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Empirical assessment of Lanius et al.s' 'Functional MRI of EMDR in Peacekeepers', a review of the EMDR literature and an annotated bibliography

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Defence R&D Canada – Toronto
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Abstract

This report reviews a research proposal, the major objective of which is to assess the relation between PTSD (Post Traumatic Stress Disorder) and limbic, paralimbic, and prefrontal brain function as assessed with functional MRI (Magnetic Resonance Imaging), and to determine whether an Eye Movement Desensitization and Reprocessing (EMDR) intervention causes those structures to return to a normal mode of functioning. The proposed study secondarily explores the effectiveness of EMDR in reducing PTSD symptomatology. While the first and second objectives of the study may have scientific merit, the mandates of other funding agencies would appear to be more appropriate for investigations of basic neuroscience processes associated with brain functioning in PTSD (e.g., NSERC or CIHR). Importantly, a critical review of the EMDR research reveals that a great deal of controversy surrounds the effectiveness of this therapy. EMDR has not been shown to be more effective than presently validated PTSD exposure-based therapies, and the eye movement component of EMDR appears to provide no therapeutic benefit. Finally, there is a lack of clarity around specific items listed in the proposed budget. Given these concerns it is not recommended that this proposal be funded at this time.

Résumé

Le présent rapport passe en revue une proposition de recherche, dont l'objectif premier est d'évaluer la relation entre le SSPT (syndrome de stress post-traumatique) et les fonctions cérébrales limbiques, paralimbiques et préfrontales, en utilisant l'IRM fonctionnelle (imagerie par résonance magnétique), et de déterminer si le traitement de désensibilisation des mouvements oculaires et de retraitement (DMOR) permet à ces fonctions de revenir à un mode de fonctionnement normal. L'étude proposée explore aussi l'efficacité de la désensibilisation des mouvements oculaires et du retraitement pour réduire les symptômes du SSPT. Même si le premier et le second objectifs de l'étude peuvent avoir des avantages scientifiques, d'autres organismes de financement sembleraient plus appropriés pour financer la recherche sur les processus de neurosciences élémentaires associés au fonctionnement du cerveau lors du SSPT (par exemple, le CRSNG ou les IRSC). Fait important, une revue critique de la recherche sur la désensibilisation des mouvements oculaires et le retraitement révèle que ce traitement suscite beaucoup de controverse. Il n'a pas été démontré que la désensibilisation des mouvements oculaires et le retraitement constituent un traitement plus efficace du SSPT que les thérapies d'exposition actuellement utilisées à cette fin, et la composante mouvements oculaires du traitement DMOR ne semble avoir aucun effet thérapeutique. Enfin, il y a un manque de clarté en ce qui concerne certains postes inscrits au budget proposé. Étant donné ces problèmes, il n'est pas recommandé de financer cette proposition pour le moment.

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Executive summary

This report reviews a research proposal recently submitted to the Department of National Defence for funding consideration. This proposal concerns the functional MRI (fMRI) of brain structures presumed related both with PTSD (Post-traumatic Stress Disorder) and with the neural pathways assumed affected by EMDR (Eye Movement Desensitization and Reprocessing) for PTSD in Peacekeepers.

The report is divided into 3 sections: review of the goals of the research proposal, review of the EMDR literature, and funding issues related to the research proposal. In addition, a more complete summary of the EMDR literature and an annotated bibliography of reviews of the EMDR literature are provided.

Research goals:

The initial stated aim of the proposal is the study of EMDR as a treatment for peacekeeping-related PTSD. However, the EMDR treatment – PTSD recovery aspect is actually a relatively secondary issue throughout the proposal. Thus it is more difficult to justify Department of National Defence/Canadian Forces monies to subsidize this work or to justify the time and psychological commitment of CF personnel suffering from PTSD.

The major objective of the proposed study, then, is to assess the impact of PTSD (Post Traumatic Stress Disorder) on limbic, paralimbic, and prefrontal brain structures using functional MRI (Magnetic Resonance Imaging), and to determine whether an EMDR intervention causes those structures to return to their normal mode of functioning, while also reducing PTSD symptomatology. As the relation between EMDR treatment and changes among the brain structures presumably identified with PTSD symptomatology has not been established, it is difficult, therefore, to justify the use of EMDR as a vehicle to explore changes in these brain structures. Moreover, while the mapping of changes in brain structures has scientific merit, the mandates of other funding agencies would appear to be more appropriate for investigations of basic neuroscience processes associated with brain functioning in PTSD (e.g., NSERC or CIHR).

Therapeutic effectiveness of EMDR

A review of the EMDR research reveals that a great deal of controversy surrounds the effectiveness of this therapy. In general, reviews of the empirical EMDR literature find that:

1. EMDR is an effective treatment only when compared to no treatment or waitlist controls or to non-specific therapies (e.g., biofeedback, relaxation);

2. EMDR is not more effective than exposure-based therapies, including stress inoculation, cognitive therapy techniques and prolonged exposure;

Thompson, M.M., Pastò, L., McCreary, D.R.. 2002. Empirical assessment of Lanius et al.s' 'Functional MRI of EMDR in Peacekeepers', a review of the EMDR literature and an annotated bibliography. | DRDC Toronto TM 2002 – 025. DRDC Toronto.

3. Eye movements, or indeed any other alternating stimuli (e.g. therapist finger tapping) are not responsible for treatment benefits.

Given the present controversy that surrounds the effectiveness EMDR therapy it does not seem prudent to fund research based upon its application to peacekeeping-related PTSD among CF personnel. Requested Financial Support: The following issues with regard to the nature and dollar value of specific items in the request for financial support require clarification.

Requested Financial Support: The following issues with regard to the nature and dollar value of specific items in the request for financial support require clarification.

1. It is unclear on what bases the authors have allocated costs for the psychiatric assessments (1200.00 per assessment).

2. The identities of the individuals budgeted to receive remuneration for completing various components of the project should be specified, particularly if these individuals are also the authors of the proposal.

Conclusion

The major objectives of this study are basic research rather than application to the betterment of CF personnel coping with peacekeeping-related PTSD. Thus, other funding agencies appear to be more appropriate sources of funding for this work. The effectiveness of EMDR appears tied to its exposure and cognitive reformulation components and unrelated to eye movements. Thus, the use of EMDR will not produce a therapeutic benefit above those of established, empirically validated PTSD therapies. Aspects of the proposed budget are unclear. At this point it does not seem prudent to invest in this research proposal.

Sommaire

Le présent rapport passe en revue une demande de financement d'une proposition de recherche récemment présentée au ministère de la Défense nationale. Cette proposition de recherche porte sur l'étude par IRM fonctionnelle (IRMf) des structures cérébrales qui, du moins le suppose-t-on, seraient liées à la fois au SSPT (syndrome de stress post-traumatique) et aux voies neurales qui seraient touchées par la désensibilisation des mouvements oculaires et le retraitement (DMOR) lors du traitement du SSPT chez les Casques bleus.

Le rapport est divisé en trois sections : examen des objectifs de la proposition de recherche, revue de la littérature sur la désensibilisation des mouvements oculaires et le retraitement et examen des questions financières liées à la proposition de recherche. De plus, un résumé plus complet de la littérature portant sur le traitement DMOR ainsi qu'une bibliographie annotée sont présentés.

Objectifs de la recherche :

L'objectif premier de la proposition de recherche est l'étude de la désensibilisation des mouvements oculaires et du retraitement (DMOR) lors du traitement du SSPT chez les Casques bleus. Cependant, le lien entre le traitement DMOR et l'élimination du SSPT est en réalité une question relativement secondaire tout au long de la proposition. Par conséquent, il est plus difficile de justifier le financement de ces travaux par le ministère de la Défense nationale/Forces canadiennes, le temps consacré à cette fin, ainsi que l'engagement psychologique des membres des Forces canadiennes qui souffrent du SSPT.

L'objectif principal de l'étude proposée est donc d'évaluer l'impact du SSPT (syndrome de stress post-traumatique) sur les fonctions cérébrales limbiques, paralimbiques et préfrontales, à l'aide de l'IRM fonctionnelle (imagerie par résonance magnétique), et de déterminer si une intervention de désensibilisation des mouvements oculaires et de retraitement (DMOR) permet de ramener ces structures cérébrales à un mode de fonctionnement normal et de réduire les symptômes du SSPT. Comme la relation entre le traitement DMOR et les changements dans les structures cérébrales qui seraient liées aux symptômes du SSPT n'a pas été établie, il est difficile de justifier l'utilisation de la désensibilisation des mouvements oculaires et du retraitement pour étudier les changements dans ces structures cérébrales. De plus, même si la cartographie des changements dans les structures cérébrales comporte certains avantages scientifiques, il serait plus approprié de faire appel à d'autres organismes de financement pour financer les recherches sur les processus de neurosciences élémentaires associés au fonctionnement du cerveau dans le cas du SSPT (par exemple, le CRSNG ou les IRSC).

Thompson, M.M., Pastò, L., McCreary, D.R.. 2002. Empirical assessment of Lanius et al.s' 'Functional MRI of EMDR in Peacekeepers', a review of the EMDR literature and an annotated bibliography. DRDC Toronto TM 2002 - 025 DRDC Toronto.

Efficacité thérapeutique de la désensibilisation des mouvements oculaires et du retraitement.

Un survol des études effectuées sur le traitement DMOR montre que l'efficacité de cette thérapie suscite beaucoup de controverse. En général, l'examen des publications portant sur les recherches empiriques en DMOR ont montré ce qui suit :

1. La désensibilisation des mouvements oculaires et le retraitement constituent un traitement efficace seulement lorsque l'on compare des sujets ayant reçu ce traitement à des patients n'ayant reçu aucun traitement, à des patients qui sont sur une liste d'attente ou encore à des patients qui ont reçu une thérapie non spécifique (par exemple, rétroaction biologique et relaxation);

2. Le traitement par désensibilisation des mouvements oculaires et retraitement n'est pas une thérapie plus efficace que les thérapies d'exposition, y compris la méthode d'inoculation contre le stress, les techniques de thérapie cognitive et l'exposition prolongée;

3. Les mouvements oculaires ou encore tout autre stimulus (par exemple, le *finger tapping*) ne sont pas responsables des bienfaits du traitement.

Étant donné la controverse qui entoure l'efficacité de la désensibilisation des mouvements oculaires et du retraitement, il ne semble pas prudent de financer des recherches qui seraient basées sur l'application du traitement DMOR à des membres du personnel des FC souffrant du SSPT, qui avaient été affectés à des activités de maintien de la paix.

Appui financier demandé : Les points suivants relatifs à la nature et à la valeur en dollars de certains postes de la demande d'appui financier exigent des éclaircissements.

1. Il n'est pas précisé sur quoi les auteurs se sont fondés pour établir les frais d'évaluation psychiatrique (1200 $ par évaluation).

2. Il faudrait indiquer l'identité des personnes qui, selon le budget, recevraient une rémunération pour effectuer diverses composantes du projet, surtout si ces personnes sont aussi des auteurs de la proposition.

Conclusions:

Cette étude a, comme principaux objectifs, d'effectuer une recherche fondamentale plutôt que de chercher à améliorer l'état des membres du personnel des FC souffrant du SSPT, qui avaient été affectés à des activités de maintien de la paix. Par conséquent, il semble qu'il serait plus approprié de faire appel à d'autres organismes de financement pour ces travaux. L'efficacité de la désensibilisation des mouvements oculaires et du retraitement semble liée à ses composantes exposition et reformulation cognitive, et non aux mouvements oculaires. Ainsi, l'utilisation du traitement DMOR ne donnera aucun résultat thérapeutique supérieur aux résultats des thérapies de traitement du SSPT qui sont établies et ont été validés par expérience. Certains aspects du budget proposé ne sont pas clairs. Il ne semble pas prudent pour le moment d'investir dans cette proposition de recherche.

Table of contents

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Review of "Functional MRI of EMDR for PTSD in Peacekeepers"

The following is a review of a grant proposal submitted to the Department of National Defence (DND) by Dr. Ruth A. Lanius and co-investigators, Dr. Donald Richardson, Dr. Sandra Wilson, Dr. James Hopper, and Dr. Peter Williamson. Several issues are addressed in the following review of this proposal, including the applicability of the research to DND priorities, the controversy surrounding Eye Movement Desensitization and Reprocessing (EMDR) as a clinical tool, and specific questions arising from the submitted budget.

Research goals

The purposes of the proposed research are: (1) to study EMDR as a treatment for peacekeeping-related PTSD; (2) to study the impact of PTSD (Post Traumatic Stress Disorder) on subjective distress during recall of traumatic memories and on limbic, paralimbic, and prefrontal brain structures using functional MRI (Magnetic Resonance Imaging); and (3) to determine whether an EMDR intervention causes those structures to return to their normal mode of functioning, while also reducing PTSD symptomatology.

The investigators plan on recruiting 60 participants who have experienced peacekeeping duties and have been exposed to traumatic stressors during their tour(s) of duty. Of those subjects, 40 will be physician-diagnosed with PTSD, while the remaining 20 will not meet the diagnostic criteria for PTSD. The 40 participants with a PTSD diagnosis will be divided into two groups of 20. One group will receive EMDR (Eye Movement Desensitization and Reprocessing) as treatment for their PTSD, while the other group will comprise a waitlist/routine clinical care comparison group.

All participants will undergo an initial psychometric assessment and fMRI scanning. It is expected that the fMRI results will show no limbic, paralimbic, or prefrontal brain structure activation differences between the two PTSD groups, but that differences will exist in these areas between each of the two PTSD groups, and the non-PTSD group.

The PTSD-EMDR group will undergo 15 sessions of EMDR treatment over an 8-week period. They will receive an fMRI scan immediately following completion of the treatment, and again six months later. The PTSD-waitlist group will undergo an fMRI at approximately the same time as the PTSD-EMDR group is completing their post-treatment fMRI (i.e., 8 weeks after initial assessment). The PTSD-waitlist group will not undergo a six-month follow-up fMRI.

This intervention is designed to ascertain whether EMDR treatment has a significant impact upon limbic, paralimbic, and prefrontal brain structures. If this is the case, then the 8-week post-treatment fMRIs should show (1) changes from the baseline fMRI for the EMDR group, but not for the waitlist group, and (2) significant post-treatment differences between the two PTSD groups when there were none at the pre-treatment stage. Furthermore, the post-treatment and six-month follow-up fMRIs for the PTSD-EMDR group should be similar to

the fMRIs for the non-PTSD control group because it is expected that the treatment should repair brain structure activation to what it had been prior to the development of PTSD.

General comments

1. The investigators have linked their research agenda with an issue of major concern to DND (i.e., PTSD and its treatment). Indeed, the study of EMDR as a treatment for peacekeeping-related PTSD was listed as the first aim of the project (page 3). However, the specific PTSD-EMDR treatment aspect is actually a relatively secondary issue throughout the proposal. Indeed, EMDR is chiefly used to provide supporting evidence of a link between PTSD and the functioning of specific brain areas. That is, if effective treatment of PTSD were related to a return to normal functioning in the brain structures presumed to mediate PTSD symptomatology, then the hypothesis that PTSD is related with functioning in these brain areas is strengthened. The authors' note that there are no published reports of the relation between EMDR treatment and changes among the brain structures presumably identified with PTSD symptomatology. It is difficult, therefore, to justify the use of EMDR in this context. Moreover, there is significant controversy that surrounds the use of EMDR as a treatment of PTSD (see EMDR Literature Review below).

2. The major objective of the proposed study then, is to assess the impact of PTSD (Post Traumatic Stress Disorder) on limbic, paralimbic, and prefrontal brain structures using functional MRI (Magnetic Resonance Imaging) and to determine whether an EMDR intervention causes those structures to return to their normal mode of functioning, while also reducing PTSD symptomatology.

More specifically, this research explores the relation between PTSD and brain structure activation using fMRI, or as the authors' state "[do] pathological responses to trauma-related stimuli impair cognitive control and associated prefrontal activation?" The authors have documented the research linking PTSD with limbic, paralimbic, and prefrontal structures. They also have presented a sound rationale for exploring further this link with script driven imagery, as well as the advantages of using a more powerful (4 Telsa) fMRI.

While these objectives may have scientific merit, it is not clear that the Department of National Defence is the appropriate funding body for basic research on this issue. There are several funding agencies whose mandates may be more appropriate for investigations of basic neuroscience processes associated with brain functioning in PTSD (e.g., NSERC or CIHR).

EMDR literature review

In several instances, the proposal concludes that EMDR is an effective therapeutic intervention for PTSD. For instance, the authors state that EMDR was recently recommended as an "effective treatment for PTSD in the Practice Guidelines of the International Society for Traumatic Stress Studies (Foa et al., 2000). " (Richardson, Wilson, Hopper & Williamson, 2001, p. 4).

A survey of the EMDR literature makes apparent that the proposal provides an unbalanced assessment of the therapy. The investigators failed to review the entire EMDR research literature; appearing to focus only on the studies that suggest EMDR is effective. A thorough literature review, however, would show that there is a great deal of controversy remains concerning this therapy. In general the empirical literature is much less supportive of EMDR as a recognized therapy. For instance, a closer examination of the cited reference suggesting that EMDR is recommended as an effective treatment of PTSD indicates that EMDR is one chapter in a book summarizing PTSD therapies (Chemtob, Tolin, van der Kolk, & Pitman, 2000). This chapter summarizes EMDR procedures but also discusses dismantling research that casts doubt on the therapeutic benefits of the rapid eye movement component of the therapy. Overall, reviews of the empirical EMDR literature (see Cahill, Carrigan, & Freuh, 1999; Davidson & Parker, 2001; Herbert, Lilienfeld, Lorh, Montgomery, O'Donohue, Rosen, & Tolin, 2000; Hudson, Chase, & Pope, 1998; Shepherd, Stein, & Milne, 2000) conclude that

1. EMDR is an effective treatment only when compared to no treatment or waitlist controls or to non-specific therapies (e.g., biofeedback, relaxation);

2. EMDR is not more effective than exposure-based therapies, including stress inoculation, cognitive therapy techniques and prolonged exposure;

3. Eye movements, or indeed any other alternating stimuli (e.g. therapist finger tapping) are not responsible for treatment benefits.

A more complete summary of the EMDR literature contained in these reviews is provided in Appendix A, while an annotated bibliography of the recent EMDR review papers is given in Appendix B.

Requested financial support

The investigators are requesting $439,328 in order to complete this project. This is a methodologically and logistically complex project, requiring each subject to commit to more than 8-months of participation in one form or another.

However, there are several concerns with regard to the nature and dollar value of specific items in the request for financial support.

1. A very large proportion of the anticipated budget for the project is allocated to psychiatric assessments. Of the total $439,328 requested, $168,000 or just over 38% of the budget is

allocated to the psychiatric assessments both of the treatment and of the control subjects. From the procedures section of the report, it appears that each of the anticipated 40 PTSD subjects is assessed on three separate occasions, and each of the anticipated 20 control subjects is assessed on one occasion. The budget allocated to each assessment session is $1,200. The most labour intensive assessment session appears to be the first one. In the first session, the Coordinator/Interviewer administers or assesses each subject on 8 measures, and then gathers information for generating personal trauma-related scripts. It would be very helpful if some indication were given with regard to the anticipated duration of the first session. Even at $250 per hour, the cost the authors budgeted for each therapy session, $1,200 should pay for almost a 5-hour assessment session. In the second assessment session, treatment-related measures are administered again at a cost of $1,200, although this second session does not appear to require the same time commitment as the first (i.e., the SCID-1 and SCID-II structured interviews are not administered, and personal trauma-related scripts are not generated). This same issue arises for both the post-treatment and the 6-month post-treatment assessments. In sum, it appears unclear on what bases the authors have allocated costs for the psychiatric assessments. It is common in this sort of research for self-report measures to be administered by trained research assistants, and that qualified (i.e., PhD or MD level) professionals administer only structured clinical interviews. Thus, a research assistant, at a substantial cost saving, could administer many of the initial and follow-up assessment tools.

2. The second issue is related to the first. It is unclear from the proposal who will conduct the psychiatric assessments. The authors write that the first session will be conducted by the study Coordinator/Interviewer. Does the same person also conduct subsequent assessment sessions? Is the study Coordinator/Interviewer one of the authors of the proposal? The identities of the individuals budgeted to receive remuneration for completing various components of the project should be specified, particularly if these individuals are also the authors of the proposal. The requested financial support also budgets for a Subject Coordinator. Again, is this person hired specifically for this purpose or will this position be filled by one of the investigators? The authors also need to specify what the anticipated duration of this position is. According to NSERC and CIHR guidelines, post-docs (who often serve as study/subject coordinators) are typically paid between $35,000 and $40,000 for one year of full-time work.

3. Among the Subject Coordinator's responsibilities is the analysis of clinical data. How does this specific responsibility differ from data analyses? This is important as data analyses for both the control and therapy groups receive separate budget allocations. A total of $60,000, almost 14% of the total budget, is allocated for data analyses. The proposed project does involve the collection of a large amount of data. However, this amount of money would typically pay for the full-time statistical services of a dedicated assistant for well over a year. It is not clear that the data analyses for the proposed project would require more than 4 months of full-time work.

Recommendations

1. In light of the controversy regarding the effectiveness of EMDR as a treatment for PTSD, alternative control groups appear warranted. At a minimum, EMDR should be compared

to other specific therapeutic protocols for PTSD. For example, there are effective, empirically validated cognitive and cognitive-behavioural therapies for PTSD that seem quite appropriate options in this respect.

An alternate empirical approach would be to systematically investigate the relative therapeutic effectiveness of each component of EMDR (referred to as a dismantling study). For example, complete EMDR treatment could be compared with one that does not include the eye movements component, and with another treatment that does not include other aspects of EMDR (e.g., the positive cognition component). This approach would assess which, if any, of the major components of EMDR are associated both with brain function and with relieving PTSD symptomatology.

2. The proposal demands both significant time and psychic involvement of the military personnel who serve as participants in this research. Although several measures of psychological and interpersonal functioning are used as intake and trauma-related assessment measures, changes on these measures appear to be addressed in a somewhat cursory way in the hypotheses. This is unfortunate as these sorts of outcomes presumably would be of most value and relevance to military personnel experiencing the debilitating effects of PTSD. Thus, the proposal might more obviously concern itself with outcomes linked to the psychological and interpersonal functioning and recovery. Such refocusing would demonstrate that the aims of this research are more fundamentally tied to important long-term quality of life issues of Canadian Forces military personnel suffering from peacekeeping-related PTSD.

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A critical review of EMDR research

Overview of literature review

For the purposes of this literature review, approximately 200 abstracts concerning Eye Movement Desensitization and Reprocessing (EMDR) therapy were surveyed using *PsychInfo* and *MedLine* databases.

Particular emphasis was placed on reviews of experimental research directly comparing EMDR with other therapies and to meta-analyses of EMDR studies (see Appendix B). The following journals were surveyed: *Journal of Consulting and Clinical Psychology, Clinical Psychology Review, Journal of Anxiety Disorders, Journal of Behavior Therapy and Experimental Psychiatry, and the Journal of Traumatic Stress.*

EMDR is a relatively recently developed procedure for the treatment of traumatic memories and related conditions (Shapiro, 1989a; 1989b). According to Shapiro, psychopathology is the result of dysfunctionally stored information (Herbert et al., 1999). According to Shapiro, rapid eye movements facilitate the emotional processing of trauma. The rapid eye movement technique that has received the most attention and credit for therapeutic improvements associated with EMDR is actually administered as a component of a much broader therapeutic procedure (Tallis & Smith, 1994). Thus, EMDR is typically a structured, client-centred model that actually combines intrapsychic, behavioural, cognitive, body-oriented, and interactional approaches (Shapiro, Vogelmann-Sine, & Sine, 1994). EMDR typically entails 8 therapeutic components including sequential exposure, desensitization, cognitive restructuring, rehearsal and classical conditioning (Shapiro, 1996).

EMDR has aspects that make it appear to be a desirable therapeutic alternative, for instance, its applicability to a wide-variety of psychological disorders including PTSD, phobias, panic disorders, and eating disorders (Hudson, Chase, & Pope, 2000).

Particularly impressive are its claims of positive, permanent and dramatic effects in relatively few sessions (Shapiro, 1996). EMDR was also recently adopted as a 'probably efficacious treatment for PTSD' by Division 12 of the American Psychological Association, also lending considerable apparent credibility to the technique (Herbert et al., 1999).

As compelling as claims concerning EMDR are, the underlying mechanisms responsible for therapeutic improvements remain unclear. Shapiro, the originator of the EMDR (see Shapiro, 1996; 1996b; Shapiro et al., 1994), proposes that rapid eye movements stimulate an inherent physiological processing system that allows dysfunctional information to be adaptively resolved, resulting in increased insight and more functional behaviour. The rapid eye movements are assumed to weaken the neural links between the traumatic stimulus and emotional response, thereby restoring balance. However, the exact mechanisms implicated here are not described in any more detail. Moreover, the proceeding account is not consistent with any established "physiological or neurological phenomenon [and thus does not provide] a compelling theoretical rational for EMDR" (Hudson et al., 2000, p. 3).

A related hypothesis suggests the basis of EMDR effects lies with the investigatory component of the orienting reflex, an evolutionary development enabling organisms to assess their environment for both rewards and dangers. EMDR is thought to promote conditioning whereby the positive visceral element of the investigatory reflex, presumably the eye movements themselves, is paired with clinically-induced noxious memories thereby removing associated negative affect (MacCulloch & Feldman, 1996). The question becomes whether the conditioning that is the presumed basis of change is predicated on the eye movements or whether any pairing of negative memories to positive stimuli might produce similar beneficial effects.

A further suggestion is that the rapid eye movements are similar to those produced during REM sleep which, in psychoanalytic theory, has been associated with a working through of troubling life events (Hudson et al., 2000). Unfortunately, there is no empirical evidence to support the claim that the rapid eye movements are more than correlates of psychic working through that may occur with REM states or that the eye movements of EMDR are equivalent to those of REM states. Moreover, there is no empirical evidence linking dream states to therapeutic effects, and certainly not to benefits that exceed those experienced in waking states (Hudson et al., 2000).

A final hypothesis offered by proponents of EMDR is that non-specific factors associated with the treatment such as human contact, focus on traumatic experiences, distraction and/or relaxation account for beneficial therapeutic effects (Hudson et al., 2000). While positive effects of EMDR may well be attributable to these components, they tend to prove the point that positive results are the product of techniques equally associated with other therapies and that the eye movement component of the therapy is superfluous.

Several excellent scholarly reviews of the EMDR literature exist (Cahill, Carrigan, & Frueh, 1999; Cusak & Spates, 1999; Herbert, Lilienfeld, Lorh, Montgomery, O'Donohue, Rosen, & Tolin, 2000; Hudson, Chase, & Pope, 1998). While one review suggests that the initial evidence concerning EMDR is encouraging (Shepard, Stein, & Milne, 2000), most reviews conclude that EMDR offers no therapeutic benefits over that of traditional and empirically established exposure and cognitive behavioural treatments for PTSD (Cahill et al., 1999; Herbert et al., 2000). These conclusions are supported by the results of a meta-analysis (Davidson & Parker, 2001), a technique that provides an empirical evaluation of a research area by examining the size of treatment effects across groups of studies.

First of all, it is important to note that most reviews indicate that a great deal of EMDR research is poorly designed or inappropriately analyzed, or is based upon case study results (Cahill et al, 1999; Herbert et al., 2000). Reviews of more rigorous scientific research suggest that EMDR does provide significant relief from psychological distress relative to no treatment or to wait list control conditions. The beneficial effects of EMDR are most evident in so-called process measures; that is self-report measures of distress assessed during therapy such as the Subjective Units of Discomfort (SUDS) and the Validity of Cognitions (VOC) scales. There is less evidence of EMDR's effectiveness at the level of outcome, that is behavioural or physiological indices of distress associated with trauma. Moreover, the literature overwhelmingly concludes that EMDR does not provide therapeutic benefits above those of exposure-based and cognitive behavioural treatments. In particular, the meta-analysis conducted Davidson and Parker (2001) revealed that, across studies, the eye movement

component of EMDR, the supposed basis of the therapy, produced near-zero effects when compared with studies that did not include the eye movement component. Dismantling studies, those that systematically vary components of therapies, also confirm the lack of effect of eye movement components. Unfortunately, although the critical components of EMDR, namely rapid eye movements (or other lateral stimulation such as therapists' finger tapping, light bars or sound generators) fail to account for the beneficial effects of the therapy, as Cusak and Spates (1999) note that these same elements have nevertheless entered unparsimoniously as explanatory variables for the therapy.

In sum, then, it is exceedingly difficult to disagree with the following commentary concerning EMDR:

> "When experimental research consistently demonstrates that EMDR without eye movement or lateral stimulation is as effective as the full treatment procedure, it is no longer reasonable for clinicians to learn the clinical intricacies of their hand movements (or the use of automated flashing light bars or sound generators) while misinforming their clients that they can expect accelerated information processing as a consequence" (Herbert et al., 2000, p. 964-965).

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Hudson, J.I., Chase, E.A., & Pope, H.G. (1998). Eye movement desensitization and reprocessing in eating disorders: Caution against premature acceptance. International Journal of Eating Disorders, 23, 1-5.

MacCulloch, M.J., & Feldman, P. (1996). Eye movement desensitization treatment utilized the positive visceral element of the investigatory reflex to inhibit the memories of post-traumatic stress disorder: A theoretical analysis. British Journal of Psychiatry, 169, 571-579.

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Shapiro, F. (1989). Eye movement desensitization procedure in the treatment of traumatic memories. Journal of Traumatic Stress, 2, 199-223.

Shapiro, F. (1989). Eye movement desensitization: A new treatment for post-traumatic stress disorder. Journal of Behavior Therapy & Experimental Psychiatry, 20, 211-217.

Shapiro, F. (1996). Eye movement desensitization and reprocessing: Evaluation of controlled PTSD research. Journal of Behavior Therapy and Experimental Psychiatry, 27, 209-

218.

Shapiro, F. (1996b). Errors of context and review of eye movement desensitization and reprocessing research. Journal of Behavior Therapy and Experimental Psychiatry, 27, 313-317.

Shapiro, F., Vogelmann-Sine, S., & Sine, L. (1994). Eye movement desensitization and reprocessing: Treating trauma and substance abuse. Journal of Psychoactive Drugs, 26, 379-391.

Shepherd, J., Stein, K., & Milne, R. (2000). Eye movement desensitization and reprocessing in the treatment of post-traumatic stress disorder: A review of an emerging therapy. Psychological Medicine, 30, 863-871.

Tallis, F., Smith, E. (1994). Does rapid eye movement desensitization facilitate emotional processing. Behaviour Research and Therapy, 32, 459-461.

Appendix A: Selected annotated bibliography of EMDR research reviews

Meta-analysis

1. Davidson, P.R., & Parker, K.C. (2001). Eye movement desensitization and reprocessing (EMDR): a meta-analysis. Journal of Consulting and Clinical Psychology 69, 305-316.

> Eye movement desensitization and reprocessing (EMDR), a controversial treatment suggested for posttraumatic stress disorder (PTSD) and other conditions, was evaluated in a meta-analysis of 34 studies that examined EMDR with a variety of populations and measures. Process and outcome measures were examined separately. EMDR showed an effect on both when compared with no treatment and with therapies not using exposure to anxiety-provoking stimuli and in pre post EMDR comparisons. However, no significant effect was found when EMDR was compared with other exposure techniques. No incremental effect of eye movements was noted when EMDR was compared with the same procedure without them. DeRubeis and Crits-Christoph (1998) noted that EMDR is a potentially effective treatment for non-combat PTSD, but studies that examined such patient groups did not give clear support to this. In sum, EMDR appears to be no more effective than other exposure techniques, and evidence suggests that the eye movements integral to the treatment, and to its name, are unnecessary.

Reviews

1. Chemtob, C. M. Tolin, D. F., van der Kolk, B. A. & Pitman, Roger K. (2000). Eye movement desensitization and reprocessing. In E. B. Foa, T. M. Keane, & M. J. Friedman (Eds.), Effective treatments for PTSD: Practice guidelines from the International Society for Traumatic Stress Studies (pp. 139-154). New York, NY: The Guilford Press.

> Provides an overview of the history and theory of eye movement desensitization and reprocessing (EMDR) and summarizes the procedure and provides a review of the outcome literature concerning its effectiveness for posttraumatic stress disorder (PTSD). EMDR treatment requires the patient to identify multiple aspects of the traumatic memory, including the images associated with the event, the affective and physiological response elements, the negative self-representation, induced by the traumatic experience (for PTSD), and an alternate, desired, positive self-representation. EMDR incorporates the following 8 stages: patient history and treatment planning, preparation, assessment, desensitization and reprocessing, installation of positive cognition, body scan, closure, and reevaluation. Dismantling studies of the contribution of eye movements to the efficacy of the EMDR procedure are reviewed, followed by an overall rating reflecting the current knowledge of EMDR's efficacy, along with recommendations for its use.

The reviewed studies are divided into 2 categories: those that employed a wait-list control, and those that employed control treatments. The chapter concludes with suggestions for further research.

2. J. Shepherd, J., Stein, K., & Milne, R. (2000). Eye movement desensitization and reprocessing in the treatment of post-traumatic stress disorder: a review of an emerging therapy. Psychological Medicine, 30, 863-871.

Background. Eye Movement Desensitization and Reprocessing (EMDR) is a relatively new form of psychotherapy for post-traumatic stress disorder. We critically reviewed randomized controlled trials of EMDR. Methods. A wide range of electronic databases and reference lists of articles obtained were searched and relevant experts were consulted. Studies were critically appraised according to established criteria. Results. We found 16 published randomized controlled trials (RCTs) comparing EMDR with alternative psychotherapy treatments, variants of EMDR and with delayed treatment groups. Studies were generally small (mean number of patients 35) and of variable methodological quality, with only five reporting blinding of outcome assessors to treatment allocation, and in some cases with high loss to follow-up. In most cases EMDR was shown to be effective at reducing symptoms up to 3 months after treatment. In one case benefit was maintained up to 9 months and in another (uncontrolled) follow-up treatment effect was present at 15 months. Two studies suggest that EMDR is as effective as exposure therapies, three claim greater effectiveness in comparison to relaxation training, and three claim superiority over delayed treatment groups. Of the studies examining specific treatment components, two found that treatment with eyes moving was more effective than eyes fixed, while three studies found the two procedures to be of equal effectiveness. Conclusion. The evidence in support of EMDR is of limited quality but results are encouraging for this inexpensive, simple therapy. Further research is warranted in larger samples with longer periods of follow-up.

3. Herbert, J.D., Lilienfeld, S.O., Lohr, J.M., Montgomery, R.W., O'Donohue, W.T., Rosen, G.M., & Tolin, D.F. (2000). Science and pseudoscience in the development of eye movement desensitization and reprocessing: Implications for clinical psychology. Clinical Psychology Review, 20, 945–971.

The enormous popularity recently achieved by Eye Movement Desensitization and Reprocessing (EMDR) as a treatment for anxiety disorders appears to have greatly outstripped the evidence for its efficacy from controlled research studies. The disparity raises disturbing questions concerning EMDR's aggressive commercial promotion and its rapid acceptance among practitioners. In this article, we: (1) summarize the evidence concerning EMDR's efficacy; (2) describe the dissemination and promotion of EMDR; (3) delineate the features of pseudoscience and explicate their relevance to EMDR; (4) describe the pseudoscientific marketing practices used to promote EMDR; (5) analyze factors contributing to the acceptance of EMDR by professional psychologists; and (6) discuss practical considerations for professional psychologists regarding the adoption of EMDR into professional practice. We argue that EMDR provides an

excellent vehicle for illustrating the differences between scientific and pseudoscientific therapeutic techniques. Such distinctions are of critical importance for clinical psychologists who intend to base their practice on the best available research.

4. Feske, U. (1998). Eye movement desensitization and reprocessing treatment for posttraumatic stress disorder. Clinical Psychology: Science & Practice, 5, 171-181.

A qualitative review of experimental and quasi-experimental outcome studies (D. Forbes et al, 1994; R. A. Kleinknecht and M. P. Morgan, 1992) of eye movement desensitization and reprocessing (EMDR) treatment for persons with posttraumatic stress disorder (PTSD) suggests that the treatment is effective for civilian but not combat PTSD. The current data indicate that additional research into EMDR's efficacy for PTSD is warranted. Further studies should include comparisons to placebo control procedures and existing validated treatments for PTSD, an adequate treatment dose, and systematic efforts to establish and assess treatment integrity and quality, and long-term follow-up data. The therapeutic mechanisms underlying EMDR's observed benefits remain elusive. Whether the eye movement or some other type of stimulation is essential to EMDR's effects cannot be determined from the current data.

5. MacCluskie, K.C. (1998). A review of eye movement desensitization and reprocessing (EMDR): Research findings and implications for counsellors. Canadian Journal of Counselling, 32, 116-137.

Provides a synopsis of the research examining the efficacy of Eye Movement Desensitization and Reprocessing (EMDR). EMDR is most often used to treat symptoms of posttraumatic stress disorder (PTSD). The research literature pertaining to EMDR falls into 4 categories: pilot studies, uncontrolled case studies, controlled case studies, and controlled group studies. Each of these categories will be systematically reviewed. This paper also provides overviews/critiques of previously published research, which are cited throughout the descriptions of studies. In addition to the synopsis of the research, readers are offered references for other reviews of the literature, and a discussion of why this topic has generated such a heated debate. There is also a discussion of the implications of the research findings for counselors in practice, including how to make sense of the conflicting data and the ethical implications of using, or not using, this technique with clients who are suffering from symptoms secondary to emotional trauma.

6. Lohr, J.M., Tolin, D.F., & Lilienfeld, S.O. (1998). Efficacy of Eye Movement Desensitization and Reprocessing: Implications for behavior therapy. Behavior Therapy, 29, 123-156.

The commitment of behaviour therapy to empiricism has led it to a prominent position in the development of validated methods of treatment. The recent development and rapid expansion of Eye Movement Desensitization and

Reprocessing (EMDR), a treatment that bears a resemblance to behavioural techniques and that has been proposed as an alternative to such techniques for numerous psychological disorders, raises important questions for the field of behaviour therapy. In this article, we examine 17 recent studies on the effectiveness of EMDR and the conceptual analysis of its mechanisms of action. The research we review shows that (a) the effects of EMDR are limited largely or entirely to verbal report indices, (b) eye movements appear to be unnecessary for improvement, and (c) reported effects are consistent with non-specific procedural artifacts. Moreover, the conceptual analysis of EMDR is inconsistent with scientific findings concerning the role of eye movements. Implications of the empirical and theoretical literature on EMDR for behaviour therapy are discussed.

7. Hudson, J.I., Chase, E.A., & Pope, H.G., Jr. (1998). Eye movement desensitization and reprocessing in eating disorders: Caution against premature acceptance. International Journal of Eating Disorders, 23, 1-5.

Reviews the literature to assess the benefits and risks of the use of eye movement desensitization and reprocessing (EMDR) in the treatment of eating disorders. Looking at the question of its benefits, no methodologically sound studies were found to show efficacy for EMDR in eating disorders, or, indeed, any psychiatric disorder. A sound theoretical basis for expecting EMDR to be effective was not found. In additional, EMDR may have adverse effects. First, EMDR is sometimes used in conjunction with efforts to "recover" memories of traumatic events. But "recovered memory" therapy may carry a risk of inducing potentially harmful false memories. Second, use of EMDR may prevent or delay other therapies of established efficacy for eating disorders, such as cognitive behavioural therapy and antidepressants. In light of the findings, the risk/benefit ratio of EMDR does not as yet encourage its widespread acceptance.

8. DeBell, C., & Jones, R.D. (1997). As good as it seems? A review of EMDR experimental research. Professional Psychology: Research & Practice, 28, 153-163.

The article reviews 7 experimental studies that examined eye movement desensitization and reprocessing (EMDR) treatment. The 7 studies varied greatly in their complexity, their designs, how treatment effects were measured, and their results. Each study is detailed and critically examined. A summary of results is provided as well as suggestions for clinical application and future research. In addition, questions are raised regarding F. Shapiro's (1995) approach to disseminating information about EMDR.

9. Lee, C., Gavriel, H., & Richards, J. (1996). Eye movement desensitization: Past research, complexities, and future direction. Australian Psychologist, 31, 168-173.

This paper reviews the present state of knowledge about the efficacy of eye movement desensitization and reprocessing (EMDR) as a treatment for traumatic

memories, and draws on information-processing theory to identify basic problems with much of the research on this procedure. The general failure of this research to take into account the complexity and hypothesised theoretical underpinnings of EMDR is discussed, and suggestions are made for future research. Although EMDR has shown some promise as an effective intervention for posttraumatic stress disorder (PTSD), well controlled comparative outcome studies are required to establish its efficacy before investigation of its active therapeutic components should be undertaken.

10. Shapiro, F. (1996). Eye movement desensitization and reprocessing (EMDR): Evaluation of controlled PTSD research. Journal of Behavior Therapy & Experimental Psychiatry, 27, 209-218.

Provides a comprehensive, up-to-date review of the literature on eye movement desensitization and reprocessing (EMDR) research in posttraumatic stress disorder (PTSD), encompassing published articles, papers in press, and papers presented at regional and national meetings. Completed controlled studies that have not been subject to peer scrutiny were excluded. A number of studies are presented that support EMDR as an empirically validated method, used in the context of other methods, in the treatment of PTSD. However, in several studies, clinical standards have not always been integrated with rigorous scientific methodology. The suggested standards include fidelity checks for the method being tested, the use of appropriate psychometrics, and assessment of co-morbidity factors. At the same time, because of common misconceptions about the method, a variety of problematic issues are discussed.

11. Cahill, S.P., Carrigan, M.H., & Frueh, B.C. (1999). Does EMDR Work? And if so, Why? A Critical Review of Controlled Outcome and Dismantling Research. Journal of Anxiety Disorders, 13, 5–33.

Research on Eye Movement Desensitization and Reprocessing therapy (EMDR) was reviewed to answer the questions "Does EMDR work?" and "If so, Why?" This first question was further subdivided on the basis of the control group: (a) no-treatment (or wait list control), (b) nonvalidated treatments, and (c) other validated treatments. The evidence supports the following general conclusions: First, EMDR appears to be effective in reducing at least some indices of distress relative to no-treatment in a number of anxiety conditions, including posttraumatic stress disorder, panic disorder, and public-speaking anxiety. Second, EMDR appears at least as effective or more effective than several nonvalidated treatments (e.g., relaxation, active listening) for posttraumatic stress reactions. Third, despite statements implying the contrary, no previously published study has directly compared EMDR with an independently validated treatment for posttraumatic stress disorder (e.g., therapist-directed flooding). In the treatment of simple phobia, participant modeling has been found to be more effective than EMDR. Fourth, our review of dismantling studies reveals there is no

convincing evidence that eye movements significantly contribute to treatment outcome. Recommendations regarding further research directions are provided.

EMDR vs. Specific Treatments

1. Muris, P., Merckelbach, H., Holdrinet, I., & Sijsenaar, M. (1998). Treating phobic children: Effects of EMDR versus exposure. Journal of Consulting & Clinical Psychology, 66, 193-198.

This study examined the efficacy of eye movement desensitization and reprocessing (EMDR) and exposure in the treatment of a specific phobia. Twenty-six spider phobic children were treated during 2 treatment phases. During the first phase, which lasted 2.5 hr, children were randomly assigned to either (a) an EMDR group (n = 9), (b) an exposure in vivo group (n = 9), or (c) a computerized exposure (control) group (n = 8). During the 2nd phase, all groups received a 1.5-hr session of exposure in vivo. Therapy outcome measures (i.e., self-reported fear and behavioural avoidance) were obtained before treatment, after Treatment Phase 1, and after Treatment Phase 2. Results showed that the 2.5-hr exposure in vivo session produced significant improvement on all outcome measures. In contrast, EMDR yielded a significant improvement on only self-reported spider fear. Computerized exposure produced nonsignificant improvement. Furthermore, no evidence was found to suggest that EMDR potentiates the efficacy of a subsequent exposure in vivo treatment. Exposure in vivo remains the treatment of choice for childhood spider phobia.

2. Muris, P., & Merckelbach, H. (1997). Treating spider phobics with eye movement desensitization and reprocessing: A controlled study. Behavioural & Cognitive Psychotherapy, 25, 39-50.

Examined the efficacy of eye movement desensitization and reprocessing (EMDR) in the treatment of a specific phobia. 24 female spider phobic Ss (aged 24-51 yrs) were randomly assigned to either (1) an EMDR group (n = 8), (2) an imaginal exposure group (n =8), or (3) a control group (n = 8). Both the EMDR and the imaginal exposure group underwent a 1-hr treatment. The control group initially received no treatment, and waited for 1 hr. Next, all groups received exposure in vivo. Treatment outcome was evaluated with a standardized Behavioural Avoidance Test. No evidence was found for EMDR being more effective than imaginal exposure or waiting list control. In fact, only exposure in vivo therapy resulted in significant improvement on the behavioural avoidance test.

3. Muris, P., Merckelbach, H., van Haaften, H., & Mayer, B. (1997). Eye movement desensitisation and reprocessing versus exposure in vivo. A single-session crossover study of spider-phobic children. British Journal of Psychiatry, 171, 82-86.

Compared the efficacy of eye movement desensitization and reprocessing (EMDR) with that of exposure in vivo in the treatment of a specific phobia. 22 spider-phobic females (aged 9-14 yrs) who met the Mental Disorders-III-Revised (DSM-III-R) criteria for specific phobia participated in the study. Children were treated with one session of exposure in vivo and one session of EMDR in a crossover design. Treatment outcome was evaluated by self-report measures, a behavioural avoidance test, and a physiological index (skin conductance level). Results show positive effects of EMDR, but also suggest that it is especially self-report measures that are sensitive to EMDR. Improvement on a behavioural measure was less pronounced, and exposure in vivo was found to be superior in reducing avoidance behaviour. With regard to skin conductance level, EMDR and exposure in vivo did not differ. EMDR has no additional value in treatment of this type of animal phobia, for which exposure in vivo is the treatment of choice.

4. Grant J.D., & Susan H.S. (1999). The Relative Efficacy and Treatment Distress of EMDR and a Cognitive-Behavior Trauma Treatment Protocol in the Amelioration of Posttraumatic Stress Disorder. Journal of Anxiety Disorders, 13, 131–157.

The growing body of research into treatment efficacy with Posttraumatic Stress Disorder (PTSD) has, by-and-large, been limited to evaluating treatment components or comparing a specific treatment against wait-list controls. This has led to two forms of treatment, Eye Movement Desensitization and Reprocessing (EMDR) and Cognitive-Behaviour Therapy (CBT), vying for supremacy without a controlled study actually comparing them. The present research compared EMDR and a CBT variant (Trauma Treatment Protocol; TTP) in the treatment of PTSD, via a controlled clinical

study using therapists trained in both procedures. It was found that TTP was both statistically and clinically more effective in reducing pathology related to PTSD and that this superiority was maintained and, in fact, became more evident by 3-month follow-up. These results are discussed in terms of past research. Directions for future research are suggested.

EMDR with and without eye movements

1. Feske, U., & Goldstein, A.J. (1997). Eye movement desensitization and reprocessing treatment for panic disorder: A controlled outcome and partial dismantling study. Journal of Consulting & Clinical Psychology, 65, 1026-1035.

Forty-three outpatients with DSM-III-R (Diagnostic and Statistical Manual of Mental Disorders, 3rd Ed., revised; American Psychiatric Association, 1987) panic disorders were randomly assigned to receive 6 sessions of eye movement desensitization and reprocessing (EMDR), the same treatment but omitting the eye movement, or to a waiting list. Post-test comparisons showed EMDR to be more effective in alleviating

panic and panic-related symptoms than the waiting-list procedure. Compared with the same treatment without the eye movement, EMDR led to greater improvement on 2 of 5 primary outcome measures at post-test. However, EMDR's advantages had dissipated 3 months after treatment, thereby failing to firmly support the usefulness of the eye movement component in EMDR treatment for panic disorder.

2. Hyer, L., & Brandsma, J.M. (1997). EMDR minus eye movements equals good psychotherapy. Journal of Traumatic Stress, 10, 515-522.

Eye movement desensitization and reprocessing (EMDR) is a form of exposure/desensitization therapy roughly equal in efficacy to others currently available. It is argued that EMDR is efficacious independent of the value of its component parts (e.g., eye movements) and is successful because it applies common and generally accepted principles of psychotherapy. 10 curative principles of EMDR are discussed as reflective of sound psychotherapy practice. It is hoped that an understanding of EMDR from the perspective of the practice and theory of psychotherapy will assist in its study.

3. Dunn, T.M., Schwartz, M., Hatfield, R.W., & Wiegele, M. (1996). Measuring effectiveness of eye movement desensitization and reprocessing (EMDR) in non-clinical anxiety: A multi-subject, yoked-control design. Journal of Behavior Therapy & Experimental Psychiatry, 27, 231-239.

Examined the efficacy of eye movement desensitization and reprocessing (EMDR) in a controlled setting to determine if it would be more effective in reducing stress in 28 college students who were paired on sex, age, severity, and type of stressful or traumatic incident. One S in each pair was selected to receive EMDR; the experimental partner spent the same amount of time receiving a visual (non-movement) placebo. Subjective units of discomfort scores and physiological measurements were taken prior to and following treatment. Analysis of physiological measurements and self-reported levels of stress were performed within and between each group. Results show that while the EMDR group showed significant reductions of stress, EMDR was no better than a placebo. This suggests EMDR's specific intervention involving eye movement may not be a necessary component of the treatment protocol.

Dismantling Study

1. Cusack, K., & Spates, C.R. (1999). The Cognitive Dismantling of Eye Movement Desensitization and Reprocessing (EMDR) Treatment of Posttraumatic Stress Disorder (PTSD). Journal of Anxiety Disorders, 13, 87–99.

Twenty-seven subjects were exposed to standard Eye Movement Desensitization and Reprocessing (EMDR) treatment or a similar treatment without the explicit cognitive elements found in EMDR. Standardized psychometric assessments were administered (Structured Interview for Post Traumatic Stress Disorder, Impact of Event Scale, Revised Symptom Checklist-90) by independent assessors at pre-test, post-test and two separate follow-up periods. Potential subjects met specific inclusion/exclusion criteria. Subjective measures including Subjective Units of Disturbance and Validity of Cognition assessments were also conducted. A two-factor repeated measures analysis of variance revealed that both treatments produced significant symptom reductions and were comparable on all dependent measures across assessment phases. The present findings are discussed in light of previous dismantling research that converges to suggest that several elements in the EMDR protocol may be superfluous in terms of the contribution to treatment outcome. These same elements have nevertheless entered unparsimoniously into consideration as possible explanatory variables.

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14. ABSTRACT

(U) This report reviews a research proposal, the major objective of which is to assess the relation between PTSD (Post Traumatic Stress Disorder) and limbic, paralimbic, and prefrontal brain function as assessed with functional MRI (Magnetic Resonance Imaging), and to determine whether an Eye Movement Desensitization and Reprocessing (EMDR) intervention causes those structures to return to a normal mode of functioning. The proposed study secondarily explores the effectiveness of EMDR in reducing PTSD symptomatology. While the first and second objectives of the study may have scientific merit, the mandates of other funding agencies would appear to be more appropriate for investigations of basic neuroscience processes associated with brain functioning in PTSD (e.g., NSERC or CIHR). Importantly, a critical review of the EMDR research reveals that a great deal of controversy surrounds the effectiveness of this therapy. EMDR has not been shown to be more effective than presently validated PTSD exposure-based therapies, and the eye movement component of EMDR appears to provide no therapeutic benefit. Finally, there is a lack of clarity around specific items listed in the proposed budget. Given these concerns it is not recommended that this proposal be funded at this time.

(U) Le présent rapport passe en revue une proposition de recherche, dont l'objectif premier est d'évaluer la relation entre le SSPT (syndrome de stress post-traumatique) et les fonctions cérébrales limbiques, paralimbiques et préfrontales, en utilisant l'IRM fonctionnelle (imagerie par résonance magnétique), et de déterminer si le traitement de désensibilisation des mouvements oculaires et de retraitement (DMOR) permet à ces fonctions de revenir à un mode de fonctionnement normal. L'étude proposée explore aussi l'efficacité de la désensibilisation des mouvements oculaires et du retraitement pour réduire les symptômes du SSPT. Même si le premier et le second objectifs de l'étude peuvent avoir des avantages scientifiques, d'autres organismes de financement sembleraient plus appropriés pour financer la recherche sur les processus de neurosciences élémentaires associés au fonctionnement du cerveau lors du SSPT (par exemple, le CRSNG ou les IRSC). Fait important, une revue critique de la recherche sur la désensibilisation des mouvements oculaires et le retraitement révèle que ce traitement suscite beaucoup de controverse. Il n'a pas été démontré que la désensibilisation des mouvements oculaires et le retraitement constituent un traitement plus efficace du SSPT que les thérapies d'exposition actuellement utilisées à cette fin, et la composante mouvements oculaires du traitement DMOR ne semble avoir aucun effet thérapeutique. Enfin, il y a un manque de clarté en ce qui concerne certains postes inscrits au budget proposé. Étant donné ces problèmes, il n'est pas recommandé de financer cette proposition pour le moment.

15. KEYWORDS, DESCRIPTORS or IDENTIFIERS

(U) Post Traumatic Stress Disorder; Magnetic Resonance Imaging; Eye Movement Desensitization and Reprocessing

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