Remediation of intrusive symptoms of PTSD in fewer than five sessions: a 30-person pre-pilot study of the RTM Protocol

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ABSTRACT

Introduction: The Reconsolidation of Traumatic Memories (RTM) Protocol is a brief non-traumatizing intervention for the intrusive symptoms of post-traumatic stress disorder (PTSD). It is supported by nearly 25 years of anecdotal and clinical reports. This study reports the first scientific evaluation of the protocol. **Methods:** A 30-person pilot study using male Veterans with a pre-existing diagnosis of PTSD. Intake criteria included interviews and confirmatory re-diagnosis using the PTSD Checklist–Military version (PCL-M). Of 33 people who met the inclusion criteria, 26 completed treatment using the RTM protocol. A small (n = 5) wait-list control group was included. All participants were reassessed following treatment using the PCL-M. **Results:** Of 26 program completers, 25 (96%) were symptom free at 6-week follow-up. Mean PCL-M score at intake was 61 points. At the 6-week follow-up, the mean PCL-M score was 28.8, with a mean reduction in scores of 33 points. Hedges' g was computed for 6-week follow-up and showed a 2.9 SD difference from intake to follow-up. A wait-list control analysis indicated non-significant symptom changes during the 2-week wait period. **Discussion:** Results suggest that RTM is a promising intervention worthy of further investigation.

Key words: NLP, PCL-M, PTSD, reconsolidation, RTM

RÉSUMÉ

Introduction : Le protocole de reconsolidation de souvenirs traumatiques est une intervention non traumatique contre les symptômes de l'état de stress post-traumatique (ÉSPT). Ce protocole est soutenu par près de vingt-cinq ans de travaux en clinique et par l'étude de rapports empiriques. Cette étude présente la première évaluation scientifique du protocole. **Méthodes :** Le projet pilote de trente participants a étudié des vétérans pré-diagnostiqués avec ÉSPT. Les critères d'admissions incluaient une entrevue avec la confirmation du diagnostic d'ÉSPT en utilisant la liste de vérification militaire de l'État de stress post-traumatique. Trente-trois personnes répondaient aux critères d'admission, vingt-six ont complété le traitement. Un petit groupe (n = 5) d'attente a été inclus. Tous les participants ont été réévalués suite au traitement en utilisant la liste de vérification militaire de l'État de stress post-traumatique. **Résultats :** Vingt-cinq des personnes qui ont complété le traitement (96 %) n'avaient plus de symptômes lors de leur du suivi à six semaines. Le résultat moyen de la liste de vérification militaire de l'ÉSPT était de 61 points. Lors de l'examen de suivi à 6 semaines, le résultat moyen était de 28.8 avec une réduction moyenne de 33 points. Le coefficient Hedges' g a été calculé lors des suivis de six semaines et a montré une différence de 2.9 SD entre le début du traitement et le suivi a six semaines. Un contrôle de la liste d'attente indiquait des changements non-significatifs lors de la période d'attente de deux semaines. **Discussion :** Les résultats suggèrent que le protocole de reconsolidation des souvenirs traumatiques est un traitement efficace digne d'étude continu.

Mots-clés : état de stress post-traumatique (ÉSPT), liste de vérification militaire de l'état de stress post-traumatique, programmation neuro-linguistique (PNL), reconsolidation, reconsolidation de souvenirs traumatiques (RST)

INTRODUCTION

Post-traumatic stress disorder (PTSD) is a debilitating condition that affects nearly 50% of the 2.5 million warriors who have served in the Middle East.[1] Current treatments for PTSD are often effective but do not work for everyone. Evidence has suggested that their largest effects are in symptom amelioration with variable rates of diagnosis loss. Preferred treatments are cognitive–behavioural, exposure, and pharmacological. Each is expensive and has a wide range of effect sizes, and some last for many months. Eye movement desensitization and reprocessing is also used. There is a need

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to continue developing and improving interventions targeting PTSD.[2–11]

Reconsolidation of Traumatic Memories (RTM) is a brief treatment that is typically completed in fewer than six sessions.[12–14] Anecdotal and clinical reports[13] have indicated high rates of success. That literature includes case studies,[13,14] larger group applications,[15] and one of the authors' (FB) unpublished personal experience with hundreds of victims of the 9/11 tragedy. RTM's non-traumatizing nature and brief treatment regimen are expected to encourage treatment compliance and completion. The procedure is distinctive in that it does not rely on either the top-down interventions typical of cognitive–behavioural therapies or the extinction protocols used by exposure-based treatments. RTM is believed to be based on reconsolidation, a long-term memory-updating mechanism.[2,11,13,16–22]

The protocol is manualized for use under the supervision of a licensed mental health practitioner. It begins with a brief, quickly terminated reminder of the traumatic event, believed to render the traumatic memory subject to change. After taking measures to ensure that the subject is calm and fully oriented to the present, and that autonomic arousal has dissipated, it then adds dissociative experiences that restructure the emotional responses to the memory. Subjects report that after treatment the memory is accessible but non-traumatizing. In the literature reviewed, there is no report of symptom re-emergence.[11–14]

This study focused on the following research question: Is RTM an effective intervention for PTSD? This led to two hypotheses: The first was that RTM will yield statistically significant reductions in pre–post comparisons on the PTSD Checklist–Military version (PCL-M) and those score reductions will be clinically significant as defined by Monson et al.[33] The second hypothesis was that post-treatment scores for RTM subjects will be significantly lower than control scores and that those differences for RTM subjects will also be clinically significant.

History of the intervention

The RTM Protocol is a manualized intervention developed by researchers associated with the Research and Recognition Project.[12] A similar procedure by Richard Bandler appeared in *Frogs into Princes*[24] and was refined in *Using Your Brain for a Change*.[25] The intervention was expanded and reconfigured by Connirae and Steve Andreas in *Heart of the Mind,*[26] the first print reference addressing use of the technique to treat PTSD. Dilts and Delozier[27] provided an alternative version in their *Encyclopedia of Systematic Neuro-linguistic Programming*. Another version, widely used in the United Kingdom as the Rewind Technique, has been accepted as a therapeutic intervention under the National Institute for Health and Care Excellence guidelines.[28]

Mechanism

A search of the literature for plausible mechanisms found the reconsolidation mechanism to be the most likely candidate. Schiller and Phelps[11] reported that reconsolidation has been the subject of a growing body of research, the bulk of which has been devoted to animal studies. Increasing evidence supports its presence in humans.[11,16–18] Reconsolidation is conserved across species.[11,19]

Reconsolidation describes the reactivation of long-term memories that are destabilized by their evocation in certain contexts. A reactivated memory may be subject to change. With fear-based memories, if the threat context remains the same, the memory is unchanged, maintained in its current state. If circumstances have intensified, the memory's impact may worsen; retraumatization can increase the intensity of such memories. If new circumstances provide evidence that the predicted threat is no longer relevant, the strength of the affective charge may decrease.

Early pharmacological studies have indicated that reconsolidation depends on protein synthesis after a brief reminder of the target memory. The labile period begins about 10 minutes after the reminder stimulus and lasts up to 6 hours.[11,18,20,21]

METHODS

Participants

Subjects were recruited from Veterans' groups in various New York localities. All were male US Veterans with a pre-existing diagnosis of PTSD. Subjects reported the following trauma contexts: Iraq (n = 7), Vietnam (n = 6), Central America (n = 4), Afghanistan (n = 2), non-combat (e.g., earthquake relief, firing range incident; n = 2), and non-military (e.g., childhood abuse, post-military trauma; n = 5). Seventeen subjects identified as Caucasian, 5 as African American, and 4 as other ethnicities. The mean age was 47.5 (SD = 13.4) years. An average of 23.9 (SD = 16.0) years had elapsed between traumatization and RTM treatment.

Inclusion and exclusion criteria. Of 58 referrals, 33 satisfied inclusion criteria as follows: pre-existing diagnosis of PTSD from the US Department of Veterans Affairs (VA) or the US Department of Defense (DOD); PTSD symptoms including intrusive, instantaneous phobic-type responses to triggering stimuli; and observable autonomic arousal recounting the index trauma.

Exclusion criteria were comorbid Axis I or II disorders, PTSD symptoms perceived as part of subject's identity structure, and prospects were adjudged not capable of sustained attention. Excluded participants were referred to their ongoing treatment provider. Of 33 subjects meeting the inclusion criteria, 3 did not report for treatment, 1 falsified data, 2 moved, and 1 was referred for psychiatric care.

Informed consent record keeping and institutional review board approval. The study protocol and informed consent were approved by the Copernicus Group institutional review board (IRB). All personal identifying and Health Insurance Portability and Accountability Act–sensitive information was held in strict confidence. Following Copernicus IRB guidelines, the protocol and all aspects of participation were reviewed with subjects; signed informed consents were obtained from all. If any subject had significant emotional difficulties during the experiment, an immediate intervention was administered by the licensed clinician on staff. If necessary, the subject was referred to his psychiatrist or primary care physician or for emergency treatment.

Study design

The study was conceived as a 30-person, single-blind, wait-list control. All subjects were to receive three to five 90-minute treatment sessions at 1-week intervals. Subjects were to be admitted to the program in cohorts of 10 and then randomly assigned to the experimental or the control group. Experimental subjects would begin treatment 2 weeks after intake with follow-up testing 2 weeks and 6 weeks later. Control subjects would submit to intake with the experimental subjects, retesting at a time consistent with their intake cohort's 2-week follow-up (about 6 weeks after intake). Because participant access was limited, the cohort design could not be executed. As a result, subjects were treated on a first-come, first-served basis, in either weekly ($n = 7$) or daily ($n = 19$) sessions.

Intervention

RTM is a brief cognitive intervention with minimal, non-traumatizing exposure to the index stimulus, administered in three to five 90-minute sessions. The intervention proceeds as follows:

1. A brief reminder of the trauma is evoked by the subject retelling the trauma narrative, terminated by the clinician as soon as autonomic arousal is observed (tears, freezing, flushing, pauses, etc.).
2. The subject is reoriented to the present and chooses safe, neutral memories from before and after the index trauma for resource states.
3. The subject imagines a movie theatre for the imaginal playback of a dissociated, black-and-white (B&W) movie of the index trauma, beginning with a still B&W image of the pre-trauma resource and ending with the post-trauma resource.
4. As if from a position behind him- or herself, the subject watches his or her own responses to the B&W movie until the movie ends with the safe B&W still image of the post-trauma resource.
5. If there was discomfort, the movie is adjusted and repeated.
6. When comfortable, the subject proceeds to a fully associated, reversed movie of the episode lasting about 2 seconds. It begins with the post-trauma resource and ends with the pre-trauma resource.
7. If there was discomfort, the rewind is repeated. If the response is positive, the subject is probed for responses to stimuli that had previously evoked autonomic responsivity.
8. When the subject is comfortable in retelling, he is invited to walk through several alternate, non-traumatizing versions of the memory.
9. After practicing the new scenarios, the subject is again asked to relate the trauma narrative, and previous triggers are probed.
10. When trauma cannot be evoked and the narrative can be told without significant autonomic arousal, the procedure is over.

The full protocol is provided by Andreas and colleagues.[12]

Control conditions

The control condition consisted of five control subjects who completed the PCL-M before their first treatment session, 2 weeks post-intake. All control subjects received the same schedule of treatment as the experimental subjects.

Measures

Subjects were tested for pre–post changes using the PCL-M. A diagnostic threshold of 36 points was used

at intake to ensure that all subjects with serious intrusive symptoms were included. Post-treatment cut-offs were set at 45 points, using the standard VA diagnostic criteria.[29] Initial screening used the Mini International Neuropsychiatric Interview[30] to rule out comorbidities. Screening included observed autonomic responses and whether they inhibited the trauma narrative.

At intake and at post-treatment sessions, each subject related his memory of the index trauma (terminated if extreme responsivity was observed). Using the examiner's observations, responses were recorded on a 5-point Likert-scale instrument ranging from "none or not at all" (1) to "very much, without question" (5). These observations were not quantified and are not reported here, but informed clinical judgments about the progress and quality of the subject's response. Observations on the scale included the following:

1. The subject cannot recount the event without strong, uncontrollable emotional responses, including the inability to relate the story from beginning to end.
2. Retelling is uneven, as disorganized vignettes, and punctuated by strong emotion (choking up, freezing, crying, or needing to stop).
3. Retelling includes loss of detail.
4. Emotional responses are spontaneous, involuntary, and overwhelming.

Data were evaluated using Student's *t*-test, and Hedges' *g* in Excel 2013 (Microsoft Corp., Redmond, WA).

RESULTS

At intake, all subjects displayed autonomic responsivity, making fully retelling their stories difficult or impossible. All began with limited facts and curtailed time frames, often with exclusive focus on elements of the traumatizing event. As treatment proceeded, each successful Veteran provided increasing detail, displayed less uncontrollable emotion, and was ultimately able to relate the memory without overwhelming emotion or signs of autonomic arousal (tears, flushing, turning away, pausing, etc.).

Table 1 reports results from control–experimental comparisons. Data include PCL-M scores at intake (PCL-1), control (PCL-1a), 2 weeks post-treatment (PCL-2), and probability calculations using Student's *t*. These data extend only to the 2-week follow-up, the last complete result from the wait-list controls.

Control group comparisons showed that symptom severity changes from intake (PCL-1) to the pre-treatment control measure (PCL-1a) were non-significant (paired $p = 0.051$; non-paired $p = 0.314$); waiting did not have an impact on symptom severity. This observation has been supported by other authors.[9,23]

Table 1. Results and *t*-tests

	PCL-1	PCL-1a	PCL-2
PCL-M Control			
Mean	67.4	69.8	29.6
SD	11.05	10.28	10.62
n	5	5	5
PCL-M Experimental			
Mean	61.344		31.961
SD	12.99		11.81
n	26		26
t-tests	*p*	Control, *n*	Experimental, *n*
PCL-1 vs PCL-1a, controls vs matched intake scores, paired 2-tailed *t*-test	0.051	5	5
PCL-1 vs PCL-1a, control vs all intake, 2-tailed, different variances	0.314	5	26
PCL-1 vs PCL-2, matched control subjects, 1-tailed, paired *t*-test	0.0056	5	5
PCL-1 vs PCL-2, control vs all completers, 1-tailed *t*-test, different variances	0.00034	5	26

PCL–M = PTSD Checklist–Military version; PCL-1 = intake; PCL-1a = pre-treatment control measure; PCL-2 = 2-week post-treatment.

Comparisons between PCL-1a scores and scores at 2-week follow-up (PCL-2), whether paired or representing the entire group, were highly significant. The hypothesis that PCL-M differences between control subjects and their paired results (*n*s = 5) at PCL-2 would be significant in the expected direction was supported at the 0.006 level ($p = 0.0056$). Similarly, the hypothesis that comparisons between control results at intake and 2-week follow-up scores for the entire group would be statistically significant was supported at the 0.0004 level ($p = 0.00034$).

Table 2 reports pre–post results as means and standard deviations. Data include pre-treatment scores for the PCL-M, post-treatment PCL-M scores at 2 weeks (PCL-2) and 6 weeks (PCL-3) post-treatment, with testing differentials at 2 weeks and 6 weeks and effect sizes (Hedges' *g*) for the 2- and 6-week follow-ups. Means for four of the subjects were computed using replications of the 2-week post-treatment scores in accordance with intent-to-treat protocols.[9,31,32]

Of 26 completers, 25, or 96%, obtained post-treatment PCL-M scores below the VA's diagnostic criteria for PTSD of 45–50 points.[29] Of the successful subjects, 85% scored at or below the intake threshold (36) at follow-up.

For the 26 completers, the mean intake score on the PCL-M was 61.34 (range 30–82) points. The mean score post-treatment for all completers was 31.9 (range 21–57) points at 2 weeks and 28.88 (range 21–39) points at 6 weeks. For the same group, the mean decrease in PCL-M scores from intake to 2 weeks post-treatment was 29.15 (range 9–62) points; at 6 weeks post-treatment, the mean decrease was 33 (range 11–62) points. These results are clinically significant[33] and support Hypothesis 1. Effect sizes (Hedges' *g*) were computed for both follow-up sessions. At 2 weeks, effect sizes for score reductions were 2.32 SDs below the mean PCL-M intake score; at 6 weeks, they were 2.9 SDs below the mean. These results argue for the intervention's effectiveness.

Of the 26 subjects meeting standard PCL-M criteria for PTSD (PCL-M > 45) at intake, only 7.7% (2/26) met PCL-M criteria for PTSD at the 2-week follow-up and 3.8% (1/26) met the criteria at the 6-week follow-up.

DISCUSSION

These results are typical of the research team's own clinical experience and extant clinical and anecdotal reports.[12–14] People previously debilitated by flashbacks, nightmares, and their sequelae typically reported being unable to fully relate their traumatizing experiences. Recounting the index trauma elicited clear, overwhelming indicia of autonomic response. Stories were typically fragmented, consisting of brief vignettes focused on the event's most salient elements; details were lacking, and recounting typically ended without their fully detailing the event.

By the end of the first session, subjects told a richer, more coherent, and less emotional version of the incident. By the second session, many subjects were spontaneously practicing the imaginal memory restructurings at the heart of the protocol. By the second or third session, the index trauma was sometimes replaced with a lesser incident that also raised issues, when one existed. By the third session and 2-week follow-up, subjects reported full access to the previously traumatic memory or memories and that they had integrated them into a meaningful context. They no longer had flashbacks and nightmares related to the incident.

In a setting that was suboptimal at best, these results suggest that RTM results compare favourably with well-designed studies executed under ideal circumstances. In brief, the 50% reduction in symptom severity, as measured by the PCL-M, and the 96% elimination of

Table 2. Simple pre–post PCL-M results*

	PCL 1	PCL 2	PCL 3	PCL-M reduction	
				PCL 1 – PCL 2	PCL 1 – PCL 3
Mean	61.344	31.961	28.884	29.1538	33.07
SD	12.99	11.810	7.57	16.856	15.854
Hedges' *g*		2.32	2.92		

w*$n = 26$.

PCL–M = PTSD Checklist–Military version; PCL-1 = intake; PCL-2 = 2-week post-treatment; PCL-3 = 6-week post-treatment.

the PTSD diagnosis in completers compared well with the 30% symptom reduction typical of most other treatments.[2–10,15,34] This real-world trial strongly suggests the need for further examination of the protocol.

Currently, there is no definitive evidence that the protocol is driven by reconsolidation, but there are strong arguments[13,14] that suggest the association: (1) The protocol reflects the structure of the reconsolidation paradigm as reported by Schiller and Phelps[11] and other authors[7,13,22] and (2) the protocol, like the syntax of reconsolidation, requires an initial, brief evocation of the traumatic memory, or it will not work.[11,13,14]

RTM results appear to persist over time. A brief examination of Table 2 shows continuing decreases in PCL-M scores at 6 weeks post-treatment without further treatment, which suggests that RTM results are distinct from extinction memories because they do not show the hallmarks of extinction: spontaneous recovery, contextual renewal, reinstatement, and rapid reacquisition.[13,35,36]

Clinicians can be trained to effectively administer RTM in as little as a week. In light of this, RTM offers the possibility of fast deployment at minimal cost. Successful administration of the procedure requires competency training in its administration, especially regarding the observation, calibration, and recording of autonomic reactivity. Time savings from both the short-term nature of the protocol and its capacity for widespread deployment will potentially release finances and clinical time for the treatment of more severe conditions.[11,13]

The current research, while showing large pre–post reductions in symptoms and leaving most subjects without a continuing diagnosis of PTSD, lacks rigor and encountered significant problems with regard to implementation of the original research design.

The study used the PCL-M to provide confirmatory diagnoses for subjects entering treatment with a prior VA or DOD diagnosis of PTSD, but no valid, confirmatory diagnostic measure was used at intake or in post-treatment follow-ups. Although clinical assessments of changes in fluidity of response, lack of autonomic responsivity, and subjects' re-evaluation of the meaning of the index trauma were used in a consistent fashion to confirm PCL-M results (as a matter of face validity), they do not constitute a validated instrument possessing convergent validity with the PCL-M. This will be addressed in later replications.

Lacking a convergent measure of PTSD, we face the possibility that subjects were reporting expected results rather than actual treatment responses. Clinical observations determined that this was unlikely on three levels. First, subjects indicated that the intervention seemed unlikely to affect their symptoms. When it did, many expressed apparently genuine surprise and delight in the changes they experienced. Second, when scores deviated from clinical observations, it tended to be the result of a failure to limit subjects' responses to the period since the last treatment or assessment. Third, continuing improvement was observed in symptoms from the 2nd to the 6th week that would seem unlikely if the responses were based on experimenter or subject expectations.

Whereas the original design called for random assignment to experimental and control groups, the flow of subjects made this impossible. Because there was no consistent flow of subjects, subjects were treated on a first-come, first-served basis. The assignment to experimental and control groups was finally done ad hoc, determined by the number of subjects who completed PCL-1a (n = 5). Throughout, we operated under the assumption that the flow of subjects was essentially random with regard to trauma source, years of suffering, ethnicity, and age. The study was limited to male subjects. Continuing analysis must depend on more sophisticated statistical measures, including repeated-measures analyses of variance.

Although evaluated in a less-than-ideal randomized controlled trial, the protocol provided highly significant results. However, the small number of control subjects may affect the generalizability of the findings. Nevertheless, the 50% decrease in symptom severity and the 96% elimination of PTSD diagnoses in program completers compares well with the 30% reduction in symptoms for most other treatments.[2–10,15,34]

Considering these data, it may be important to note that *evidence based* often means only that a protocol has been through the peer review process, replications have occurred, and statistically significant changes have occurred, whether or not they are clinically meaningful.

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