (e.g., presence or absence of secondary sex characteristics) are used to assist the test taker in remaining focused on the age and gender depicted in the segment. The test taker participates using a hand-operated tracking device intended to ensure sustained attention to stimuli.

Data are collected and coordinated by a Monarch Data Recording Device (DRD; Behavioral Technology, Inc., Salt Lake City, UT), and each of the 22 segments is analyzed using Monarch Adult Male Assessment Software, Version 3.21. Data output includes cm of penile circumferential change, with 15 units or .675 cm ($4.5/100 \times 15$) representing the level of clinical significance (Card, 2000).

The Subjective Units of Distress (SUD). This is a process measure of EMDR in which participants are asked to recall the trauma-relevant memory and negative cognition and to rate the accompanying anxiety level using an 11-point scale, in which 0 represents neutral intensity and 10 equals the highest possible disturbance (Shapiro, 1989; Wolpe, 1982).

Procedure

Pre-treatment TSI, SOTRS, and PPG measures were obtained. SOTRS scores were assigned by the clinician who was overseeing the participant's ongoing CBT-RP group treatment and, in all cases, was aware that the client was a member of the EMDR-added treatment group. PPG assessments were administered by a technician who was blind to treatment condition. Circumferential penile change data related to the offender's historical victim population were recorded. For example, if the

offender's victims were pre-school aged males, the penile arousal response to stimuli depicting that population was considered.

An average of six EMDR sessions using standardized protocols (Shapiro, 2001) were conducted with the 10 EMDR-added treatment group clients. EMDR treatment was considered complete when participants reported a SUD as low as they expected their disturbance could become. In two cases a certain amount of disturbance remained. It appeared in these instances that the participants' increased awareness of their own childhood victimization, in addition to increased awareness of the harm they caused their victims, kept their SUD scores from reaching the level of no disturbance.

Post-treatment TSI, SOTRS, and PPG data were recorded for the EMDR-added treatment group. Follow-up data were obtained from eight of these participants. The time frame for this measure was 6–12 months, depending on participants' regularly scheduled testing dates, with the majority taken at 12 months.

Two sets of control data were obtained from the remaining 22 child molesters in the CBT-RP program, to serve as comparisons for the EMDR-treated group. The first was from a CBT-RP treatment-as-usual control group consisting of eight cases from the same treatment site with a reported history of CSA. The second treatment-as-usual control group consisted of 14 child molesters from the same treatment site with no reported history of CSA. For the two control groups, PPG data were recorded over approximately the same time frame that the treatment group was undergoing the EMDR-added treatment. In other words, all three groups received the same CBT-RP treatment during that time frame and the two scores for the control groups approximately coincide in time with the pre- and post-test PPG measures of the EMDR-added treatment group.

Results

PPG

The results for the EMDR-treated and two control groups are presented in Table I. The apparent difference in pre-test measures among the three groups was not statistically significant ($F[2,29] = 1.32, p > .05$). According to t tests, the pre–post differences in PPG were statistically different from zero for the treated group ($t[9] = 2.384, p = .04$), but not for either of the control groups ($t[7] = -1.290, p = .24$, and $t[13] = -1.116, p = .28$, respectively). A comparison of the two control groups on pre–post difference in PPG units of change revealed no difference ($t[20] = .39, p = .70$), allowing us to combine these data for the subsequent analysis. Figure 1 presents the pre- and post-test measures for the EMDR group, the combined control groups, and the follow-up data for the eight members of the treatment group.

A pre/post \times EMDR/control analysis of variance revealed a highly significant interaction ($F[1,30] = 17.520, p < .001$). The strength of relationship between the EMDR treatment and the units of change in PPG readings, as assessed by eta squared, was strong, the treatment factor accounting for 36.9% of the variance of the dependent variable. As seen in Figure 1, this interaction resulted from the large pre–post drop in the EMDR treatment group and slight pre–post increase in the control group.

Table I. PPG data for EMDR-treated and two control groups.

Group	Pre-treatment	Post-treatment	Change in PPG score	<i>n</i>
Control 1				
<i>M</i>	8.62	12.38	+3.75*	8
<i>SD</i>	4.78	2.64	8.22	
Control 2				
<i>M</i>	13.64	16	+2.36*	14
<i>SD</i>	10.20	11.56	7.90	
EMDR				
<i>M</i>	16.06	4.61	-12.60**	10
<i>SD</i>	12.77	5.44	13.00	

* $p > .05$; ** $p < .05$.

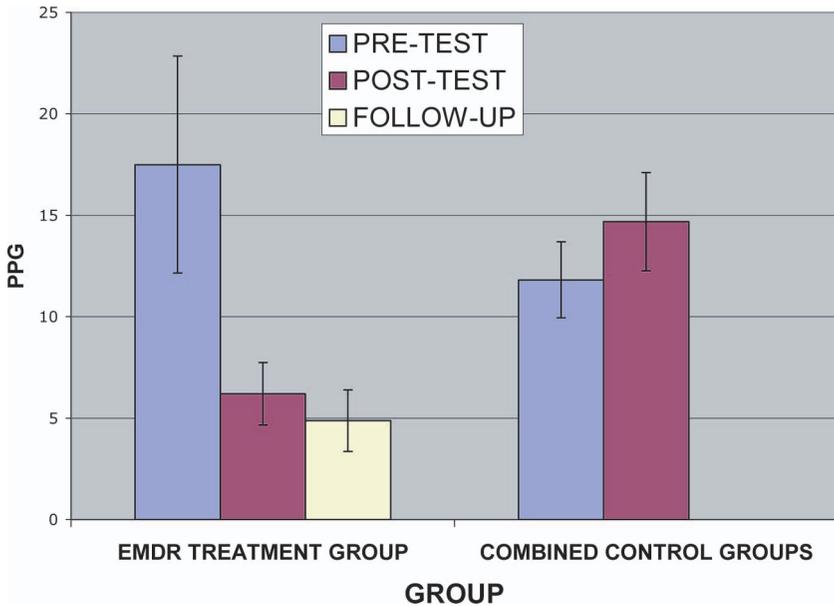


Figure 1. PPG for EMDR-treated and control groups (error bars signify standard error of the mean).

SOTRS

Table II presents the SOTRS data for the EMDR treatment group. It can be seen that all six sub-scales designed to measure issues specific to cognitive-behavioural sexual offender treatment underwent a statistically significant pre–post improvement. Furthermore, the subscales relating to sexual thoughts, motivation for treatment, and victim empathy were significantly correlated with the pre–post changes in PPG. All of these results are congruent with our hypotheses concerning the effects of EMDR processing.

Follow-up measures

Follow-up PPG measures at 6–12 months were obtained for all available EMDR-treated participants ($n = 8$), as depicted in Figure 1. It is apparent that the significant pre–post drop in PPG for the treated participants was maintained at follow-up. A t test indicated that the difference between pre-test and follow-up test was statistically significant ($t[7] = 2.65$, $p = .03$).

TSI

The TSI scores showed no consistent pre–post changes or correlations with the PPG, possibly due to participants' increased awareness of the consequences of their actions, as discussed later.

SUD

SUD scores for the worst memory of the participant's own victimization declined from a pre-test average of 6.9 to a post-test average of 1.9, a difference that was statistically significant ($t[9] = 4.19$, $p = .002$). However, the pre-test scores for some of the participants were misleading, because they entered into therapy strongly denying that their victimization had actually

Table II. SOTRS data for EMDR treatment group.

Subscale	Pre	Post	Diff	t value	Correlation with PPG
Insight	24	37	13	–4.333**	.017
Sexual thoughts	23	34	11	–3.498**	.780**
Risk awareness	20	32	12	–6.000**	–.114
Motivation for treatment	30	47	17	–3.431**	.746*
Empathy	16	40.5	24.5	–4.930**	.666*
Disclosure	32	50	18	–3.250**	.262

* $p < .05$; ** $p < .01$.

been harmful to them. During the EMDR processing, as it became apparent to them how damaging the event had actually been, their SUD levels increased. The mean level of disturbance once denial was processed was 9.2, which, of course, was statistically greater than the post-test measure ($t[9] = 11.69, p < .001$). In short, it was clear from this process measure of EMDR that the procedure was having its desired effects.

Polygraph results

No member of any of the three groups was detected by polygraph examination to have sexually re-offended.

Discussion

The results of this study suggest the potential for sustained reductions in deviant sexual arousal responses. These findings are particularly significant given Hanson and Bussiere's (1998) report that deviant sexual interest in children as measured by phallometry is the single strongest predictor of sexual recidivism, as well as Hanson and Morton-Bourgon's (2005) observation that sexual recidivism is associated with deviant sexual interests. Laws (1995) states: "If deviant sexual arousal does play a major role in the enactment of deviant sexual behavior, then procedures intended to suppress or eliminate it are central to preventing relapse" (p. 163).

Given recent evidence for the limited effectiveness of current treatments of sexual offenders (Brooks-Gordon, Bilby, & Wells, 2006; Marques et al., 2005), there is an outcry in the mental health community for more effective therapies. The current preliminary findings have important implications for improving the effectiveness of commonly used contemporary practices for treating child molesters with histories of CSA.

The study found statistically significant pre–post improvement on all six sub-scales of the SOTRS designed to measure the outcome of cognitive-behavioural treatment of sexual offenders. These findings are congruent with the hypotheses and additional reports (Datta & Wallace, 1994; Finlay, 2002; Ricci, 2006, submitted) that combining EMDR trauma treatment with standard CBT-RP treatment increases the offender's treatment motivation, enhances his empathic capacity, increases his internal locus of control, and increases his tolerance for emotions that can trigger the sexual offending cycle.

A serendipitous result – but perhaps the most important result of this study – was our observation of a reduction in idiosyncratic deviant sexual arousal in EMDR-treated participants, as measured by phallometry. As reported in the Results section, pre–post differences in PPG were statistically different from zero for the treated group, but not for either of the control groups. In fact, a closer examination indicates that 9 out of 10 of

the EMDR-treated participants showed a decrease in arousal at post-test, as compared with only 6 of the 22 control participants (2/8 in Group 1 and 4/14 in Group 2). Further, it is important to note that the SOTRS subscales regarding sexual thoughts, motivation for treatment, and victim empathy were significantly correlated with the pre–post changes in PPG. Deviant arousal reduction is a key factor in minimizing sexual re-offence risk. The decreased and sustained arousal response to idiosyncratic victim populations demonstrated by the child molesters receiving EMDR treatment clearly merits more rigorous investigation.

Ricci's (submitted) qualitative analysis revealed that EMDR-treated sexual offenders verbalized and demonstrated increased remorse, as well as increased empathy for their victims and victims in general. They also demonstrated improved motivation to engage in their CBT-RP treatment program. These observations are supported in our study by the statistically significant changes and correlations noted on SOTRS items.

Just one example of the changes noted in our study is provided by a participant (referred to here as "Tom") who had been in CBT-RP treatment for approximately six years and who was nearing the end of his treatment program. Tom had shown good effort in treatment and had developed a thorough, personalized sexual offence cycle and relapse prevention plan. He is a homosexual pedophile with 32 victims. He was sexually offended as a young male by an older teenager whom he idolized. He was later sexually offended by a male school teacher. Although he reported a cognitive awareness that he had been sexually abused, the clinical team was concerned about the underlying distortions he held, due to his view of his own victimization as "no big deal" and his perception that he "wanted" the sexual contact.

Tom underwent four EMDR sessions specifically targeting his victimization. Shortly after completing the EMDR treatment he was making a presentation to his group and began to cry as he attempted to discuss his victim selection. This was one of very few times in his six-year treatment tenure that he had become tearful. As he attempted to explain his emotional reaction, he said that he had come to realize fully that older men had manipulated him into sexual contact due to his deep-seated desire for the attention he had missed from his father. He articulated a newfound awareness that his victims complied for similar reasons. He became much clearer about this dynamic in his offending and his reasons for targeting particular victims. Despite the fact that Tom had verbalized similar concepts throughout his treatment, this realization was clearly on a deeper, more emotional level. From that point on, changes in his attitude, behaviour, and even language were noticed by his probation officer, his group members, and his therapists. There were no longer any detectable signs of offence-supportive beliefs. He moved ahead very quickly in his program and completed treatment shortly thereafter. He has demonstrated

and sustained lowered PPG readings and has thus far complied with his aftercare program.

This anecdotal evidence is typical of individuals treated with EMDR for this study. One possible explanation is that increased emotional awareness makes the practice of sexual objectification both more difficult and less satisfying. The increased clarity with which the offender perceives his victimization allows him the opportunity to challenge the cognitive distortions (Ward, Hudson, Johnston, & Marshall, 1997) he previously used to support and/or mitigate his offensive actions. This dynamic was evident in offenders fitting the criteria of both passive and active offending pathways (Ward & Siegert, 2002), and at least in part encompasses the emotional, cognitive, and behavioural aspects discussed in Ward, Hudson, and Keenan's (1998) self-regulation model of the sexual offence process.

Consideration should also be given to Money's (1986) ideas about arrested emotional development resulting from childhood sexual trauma in relation to Kohlberg's (1984) theory of moral development. For example, if someone is arrested at the second stage of the pre-conventional level of moral development, does he fully comprehend harm done to others by his actions? Helping the offender become developmentally unstuck may provide the opportunity for him to progress to a higher level of moral development. A review of the characteristics of the offenders selected for this study reveals that each participant had at least some victim(s) who were the same age as he was when he was sexually offended. This phenomenon aligns with Money's (1986) theory of arrested development, as well as with psychodynamic/psychoanalytic theories of trauma reenactment and/or repetition compulsion. Speculation about this dynamic is beyond the scope of this paper, but suggests the need for further study.

Both of the preceding interpretations are consistent with the AIP model that guides EMDR practice. According to Shapiro (1995, 2001), emotions, physical sensation, and beliefs are inherent in the unprocessed memories. Consequently, the child's perspective would be essentially unchanged from the time of victimization, and similar events in the present (e.g., the sight of a similar-appearing child) can trigger the dysfunctional response. EMDR treatment is predicted to decrease or eliminate somatic responses and emotional triggers. Sexual arousal is one aspect of the memory of victimization that remains somatically stored until processing had occurred (Shapiro, 2005). Further, after EMDR treatment, clients are reported to take on appropriate levels of responsibility for events that have occurred. As the childhood victimization is processed, the reallocation of blame to the perpetrator is made, which shifts the client's perception regarding his own offender behaviour (Shapiro, 2001, 2005). Other studies have indicated an increase in perpetrator empathy subsequent to EMDR treatment (Datta & Wallace, 1994, 1996), and a decrease in justification for perpetrator behaviour (Finlay, 2002).

The effectiveness of EMDR in eliminating arousal, as demonstrated in this study, adds credence to conjectures that it offers a “new tool to allow us to access the patient’s abilities on a neurophysiological level, through cognitions both in a downward serial system and in a parallel system through precortical intervention” (Ray & Zbik, 2001, p. 203). Memory research (Christman et al., 2003; Kuiken et al., 2001–2002) has supported the theory (Stickgold, 2002) that EMDR links into the same processes that occur during REM sleep, “produc[ing] an altered mind-brain state in which effective processing of the traumatic memories can occur” (Stickgold, 2002, p. 72). Consequent to EMDR treatment, and the posited resultant neurophysiological reorganization, recall of the resolved memories no longer reactivates the physical sensations and high arousal experienced at the time of the traumatic event (Ray & Zbik, 2001; Shapiro, 1995, 2001; Siegel, 2002; Stickgold, 2002; van der Kolk, 2002). Neurophysiological studies have indicated a correlation between positive EMDR treatment effects and a decrease in limbic activity (Lansing et al., 2005), as well as an increase in hippocampal volume (Bossini et al., in press) after only a few sessions.

Similar to our current findings, evaluations of chronic phantom limb pain patients (Schneider, Hofmann, Rost, & Shapiro, submitted) have reported a decrease or complete cessation of pain sensations subsequent to the processing of the traumatic event during which it first occurred. The AIP model explains some of the negative effects of unresolved experiences as the incorporation of affects and sensations experienced at the time of the event, and the resolution as including the elimination of these elements. As previously noted, it may be that CSA creates trauma-bonded sexuality in some sexual offenders that later leads to aberrant arousability to children. This underscores the probability that continued versus ceased arousal to children is a crucial indicator of treatment effect in offenders. EMDR-altered arousability to child stimuli, therefore, may be a novel effect of the physiologically-based EMDR treatment, or it may be an as yet unexplored result of any treatment that successfully addresses the offender’s traumata. Further research is needed to address these issues.

The present study found no significant correlations between TSI scores and units of change as measured by PPG. Overall, TSI scores did not have a consistent downward trend. Approximately half of the participants experienced negative emotion and memory regarding their own sexual trauma from the outset. Upon resolution, their disturbance was in part replaced by their increased negative emotion related to their offending. Raising awareness of the harmfulness of sexually offensive acts is an important goal of CBT-RP treatment. In many of those cases, TSI scores remained static or showed only slight downward trends. Approximately half of the participants did not perceive their childhood sexual victimization as harmful at the outset, and thereby registered little in the way of pre-EMDR symptomatology as measured by the TSI. In many of those cases, TSI

scores remained static or slightly increased. In short, the opposing dynamics tended to blur quantitative indicators on the TSI. However, changes in affect and reductions in SUD levels consistently indicated that processing of the target memories had occurred.

Limitations

The obvious shortcomings of this study are its size and scope. The 10 treatment participants were not randomly assigned, but were chosen on the basis of a specific set of criteria (see above). On the other hand, these criteria should have had the effect of producing a group of more difficult clients, or clients who were resistant to CBT-RP treatment, with the rest of the program participants serving as a control condition. Clinicians providing ratings on the SOTRS were aware that the client was participating in the EMDR-added treatment group, which could have had a biasing effect. It is important to note, however, that the technicians conducting the PPG and polygraph were blind to which clients were and were not participating in EMDR treatment. In addition, as previously indicated, probation officers and other group members independently confirmed changes in participant behaviour. Given the paucity of follow-up data in research with this population (Brooks-Gordon et al., 2006), an important strength of this study is the independent verification of the PPG results at 6–12 month follow-up.

Another limitation is that our participants were selected from a heterogeneous population of adjudicated sexual offenders who were deemed safe enough by the courts to be supervised in the community. This is clearly not true for all sexual offenders. In addition, all of the participants in the treatment group were child molesters with a sexual trauma history. Child molesters constitute a unique sub-set of sexual offenders; many of them share traits of social inadequacy, isolation, and higher rates of CSA (van Wijk et al., 2005). In sum, the findings of this study may not generalize to other sexual perpetrator sub-groups.

Conclusions

It is well established that sexual offending has both an emotional and a financial impact on our society, thus creating a need for more efficient and effective treatment models. Some theorists and practitioners have proposed adding a trauma treatment component to enhance the offender's capacity to benefit fully from standard CBT-RP programs, thus minimizing re-offence risk further. This study offers a viable option for improving the effectiveness of sexual offender treatment by incorporating EMDR to address the proposed etiological mechanisms in the offending of child molesters. There is also evidence that including EMDR therapy may result in sustained

reduction in deviant arousal, an objective that has proved difficult to achieve with currently accepted treatment models.

Future studies should include randomized assignment and blind assessment to test these findings further by comparing EMDR to another active trauma-focused treatment (for a review of study designs see Hertlein & Ricci, 2004; Maxfield & Hyer, 2002). Currently, it cannot be ascertained whether trauma treatment in general is responsible for the current PPG results, rather than some aspects peculiar to EMDR. Further, while deviant sexual arousal to children has been shown to be the strongest indicator of recidivism (Hanson & Bussiere, 1998), it is but one of the factors (Hanson & Morton-Bourgon, 2004). Future studies should be designed to consider other important dynamic factors associated with recidivism risk.

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