

## **Reconsolidation of Traumatic Memories (RTM) for PTSD - a case series -**

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### ***Abstract***

*Clients with posttraumatic stress disorder (PTSD) represent a significant problem to the US Military and Veterans Administration. Upwards of 30 percent go on to life-long chronicity with or without treatment (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Most mainline treatments are not meeting the needs of our veterans and active duty warriors. The current case study describes four individuals previously diagnosed with PTSD who volunteered for treatment in a waitlist RCT of a brief, non-traumatizing intervention, Reconsolidation of Traumatic Memories (RTM). These individuals completed five 90-min sessions of RTM. In the larger study 96% (25/26) of treated clients no longer met diagnostic criteria for PTSD at the end of treatment, with these gains maintained at 6- and 26-week posttreatment. Implications for delivery of RTM and its further investigation are discussed.*

***Keywords: posttraumatic stress disorder, reconsolidation, brief-interventions, rtm***

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Approximately 2.6 million service men and women have served in Operation Iraqi Freedom (OIF), Operation New Dawn (OND), and/or Operation Enduring Freedom (OEF) in Afghanistan since, 2001 (Institute of Medicine [IOM], 2014). More than a third of these individuals suffered from war-related mental health issues (Bilmes, 2013). The prevalence of post-traumatic stress disorder (PTSD) among veterans of OIF and OEF ranges 7% and 20% (IOM, 2014). A recent review of treatment results in the armed forces has found that 11% of Vietnam veterans continue to report PTSD symptoms that impair their capacity to function despite the extended time since their traumatization (Steenkamp, Litz, Hoge, & Marmar, 2015). It is believed that up to 30% of all PTSD diagnosed persons, treated or untreated, will become permanently disabled (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995).

Despite the large numbers of veterans suffering from mental disorders, only 23-40% sought mental health care (Hoge, Castro et al., 2004). Low motivation to seek help for mental health care has been attributed to stigma (Hoge, Castro, Messer et al., 2004); barriers to treatment such as, time commitments, accessibility, work and family commitments (Hoge et al., 2004); and lengthy pretreatment waiting periods (Veterans Health, 2012). Other reasons cited as contributing to non-participation in treatment have included negative ideas about treatment and its efficacy (Kim, Britt, Klocko, Riviere, & Adler, 2011; Najavits, 2015; Pietrzak et al., 2009); high levels of dissatisfaction with current VA-supported evidence-based treatments (Hoge et al. 2004); and frustrations arising from continuing symptomatology (Szafranski et al., 2014). Often, prospective patients refuse to participate in exposure-based treatments (Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008). Some decline because of bad personal experiences, others because of rumored problems with the interventions (Najavits, 2015; Schottenbauer et al., 2008).

### **Current Interventions for PTSD**

Standard behavioral treatments for PTSD, with special reference to Trauma Focused Cognitive Behavioral Therapies (TFCBT) are largely dependent upon extinction. Such treatments have drawbacks. Nearly all of these interventions require adjunctive or follow-up treatment (Foa, et al., 2000), and they require some level of re-exposure to the traumatizing event, which may put the patient at risk of re-traumatization. Consistent with their theoretical bases in fear extinction research, the positive results of such treatments often erode over time as spontaneous fear recovery, contextual renewal, reinstatement, and/or rapid

reacquisition assert themselves (Bisson, Roberts, Andrew, Cooper, & Lewis, 2013; Bouton, 2004; Gray & Liotta, 2012; Rescorla, 1988; Schiller, Kanen, LeDoux, Monfils, & Phelps, 2013; Steenkamp, Litz, Hoge, & Marmar, 2015).

In general, interventions that have an element of exposure (TFCBTs) have been found superior to non-exposure-based treatments and have been mandated for distribution throughout the VA system (Barrera, Mott, et al., 2013; Benish, Imel et al., 2008; Bisson Roberts et al., 2013; Ehering, Welboren, et al., 2014; Powers, Halpern, et al., 2008; Steenkamp & Litz, 2013). Nevertheless, evidence for the efficacy of those interventions has been described as weak (Bisson, Roberts et al. 2013; Steenkamp & Litz, 2013; Steenkamp & Litz, 2014; Steenkamp, Litz, et al., 2015).

Bisson and colleagues (2013) reviewed 70 studies in their Cochrane Collaboration review of psychotherapeutic interventions for PTSD. Nineteen of those studies used self-report measures for PTSD. Comparing Prolonged Exposure (PE), Cognitive Processing Therapy (CPT), EMDR, non-TFCBT and other therapies against waitlist controls or treatment as usual (TAU), they found high effect sizes for completers in CPT trials (ranging from  $d=1.14$  to  $d=2.84$ ) but these were accompanied by a persistent diagnosis of PTSD on follow-up for between 41% and 60% of subjects. For those treated with PE, program completers also showed large effect sizes (ranging from  $d=.80$  to  $d=2.04$ ) that were likewise accompanied by relatively high rates of non-remission (from 20% to 51%). In other words, even for the most effective behavioral interventions, patients who complete the therapy are still somewhat likely to meet diagnostic criteria for PTSD.

Steenkamp and Litz (2013) examined 19 studies of PTSD interventions. 7 of the 19 studies in their review reported both effect sizes and the proportion of subjects still retaining a diagnosis of PTSD after treatment. In three of the PE studies (combined  $n = 314$ ) effect sizes were high ( $d= .80$  to  $d=2.19$ ), however, about 50% of subjects retained PTSD diagnoses after treatment. Dropout rates for these studies hovered around 35%. A second group of three PE studies (combined  $n=86$ ) with large effect sizes ( $d=1.7$  to  $d=3.64$ ) reported that 10% to 26 % of their subjects retained the diagnosis of PTSD after treatment. For these subjects the drop-out rate clustered around 30%. One large study of CPT ( $n=101$ ) in their review reported high effect sizes for both OEF/OIF and Vietnam veterans ( $d=2.84$ ,  $d=1.11$  respectively) with 40 % of OEF/OIF and 60% of Vietnam veterans still diagnosable with PTSD post treatment. This study also reported drop-out

rates of 35% and 25% (respectively). Such results have led to a broad call for the development of innovative approaches to the treatment of PTSD.

### **The Reconsolidation of Traumatic Memories (RTM) Intervention**

One such innovative approach is suggested by the reconsolidation mechanism which allows for the updating of long term memories with new, relevant information (Agren, 2014; Forcato, Bourgos, et al., 2007; Gray & Liotta, 2012; Kindt, Soeter & Vervliet, 2009; Lee, 2009; Nader et al., 2000; Schiller, Monfils, et al., 2010; Schiller and Phelps, 2011; Soeter & Kindt, 2015). Reconsolidative mechanisms are invoked when a memory is recalled under new, novel, but relevant circumstances and allows for the inclusion of that new information into the already extant memory. This information then becomes a permanent part of the long term trace (Agren, 2014; Forcato, Bourgos, et al., 2007; Gray & Liotta, 2012; Kindt, Soeter & Vervliet, 2009; Lee, 2009; Nader et al., 2000; Schiller, Monfils, et al., 2010; Schiller and Phelps, 2011; Soeter & Kindt, 2015).

The Reconsolidation of Traumatic Memories (RTM) protocol is a brief treatment that is often completed in five sessions or fewer (Gray & Bourke, 2015; Gray & Liotta, 2012). It begins with a brief, controlled reminder of the trauma that is believed to render the traumatic memory subject to change (Gray & Bourke, 2015; Gray & Liotta, 2012). It then leads the client through a series of dissociative experiences which are believed to modify the perceptual structure of the memory, thereby changing its emotional intensity. After treatment, the memory remains accessible, but does not evoke traumatic emotional responses (for a complete description see Gray & Liotta, 2012).

#### **Origins**

The RTM protocol<sup>vii</sup> is based upon sample protocols donated by Steve Andreas and Tim Hallbom. The earliest version of a similar intervention first appeared in Richard Bandler's *Use Your Brain for a Change* (1985). A more precise and detailed version of the procedure appeared in the Andreas' *Heart of the Mind* (1989). Dilts and Delozier (2000) provide a slightly different version in their *Encyclopedia of Systematic NLP*. The RTM protocol is a standardized, researchable protocol developed by a number of

Research and Recognition Project experts including Steve Andreas, Tim Hallbom, Robert Dilts, William McDowell, Frank Bourke and Richard Gray. It is distinct from earlier and similar versions in that it has been refined and standardized for scientific evaluation. It includes several elements which improve its efficacy over earlier and less rigorous formulations. Unlike other versions it explicitly relies upon the mechanism of memory reconsolidation (Nader, 2003; Gray & Liotta, 2012), the protocol is now known as the Reconsolidation of Traumatic Memories. It is the exclusive property of the Research and Recognition Project and is used with their permission.

The case series presented here is drawn from a 2015 report of a 26-person pre-pilot study of male veterans (Gray & Bourke, 2015). After fewer than four treatments, 25 of the 26 participants scored below diagnostic threshold, with mean PCL-Ms of 28.8 ( $\pm$  12.99) at the 6-week post treatment follow-up, a mean reduction of 33 points (53%) from baseline (61 points).

Clinical change in PTSD symptoms was determined using standard levels of change in the PTSD Checklist Military Version (PCL-M; Weathers & Ford, 1996) scores as used by Castillo and colleagues (Castillo, Lacefield et al., 2014; Monson, Gradus, et al. 2008; Schnurr, et al., 2007). Response to treatment was defined as improvements in PCL-M scores of greater than 20 points (clinically significant change; Monson, Gradus et al., 2008; Schnurr, et al., 2007). Loss of diagnosis was defined as a total PCL-M score of < 50 points and failure to endorse at least 1 re-experiencing, 3 avoidance/numbing, and 2 hyperarousal symptoms; (APA, 1994; VA, 2014). Full remission was defined as a total PCL-M score of less than 30 (Castillo, Lacefield et al., 2014; VA, 2014).

Of the 26 participants enrolled in this study, 1 received no appreciable benefit from RTM, one scored below threshold and no longer satisfied DSM Criteria for a diagnosis of PTSD, four scored below the total score cut off, but continued to meet DSM IV diagnostic criteria for PTSD, and 20 were in full remission at the last follow-up recorded (See Table 1.).

These results suggest that RTM holds promise as a new, brief, non-traumatizing intervention for the treatment of PTSD.

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Table 1. Treatment response to RTM intervention as PCL-M score at last measure

		Non response n (%)	PCL-M <50 n (%)	Loss of Dx n (%)	Full remission n (%)	Total effective treatments n (%)
New York <sup>a</sup> 201	Cases	1 (3.8%)	4 (15%)	1 (3.8%)	20 (76.9%)	
	Loss of Dx		4 (15%)	1 (3.8%)	20 (76.9%)	25 (96%)
San Diego <sup>b</sup> 2015	Cases	3 (8.66%)	0	4 (15%)	19 (73%)	
	Loss of Dx			4 (15%)	19 (73%)	23 (88%)
Dx = Diagnosis; Non response = PCL-M > 50 and all DSM criteria still met; PCL-M <50 = total PCL-M < 50 but DSM criteria still met; Loss of Diagnosis = total PCL-M < 50 and DSM criteria no longer met; Total PCL-M score < 30 and DSM criteria no longer met. <sup>a</sup> Gray, R., & Bourke, F. (2015). Remediation of intrusive symptoms of PTSD in fewer than five sessions: A 30- person pre-pilot study of the RTM Protocol. <i>Journal of Military, Veteran and Family Health</i> , 1(2), 85-92. doi:10.3138/jmvfh.3119 <sup>b</sup> Tylee, D., Gray, R., Glatt, S. & Bourke, F. (2016). Evaluation of the reconsolidation of traumatic memories protocol for the treatment of PTSD: A randomized, wait list controlled trial. Submitted manuscript.						

In addition to the pilot study from which the current cases are drawn (Gray & Bourke, 2015), a recent replication (Tylee, Gray, Glatt & Bourke, 2016) reports similar levels of symptom amelioration and loss of diagnosis that were maintained at 26-weeks post (See Table 1). Anecdotal and clinical reports from the literature using earlier or alternate versions of the RTM intervention (Gray & Liotta, 2012; Hossack & Bentall, 1996; Muss, 1991, 2002; Utuza, Joseph & Muss, 2011) also reflect high rates of success and little or no recurrence of symptoms, often after multi-year follow-ups.

Insofar as it begins with the client's narrative of the index trauma memory, RTM may be considered a TFCBT. It is, however, distinct from other TFCBTs in that the brief, or non-reinforced, exposure to the trauma memory is not conceived as awakening either the extinction mechanism or classical habituation. In RTM, the exposure is believed to initiate a period of labilization during which new information can be added to the structure of the target memory. Brevity of exposure is one of the boundary conditions for the evocation of the reconsolidation mechanism. If the exposure is too long or too intense, the memory may remain unchanged, the creation of extinction memories may be initiated, or the client may be retraumatized (Agren, 2014; Gray & Liotta, 2012; Fernández, Bavassi, Forcato & Pedreira, 2016; Forcato, Bourgos, et al., 2007; Kindt, Soeter & Vervliet, 2009; Lee, 2009; Schiller and Phelps, 2011; Schiller et al., 2013).

Research indicates that reconsolidation and extinction are distinct and mutually exclusive processes (Clem & Schiller, 2016; Merlo, Milton et al., 2014; Nader, 2003; Perez-Cuesta & Maldonado 2009; Suzuki, Josselyn et al., 2015) and that reconsolidation is not facilitated extinction (Clem & Schiller, 2016; Merlo, Milton, et al., 2014; Nader, 2003; Perez-Cuesta & Maldonado, 2009; Suzuki, Josselyn et al., 2004).

RTM specifically targets the intrusive symptoms of PTSD that are typically experienced as sudden, uncontrollable autonomic responses to the trauma narrative, its elements, or triggers for flashbacks and nightmares. Participants must have had at least one flashback or one nightmare within the preceding month to meet inclusion criteria. The intervention is not appropriate for the treatment of the dissociative subtype of PTSD (Gray & Bourke, 2015; Gray & Liotta, 2012; Lanius et al., 2010; Wolfe, 2013).

**Clinical Case Series**

The following case examples represent individuals who received in RTM as part of a 26-person waitlist controlled trial. Some individuals had previously completed courses of standard treatments without effect while others were untreated at the time of the investigation.

All participants met criteria for at least one Diagnostic and Statistical Manual of Mental Disorders (*DSM-IV*) Criterion A traumatic event and a current PTSD diagnosis. Each client also asserted the presence

of one or more flashbacks or nightmares during the preceding month. At the initial assessment, and at 2- and 6-weeks post-treatment, each completed assessments for PTSD. Clients with psychotic symptoms, imminent suicidality, or Axis I or II disorders of sufficient severity to prevent treatment completion were excluded. Robert, Kenneth, Jorge, and Steven were treated between June and September 2014 (Note: Names and identifying information of these clients have been changed to protect confidentiality).

The study included three locations in New York State, one urban (Albany) and two Suburban (Rochester and Middletown). Participants arranged for their own transportation to and from the sites. Most participants had independent living arrangements, however, some of the volunteers were housed at the Albany Housing Coalition. Treatment locations included a dedicated treatment space in Middletown, NY; a private clinical office in suburban Rochester, NY; space provided by the Albany Housing coalition, and spaces provided by other organizations. RTM staff members came to the various treatment facilities to assess PTSD and provide individual treatment to qualifying volunteers (see below for assessment and treatment procedures). RTM team members worked with local organizations to recruit volunteers. All scheduling was arranged by RTM team members.

#### **Assessment**

Clients completed semi-structured clinical interviews at baseline to assess their current status, and eligibility for participation. The PTSD Checklist-military version (PCL-M; Weathers & Ford, 1996) was administered to all participants at intake, two weeks and six-weeks post. Participants were admitted to the program with a PCL-M  $\geq 30$  as long as they reported significant intrusive symptomatology. Early participants also completed the Posttraumatic Stress Scale-Interview version which was discontinued after the first ten patients. Its results are not reported here. The M.I.N.I. International Neuropsychiatric Interview (Sheehan et al., 1998) was administered to assess Axis I and Axis II disorders which may have interfered with treatment. Observations of autonomic reactivity were recorded on an in-house instrument, the Behavioral Screening Instrument (BSI), whose results are not reported here. Post treatment assessments relied upon the PCL-M and clinical observations. The following case examples are all of individuals that participated in the pilot study. All clients were male and served in the United States armed forces.

#### **Client #1: Robert**

Robert was a sixty-year-old veteran of the

Vietnam war. He met criteria for PTSD and was treated thirty-eight years after the primary traumatic incident occurred. Robert presented with typical autonomic arousal, difficulty recalling traumatic memories, and scored 67 on the PCL-M. For almost forty years he had been suffering nightmares, flashbacks, and guilt related to the traumatic incidents. This case demonstrates the effectiveness of the RTM protocol treating nightmares and flashbacks that have been occurring for decades.

At intake, Robert related two traumatic events. The first involved an assignment to assassinate a call girl with whom he had established a personal relationship and the second involved a mortar hitting the jeep in which he was riding. During the first session, the RTM protocol was used to address the assassination assignment. Robert had some initial difficulty with the procedure, but learned it sufficiently to gain marginal relief. By the end of session two, after multiple repetitions of the protocol, Robert was able to tell the story much more easily and smoothly. Additionally, he remembered the call girl's name and added considerable detail as he related the narrative. When he returned for the final session, Robert was able to tell the story at length. There was no hesitation and the narrative held considerably more detail. Robert then spontaneously reframed the incident as, "a kid doing his duty." He spontaneously transferred his guilt to a moderate anger regarding the CIA's order to assassinate the girl. The remainder of the session was used to apply the RTM protocol to his second trauma, which involved a mortar shell hitting the jeep in which he was riding. Robert was not injured in that incident, but his sergeant, whom he had described as a close mentor, received a direct hit and then died in Robert's arms. By the end of the session, Robert was able to recount both events smoothly with much detail and with no physiological agitation.

At the two week follow up, Robert reported that he experienced a completely different affect related to both traumas. He described the difference as, "It's more like they're just memories without the overwhelming feelings attached." He also noted feeling much less guilty about both situations, seeing himself back then as a young man without the tools to cope with impossibly difficult realities. His score on the PCL-M had dropped to 22. At six weeks the gains Robert had made remained. His PCL-M score was a 28 and he reported being able to remember even more detail of the traumatic memories, but without feeling emotionally overwhelmed. At six-months post, the client reported a continuing positive adjustment. He had experienced no flashbacks or nightmares since the last treatment and reported that his life had improved immeasurably.

**Client #2: Kenneth**

Kenneth provides another example of the RTM protocol helping decades after a trauma is experienced, but in this case the traumatic event was not combat related. Kenneth was a seventy-four-year-old Caucasian male diagnosed with PTSD, major depressive disorder, and traumatic brain injury. At the time of his treatment he was prescribed morphine and oxycodone for pain relief, but he was not prescribed any psychotropics for the relief of his PTSD symptoms. His traumatic experience occurred while serving in the US Army and assisting in an earthquake rescue operation fifty-two years prior to participating in the study. During the earthquake he witnessed several children falling into a chasm. He was unable reach them to help because of the terrain. Since that time he had been unable to watch videos or movies containing earthquakes or suffering children without experiencing flashbacks as well as several consecutive sleepless nights. Additionally, Kenneth would frequently experience bouts of severe, debilitating depression following the flashbacks and nightmares.

Kenneth began his first session having difficulty describing the event and responding with tearfulness, agitation, and a flushed face. His score on the PCL-M was 52. After several repetitions of the first phase of the protocol, seeing the event as a black and white movie, and then reversing it in color, Kenneth was able to recount the traumatic event calmly and with more detail. He reported feeling peaceful and no longer guilty. When he recalled the victims that fell into the hole, he now spontaneously imagined seeing their souls ascending into heaven. At his second session, Kenneth reported that he took it upon himself to practice what he had learned in the first session several times on his own. He reported that the new skills left him feeling much more in control of his emotions. When he was asked about his traumatic memory he reported that he no longer thought of it in the first person and he could think of it without emotion. An exception was when he saw news of a current earthquake on television he would have several brief flashbacks.

The newer episodes only lasted a few minutes and he had now been able to “shake them off;” they had no continuing impact. The RTM protocol was continued using this memory with the creation of an alternate version of the memory with a better outcome in sessions two and three. The alternate version, created by the client, involved imagining the events surrounding the earthquake as if they were [part of a movie, the participant was a stunt man--wearing protective equipment, and the other people involved were paid extras.

At his two-week follow-up, Kenneth was able

to retell the entire story of the event and reported that he had had no nightmares or flashbacks since completing treatment. Even when he saw a broadcast of an earthquake, Kenneth only had a brief but appropriate emotional response that lasted less than a minute. His PCL-M score was 21. Kenneth’s improvements remained stable; at his six-week follow-up, his PCL-M score was 23.

At six-months post and longer follow-ups, Kenneth continues to report complete secession of flashbacks and nightmares. He reports that his emotional life has evened out and he has been able to re-establish relationships with several previously-estranged family members.

**Client #3: Jorge**

Jorge was a forty-nine-year-old Latino male who served in the US Army for twenty-eight years. He was stationed in Kuwait, Germany, and Iran. Jorge had been diagnosed with PTSD and generalized anxiety disorder. Jorge was taking Cymbalta as prescribed, but reported that it had not helped with flashbacks, nightmares, or sleeplessness. Jorge was experiencing anxiety and hypervigilance as well as regular nightmares and flashbacks related to traumatic events that occurred ten years prior to the study while serving in Iraq. One of his traumatic incidents involved being on an airplane that was attacked unexpectedly by anti-aircraft guns while landing in Iraq. The other traumatic incident involved loading coffins onto a transport to be taken to Baghdad Airport for further disposition. Jorge participated in this Honor Guard activity several times, but the specific memory that troubled him involved loading bodies of airmen whom he had known well into the aircraft.

At intake, the patient scored 54 on the PCL-M. He was clearly agitated when describing both of his traumatic memories, and most of the details of the memories escaped him. He participated in three sessions using the RTM protocol. As these sessions progressed, his ability to comfortably and fully recall the memories improved. At the end of his final session he reported that he was able to talk about the incidents in Iraq without discomfort for the first time since they happened. Jorge showed no signs of physiological arousal as he related each narrative.

At Jorge’s two-week follow-up, his PCL-M score had dropped to 21 and he reported having had no nightmares or flashbacks since completing his three sessions. Additionally, Jorge reported that he was now sleeping through the night, was much less hypervigilant, and that his startle response was significantly reduced. Jorge reported that when he thinks of the two events they

are now just memories with no significant impact on him. His gains held constant when he completed his six-week follow-up; his PCL-M score was 24. An informal six-month follow-up found that his gains had held steady and that he had been free from nightmares and flashbacks since completing treatment.

#### **Client #4: Samuel**

Samuel was a 25-year-old Caucasian male that resided in a homeless program for veterans. He had been diagnosed with PTSD, generalized anxiety disorder, and polysubstance dependence, without physiological dependence, in early full remission. He was not prescribed any medications. At presentation he was extremely agitated, reported significant anxiety, and made poor eye contact. In fact, he was so anxious at his first session that his nose began to bleed. He indicated that he generally had three or four nightmares each night and suffered flashbacks several times each day. His PCL-M score at intake was 77. Samuel initially disclosed two traumatic memories, but as he gained experience with the RTM protocol and developed rapport with the therapist, he began to disclose other troubling material. This case is presented as an example of using the RTM protocol with multilevel, complex trauma in a relatively brief time-frame.

At the first session, Samuel reported that he had served in Iraq on morgue duty. His first reported trauma involved having to recover the remains of a friend following a rocket attack. His response at the recollection of this trauma was so intense that he was encouraged to identify another event — one which was less impactful — that he could use to learn and practice the RTM protocol. Samuel identified a second trauma, having to pick up the body of an American contractor, and was able to follow the protocol. Initially, Samuel became observably upset when thinking of this memory, but after several repetitions of the protocol he reported that he could think of the memory without any discomfort. Instead of attempting the protocol with the memory of the rocket attack, Samuel chose to work with a third memory from training stateside, prior to deployment. He recalled observing the autopsy of infant twins. Samuel reacted strongly when recalling the memory. His face reddened, he began to fidget in his seat, and his eyes began to tear up. After processing the memory with RTM, Samuel reported that he was able to recall the event with little emotional response. Having gained experience using the protocol, Samuel felt that he was ready to work with his memory of recovering the remains of his friend. While it took multiple repetitions of the RTM process, the negative affect was removed from the memory and Samuel could comfortably talk

about the event; as he related the narrative, his speech was calm and even. He recalled additional details including the fact that his friend had been playing cards at the time of the missile attack, and when Samuel picked up his friend's arm, there was a hidden ace up his sleeve. Samuel was so calm as he told the story that he was able to laugh about his friend's cheating at the card game. Having experienced the RTM protocol several times, Samuel revealed yet another traumatic incident. It was a disturbing memory of the death of several local children in Iraq. Samuel was an observer and revealed in session that he had never felt comfortable disclosing the memory in therapy before. This memory also responded well to the RTM protocol.

Arriving for his second session, Samuel reported that he had been sleeping well since our last session and had not had a single nightmare or flashback. He was able to discuss all of the memories that had been processed at the first session without any physical agitation and recalling much more detail. The next traumatic memory Samuel identified involved a female soldier accidentally gaining access to a part of the morgue that held the remains of another soldier from her unit. When she saw the remains, she had a very strong reaction which Samuel described as a "meltdown." The RTM protocol worked well with this memory. Samuel revealed one more memory that he had never shared with anyone. He had been a victim of sexual assault by an officer. Samuel processed this memory and reported that the negative feelings associated with the memory were almost completely gone. He was not pressed for details due to the sensitive nature of the remembered incident.

Samuel's third session revealed that he still had had no nightmares or flashbacks. He also reported that several people at the shelter where he lived had told him that he seemed different and that he was more social. Prior to his participation in the study he had never eaten a meal with the other residents of the facility, but after his first session, he started regularly dining with his peers. He could not think of any additional memories that he wanted to address, so his treatment was ended.

At the two-week follow-up Samuel scored 34 on the PCL-M. He reported that he still did not have any nightmares or flashbacks and was sleeping well. He also reported that he was no longer reactive to loud noises or aircraft flying overhead. At his six-week follow-up his PCL-M score was 26.

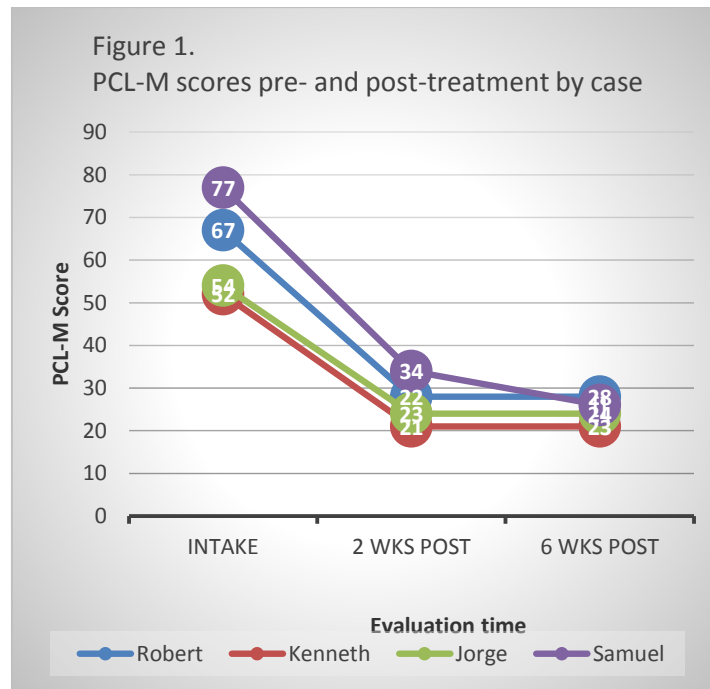
#### **Treatment Outcome**

At the beginning of treatment, all clients met diagnostic criteria for current PTSD using PCL-M. The mean PCL-M score for all treatment subjects (n=26) at intake was 61. 34 ( $\pm$  12.99) and the mean post-treatment

PCL-M at 6-weeks was 28.8, reflecting a mean reduction in scores of 33 points (53%). Hedges' *g* was computed to compare baseline with 6-week follow-up and showed a 2.9 standardized score difference.

The four cases discussed here had an intake mean of 62.5 ( $\pm 11.7$ ), well above the standard military cut-off of 50 points (VA, 2014). All clients endorsed at

least two Criterion A events. Because previous experience with RTM had found that most traumas could be resolved in three or fewer treatments, treatments were limited to three sessions each. Post treatment mean PCL-M scores for all four cases participants dropped 37.75 points (57%), to 24.7 5 ( $\pm 2.98$ ) at the six-week follow-up (See Figure 1).



At baseline, all participants showed clear signs of autonomic reactivity including, tearing, freezing, color changes, breathing changes, loss of detail and the inability to coherently relate the entire narrative. At follow-up, their capacity to recall the events fully, as coherent narratives, without the observable indicia of autonomic arousal (tears, flushing, pausing, freezing, changing color and vocal tone, etc.) attested to their changed comfort level with the material. Moreover, each of the clients indicated that they were now comfortable with the trauma memories and that they were viewed as distant, relatively dissociated memories.

All four clients reported with symptoms in the “severe” range (50+), and at six-weeks post, all scored below the minimal cut off for any PTSD (30 points; VA, 2014) and all failed to meet DSM diagnostic criteria for PTSD (APA, 1994; VA, 2014). As noted, informal follow-ups, without objective measures at six-months post, found all cases reported here attesting to continuing positive responses and indicating neither

flashbacks nor nightmares during the time since completing treatment.

### Summary

The four clients presented in this case series illustrated successful PTSD treatment using a novel, brief intervention requiring fewer than 5 hours of treatment. Despite a low intake criterion (PCLM  $\geq 30$ ) the mean intake score for this sample was 62.5 ( $\pm 11.7$ ) and for the group as a whole 61 and none of these clients met criteria for PTSD following RTM. these gains were maintained, as reported by the participants, at 6-months posttreatment. These results are noteworthy in that in all of the cases reported here, participants suffered from multiple, treatment resistant traumas, complex trauma histories, and had suffered from PTSD for a range of between 6 and 52 years. Table 2 provides a summary of some of the relevant data on the cases. Each of them had been treated to little or no avail by the Veterans Administration and various veteran outreach agencies.



Table 2. Summary of clients' reported traumas

Client	Robert	Kenneth	Jorge	Samuel
Trauma context	Vietnam	Alaska	Iraq	Iraq
Trauma 1	Assassination	Earthquake relief	Aircraft landing	Mortuary assignment
Trauma 2	Dying friend	Tsunami	Angel flight	Autopsy
Years to RTM Treatment	40	52	10	6

These results support the claim of RTM as a brief, effective treatment for PTSD with symptoms centered upon the presence of intense, automatic, phobic-type responses to intrusive symptoms (Gray & Liotta, 2012). In each case, clients endorsed at least one flashback and nightmare per month and each had scored above 50 on the PCL-M at baseline. Post treatment, the bulk of all of those treated scored at or below 30, the minimal criterion for any PTSD and well below the military threshold of 50 (VA, 2014). Pursued in less than optimal circumstances, often using borrowed offices, and often subject to environmental distractions, these results reflect a robust intervention for PTSD.

We note that, as in many cognitive interventions, some clients (notably Kenneth) found themselves practicing the cognitive skills at the heart of the program without being instructed to do so. Such clients reported significant satisfaction with the utility of the techniques used and generally reported them as useful tools in their daily lives. However, the larger bulk of the clients made no such efforts and yet were provided with the same level of benefit. This would attest to the capacity of RTM to straddle the border between classical cognitive interventions, requiring conscious effort and homework, and more direct neurological interventions, requiring no conscious effort beyond the initial sessions.

We note that each of the therapists employed had significant training in establishing and maintaining rapport. It is believed that this capacity strongly influenced the ability of the therapists to gain cooperation in what is for many, a non-intuitive, and even patently absurd set of exercises (See Gray & Liotta, 2012 for a complete description). It was not uncommon to have the clients protest the apparent irrelevance of the techniques involved.

We further note that each of the therapists had many years training and practice in the skill of calibration: the ability to note subtle changes in voice, manner, and physiology that mark out autonomic arousal and its subsidence. These skills were essential in noting and terminating autonomic arousal before the client is re-traumatized. The claim that RTM is non-traumatizing is an essential element of its appeal to potential beneficiaries and its non-traumatizing nature is

a crucial part of the reconsolidation mechanism as used.

This preliminary study is being followed by one already-completed replication (Tylee, et al., 2016), and three others. All of these studies have using the waitlist control design with more rigorous application of control and evaluation methods. Each has also included formal follow-up testing at six and 12 months. conditions.

#### References

- Agren, T. (2014). Human Reconsolidation: A Reactivation and Update. *Brain Research Bulletin, 105*, 70-82. doi: <http://dx.doi.org/10.1016/j.brainresbull.2013.12.010>
- Andreas, C. & Andreas, S. (1989). *Heart of the mind*. Moab, UT: Real People Press.
- Andreas, S., Bourke, F., & Gray, R. (2010). The RTM Protocol [Internet]. Corning (NY): Research and Recognition Project; c2010 [cited 2014 Nov 10]. Available from: <https://dl.dropbox.com/u/16549738/The%20%20RTM%20Protocol.pdf>
- Bandler, R. (1985). *Using Your Brain for a Change*. 165 p. Moab, UT: Real People Press.
- Barrera, T.L., Mott, J.M., Hofstein, R. F., & Teng, E.J. (2013). A Meta-Analytic Review of Exposure in Group Cognitive Behavioral Therapy for Posttraumatic Stress Disorder. *Clinical Psychology Review, 33*(1), 24-32. doi: <http://dx.doi.org/10.1016/j.cpr.2012.09.005>
- Benish, S.G., Imel, Z.E., & Wampold, B.E. (2008). The Relative Efficacy of Bona Fide Psychotherapies for Treating Post-Traumatic Stress Disorder: A Meta-Analysis of Direct Comparisons. *Clinical Psychology Review, 28*(5), 746-758. doi: <http://dx.doi.org/10.1016/j.cpr.2007.10.005>
- Bilmes, L.J. (2013). *The financial legacy of Iraq and Afghanistan: How wartime spending decisions will constrain future national security budgets*. Harvard Kennedy School, Faculty Research Working Paper Series RWP13-006. Cambridge: Harvard Kennedy business school.
- Bisson J.I, Roberts N.P, Andrew M., Cooper R., & Lewis C. (2013). Psychological Therapies for Chronic Post-Traumatic Stress Disorder (PTSD) in Adults. *Cochrane Database of Systematic Reviews, 12*. DOI: 10.1002/14651858.CD003388.pub4
- Björkstrand, J., Agren, T., Frick, A., Engman, J., Larsson, E., Furmark, T., & Fredrikson, M. (2015). Disruption of Memory Reconsolidation Erases a Fear Memory Trace in the Human Amygdala: An 18-Month Follow-Up. *PLoS ONE, 10*(7), e0129393. doi: 10.1371/journal.pone.0129393
- Bouton, M. (2004). Context and Behavioral Processes in Extinction. *Learning and Memory, 11*(5), 485-494.
- Bouton, M., & Moody, E. (2004). Memory Processes in Classical Conditioning. *Neuroscience & Biobehavioral Reviews, 28*(7), 663-674.

- Clem, R., & Schiller, D. (2016). New Learning and Unlearning: Strangers or Accomplices in Threat Memory Attenuation? *Trends in Neurosciences*, 39(5), 340-351. doi: <http://dx.doi.org/10.1016/j.tins.2016.03.003>
- Devilly, Grant J., & McFarlane, Alexander C. (2009). When Wait Lists Are Not Feasible, Nothing is a Thing That Does Not Need To Be Done. *Journal of Consulting and Clinical Psychology*, 77(6), 1159-1168. doi: 10.1037/a0016878.10.1037/a0016878.supp (Supplemental)
- Dilts, R., & DeLozier, J. (2000). *Encyclopedia of Systemic Neuro-Linguistic Programming and NLP New Coding* [Internet]. Scotts Valley, CA: NLP University Press. 2000 [Cited 2014 November 10]. Available from: <http://nlpuniversitypress.com>
- Ehring, T., Welboren, R., Morina, N., Wicherts, J.M., Freitag, J., & Emmelkamp, P.M.G. (2014). Meta-analysis of Psychological Treatments for Posttraumatic Stress Disorder in Adult Survivors of Childhood Abuse. *Clinical Psychology Review*, 34(8), 645-657. doi: <http://dx.doi.org/10.1016/j.cpr.2014.10.004>
- Fernández, R., Bavassi, L., Forcato, C., & Pedreira, M. (2016). The Dynamic Nature of the Reconsolidation Process and its Boundary Conditions: Evidence Based on Human Tests. *Neurobiology of Learning and Memory*, 130, 202-212. doi: <http://dx.doi.org/10.1016/j.nlm.2016.03.001>
- Forcato, C., Burgos, V.L., Argibay, P.F., Molina, V.A., Pedreira, M.E., & Maldonado, H. (2007). Reconsolidation of Declarative Memory in Humans. *Learning & Memory*, 14(4), 295-303.
- Goodson, J., Helstrom, A., Halpern, J.M., Ferenschak, M.P., Gillihan, S.J., & Powers, M.B. (2011). The Treatment of Posttraumatic Stress Disorder in U.S. Combat Veterans: A Meta-Analytic Review. *Psychological Reports*, 109(2), 573-599. doi: 10.2466/02.09.15.16.PR0.109.5.573-599.
- Gray, R., & Bourke, F. (2015). Remediation of Intrusive Symptoms of PTSD in Fewer Than Five Sessions: A 30- Person Pre-Pilot Study of the RTM Protocol. *Journal of Military, Veteran and Family Health*, 1(2), 85-92. doi:10.3138/jmvfh.3119
- Gray, R., & Liotta, R. (2012). PTSD: Extinction, Reconsolidation and the Visual-Kinesthetic Dissociation Protocol. *Traumatology*, 18(2), 3-16. DOI 10.1177/1534765611431835.
- Hoge, C., Castro, C., Messer, S., et al. (2004). Combat Duty in Iraq and Afghanistan: Mental Health Problems, and Barriers to Care. *New England Journal of Medicine*, 351(1), 13-22.
- Hossack, A., & Bentall, R. (1996). Elimination of Posttraumatic Symptomatology by Relaxation and Visual Kinesthetic Dissociation. *Journal of Traumatic Stress*, 9(1), 99-110.
- Kessler, R.C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C.B. (1995). Posttraumatic Stress Disorder in the National Comorbidity Survey. *Arch Gen Psychiatry*, 52(12), 1048-1060.
- Kim, P.Y., Britt, T.W., Klocko, R.P., Riviere, L.A., & Adler A.B. (2011). Stigma, Negative Attitudes about Treatment, and Utilization of Mental Health Care among Soldiers. *Military Psychology* 23(1): 65-81.
- Kindt, M., & Soeter, M. (2013). Reconsolidation in a Human Fear Conditioning Study: A Test of Extinction as Updating Mechanism. *Biological Psychology*, 92(1), 43-50. doi: <http://dx.doi.org/10.1016/j.biopsycho.2011.09.016>
- Kindt, M., Soeter, M., & Vervliet, B. (2009). Beyond Extinction: Erasing Human Fear Responses and Preventing the Return of Fear. *Nature Neuroscience*, 12(3), 256-258. doi: 10.1038/nn.2271
- Lanius, R.A., Vermetten, E., Loewenstein, R.J., Brand, B., Schmahl, C., Bremner, J.D., & Spiegel, D. (2010). Emotion Modulation in PTSD: Clinical and Neurobiological Evidence for a Dissociative Subtype. *Am J Psychiatry*, 167(6), 640-647. doi: 10.1176/appi.ajp.2009.09081168
- Lee, J. (2009). Reconsolidation: Maintaining Memory Relevance. *Trends in Neurosciences*, 32(8), 413-420.
- Merlo, E., Milton, A., Goozée, Z., Theobald, D., & Everitt, B. (2014). Reconsolidation and Extinction Are Dissociable and Mutually Exclusive Processes: Behavioral and Molecular Evidence. *The Journal of Neuroscience*, 34(7), 2422-2431. doi: 10.1523/jneurosci.4001-13.2014
- Monson, C., Gradus, J., Young-Xu, Y., Schnurr, P., Price, J., & Schumm, J.A. (2008). Change in Posttraumatic Stress Disorder Symptoms: Do Clinicians and Patients Agree? *Psychological Assessment*, 20(2), 131-138.
- Muss, D. (1991). A New Technique for Treating Post-Traumatic Stress Disorder. *British Journal of Clinical Psychology*, 30(1): 91-92.
- Muss, D. (2002). *The rewind technique in the treatment of post-traumatic stress disorder: Methods and application. Brief treatments for the traumatized*, 306-314. West Port, CT: Greenwood Press.
- Nader, K. (2003). Memory Traces Unbound. *Trends Neurosci* 26, 65-72.
- Nader, K., Schafe, G., Le Doux, J. (2000). Fear Memories Require Protein Synthesis in the Amygdala for Reconsolidation After Retrieval. *Nature*, 406, 722-726.
- Najavits, L. (2015). The Problem of Dropout from Gold Standard PTSD Therapies. *F1000 Prime Reports* 7, 43.
- Pedreira, M., Perez-Cuesta, L., & Maldonado, H. (2004). Mismatch Between What Is Expected and What Actually Occurs Triggers Memory Reconsolidation or Extinction. *Learning & Memory*, 11(5), 579-585. doi: 10.1101/lm.76904
- Perez-Cuesta, L., & Maldonado, H. (2009). Memory Reconsolidation and Extinction in the Crab: Mutual Exclusion or Coexistence? *Learn Mem*, 16(11), 714-721. doi: 10.1101/lm.1544609
- Pietrzak, R.H., Johnson, D.C., Goldstein, M.B., Mallely, J.C., & Southwick, S.M. (2009). Perceived stigma and barriers to mental health care utilization among OEF-OIF veterans. *Psychiatric Services*, 60(8), 1118-1122. doi: 10.1176/appi.ps.60.8.1118
- Powers, M.B., Halpern, J.M., Ferenschak, M.P., Gillihan, S.J., & Foa, E.B. (2010). A Meta-Analytic Review of Prolonged Exposure for Posttraumatic Stress Disorder. *Clin Psychol Rev*, 30(6), 635-641. doi: 10.1016/j.cpr.2010.04.007
- Rescorla, R. (1988). Pavlovian Conditioning: It's Not What You Think It Is. *American Psychologist*, 43(3), 151-160.
- Schiller, D. & Phelps, E. (2011). Does Reconsolidation Occur in Humans? *Frontiers in Behavioral Neuroscience*, 5(24). doi: 10.3389/fnbeh.2011.00024. [http://www.frontiersin.org/Behavioral\\_Neuroscience/10.3389/fnbeh.2011.00024/abstract](http://www.frontiersin.org/Behavioral_Neuroscience/10.3389/fnbeh.2011.00024/abstract)
- Schiller, D., Kanen, J. W., LeDoux, J. E., Monfils, M-H., & Phelps, E. A. (2013). Extinction During Reconsolidation of Threat Memory Diminishes Prefrontal Cortex Involvement. *Proceedings of the National Academy of Sciences*, 110(50), 20040-20045. doi: 10.1073/pnas.1320322110
- Schiller, D., Monfils, M., Raio, C., Johnson, D., LeDoux, J. & Phelps, E. (2010). Preventing the Return of Fear in Humans Using Reconsolidation Update Mechanisms. *Nature*, 463(7277), 49-53.
- Schottenbauer, M.A., Glass, C.R., Arnkoff, D. B., Tendick, V., & Gray S.H. (2008). Nonresponse and Dropout Rates in Outcome

- Studies on PTSD: Review and Methodological Considerations. *Psychiatry* 71(2): 134-168.
- Sheehan, D., Janavs, J., Harnett-Sheehan, K., et al. M.I.N.I.: *Mini International Neuropsychiatric Interview*, English version 6.0.0, DSM-IV. Tampa: University of South Florida; 1992–2010.
- Soeter, M., & Kindt, M. (2015). An Abrupt Transformation of Phobic Behavior After a Post-Retrieval Amnesic Agent. *Biol Psychiatry*, 78(12), 880-886. doi: 10.1016/j.biopsych.2015.04.006
- Steenkamp, M.M. & Litz, B. T. (2013). Psychotherapy for Military-Related Posttraumatic Stress Disorder: Review of the Evidence. *Clinical Psychology Review*, 33(1), 45-53.
- Steenkamp, M.M. & Litz, B. T. (2014). One-Size-Fits-All Approach to PTSD in the VA not Supported by the Evidence. *American Psychologist*, 69(7), 706-707.
- Steenkamp, M.M., Litz, B.T., Hoge, C.W., & Marmar, C.R. (2015). Psychotherapy for Military-Related PTSD: A Review of Randomized Clinical Trials. *Journal of the American Medical Association*, 314(5), 489-500. doi: 10.1001/jama.2015.8370
- Suzuki, A., Josselyn, S. A., Frankland, P.W., Masushige, S., Silva, A.J., & Kida, S. (2004). Memory Reconsolidation and Extinction Have Distinct Temporal and Biochemical Signatures. *J Neurosci*, 24(20), 4787-4795. doi: 10.1523/jneurosci.5491-03.2004
- Szafranski, D.D., Gros, D.F., Menefee, D. S., Wanner, J. L., & Norton, P.J. (2014). Predictors of Length of Stay Among OEF/OIF/OND Veteran Inpatient PTSD Treatment Noncompleters. *Psychiatry: Interpersonal and Biological Processes*, 77(3), 263-274.
- Tylee, D., Gray, R., Glatt, S. & Bourke, F. (2016). *Evaluation of the reconsolidation of traumatic memories protocol for the treatment of PTSD: A randomized, wait list controlled trial*. Submitted manuscript.
- Utuya, A.J., Joseph, S., & Muss, D.C. (2011). Treating Traumatic Memories in Rwanda With the Rewind Technique: Two-Week Follow-Up After a Single Group Session. *Traumatology*, 8(1), 75-78. doi: 10.1177/1534765611412795
- VA National Center for PTSD. (2014). Using the PTSD Checklist for DSM-IV (PCL) [Internet]. Washington (DC): US Department of Veterans Affairs; c2014 [cited 2014 Nov 20]. Available from: <http://www.ptsd.va.gov/professional/pages/assessments/assessment-pdf/PCL-handout.pdf>
- Weathers, F. & Ford, J. (1996). Psychometric properties of the PTSD checklist (PCL-C, PCL-S, PCL-M, PCLPR). In: B.H. Stamm, Editor, *Measurement of stress, trauma, and adaptation*. Lutherville, MD: Sidran Press.
- Wolf, E.J. (2013). The Dissociative Subtype of PTSD: Rationale, Evidence, and Future Directions. *PTSD Research Quarterly*, 24(4), p. 1.