

## Trauma-Focused Interventions: A Clinical Practice Analysis

Jose Carbajal, Stephen F. Austin State University

### Abstract

This paper presents a systematic review of trauma-treatment interventions, which have different theoretical perspectives on trauma etiology and its application. The empirical findings of these trauma treatment therapies are presented. The extant literature identifies five therapies as the most-effective treatment modalities for PTSD: cognitive therapy (CT), cognitive-behavioral therapy (CBT), cognitive processing therapy (CPT), prolonged exposure (PE) therapy, and eye movement desensitization and reprocessing (EMDR) therapy. They are all validated with some nuances on treatment approach and effectiveness. However, to use these five interventions, practitioners need to consider and apply the research findings that indicate which intervention is best for which population. Based on the findings, suggestions are made for which population the different interventions are best suited.

Keywords: Trauma, EMDR; Research and Practice; Clinical Practice

### **Trauma-Focused Interventions: A Clinical Practice Analysis**

Using validated trauma interventions are important, as they can help with treatment efficacy and with maintaining a trauma-informed practice. Selecting interventions based on the client's needs and using an intervention tailored to the client are paramount. Therefore, this literature review summarizes the most accepted therapies for trauma treatment, their efficacy, and with which populations these interventions were found to be the most effective.

The most-accepted therapies (trauma-focused interventions) for treating posttraumatic stress disorder (PTSD) are cognitive therapy (CT), cognitive-behavioral therapy (CBT), cognitive processing therapy (CPT), prolonged exposure (PE) therapy, and eye movement desensitization and reprocessing (EMDR) therapy (Foa, Hembree & Rothbaum, 2007; Friedman, Resick & Keane, 2007). These interventions follow a similar format: psychoeducation, symptom stabilization, treatment, and symptom-reduction reevaluation. Training is necessary to use these interventions, and the level of training ranges from graduate-school introduction to the intervention to full training that includes protocols and manuals. Full training entails at least 40 hours, with consultation during and after the training.

These therapies aim to restructure the maladapted cognition, emotion, or behavior, as well as reduce any symptoms associated with the traumatic experience at the physiological level. Some interventions focus more on cognitive restructuring, while others focus on avoidance and affect regulation. The goal of trauma treatment is to reduce symptoms and improve overall functioning (Foa et al., 2007). For a client to process a traumatic experience, the client must

maintain a healthy level of affect tolerance as he or she processes the traumatic experience (Van der Kolk, 1994). Furthermore, a person with low affect tolerance is prone to dissociate because of hyper-arousal or because of hypo-arousal, i.e., the person cannot access the traumatic system effectively to process the information (Brewin, 2003; Van der Kolk, 1994). Thus, trauma treatment requires adeptness to help the client maintain a healthy level of tolerance, as well as process the traumatic experience.

### **Methodology**

The literature for this research review was located using search engines in the following databases from 1990 through 2017: Academic Search Complete, PsycINFO, PsycARTICLES, Medline, Psychology and Behavioral Sciences Collection, ERIC, and Social Work Abstracts. The key search terms were *trauma*, *trauma treatment*, *trauma-focused*, *intervention*, *PTSD*, *cognitive therapy (CT)*, *cognitive behavioral therapy (CBT)*, *cognitive processing therapy (CPT)*, *prolonged exposure (PE) therapy*, and *eye movement desensitization and reprocessing (EMDR)*. The inclusion criteria were that selections must come from peer-reviewed journals, randomized controlled studies, and meta-analyses. The exclusion criteria were that they could not come from books, dissertations, commentaries, and non-peer reviewed publications. Furthermore, these searches were not limited to the United States, but rather were worldwide, but each article had to be in English or translated into English. The research question guiding this review is: How effective are trauma-focused interventions in treating posttraumatic stress, and what are the clinical implications?

The present study's design is a clinical-approach analysis, though it varies from the systematic literature review or meta-analysis design recommendation (Moher et al., 2015). This approach considers the statistical significance of the studies, but also focuses on the nuances of each intervention. The method is more qualitative and less quantitative. For example, case studies that are clinically significant were selected based on the clinical insights they might provide. The intent is to provide an avenue for practitioners to assess the empirical data and apply it in the field. This study illustrates how practitioners could synthesize empirical data applicable to their practice, as this literature review concerns trauma-focused interventions. Altogether, this review covers 40 qualitative and quantitative studies.

### **Results**

#### **Trauma-Treatment Modalities**

**Cognitive therapy.** CT is designed to help clients with depression and anxiety disorders (Beck & Dozois, 2011; Beck, Rush, Shaw, & Emery, 1979). Because CT was validated for clients diagnosed with depression and anxiety, understanding how it applies to clients with PTSD is important. CT addresses the negative beliefs and maladaptive behaviors or effects that a client might have because of PTSD. For example, a person's beliefs can lead to the traumatic experiences and maintenance. These beliefs, which trauma often creates, conflict with a person's understanding of an event. The conflict between beliefs and the event is the trauma, or prior maladaptive schemata reinforce existing beliefs. Thus, CT focuses on those cognitions to reconcile prior beliefs with the current beliefs that are causing the conflict (trauma) and maintaining the posttraumatic symptoms. The treatment requires bringing these unconscious

schemata to the surface so that the person can appraise these automatic reactions, thoughts, and feelings. It is through such cognitive appraisals of internal and external stimuli that the person becomes conscious of his or her schemata and can change their meaning.

Controlled studies for PTSD with CT are limited, with CBT more often used in such studies. Furthermore, only two PTSD studies were found that used CT. Wild and Ehlers (2010) used CT in a case study to change the appraisal of an event, memory (intrusive thoughts), and the client's maintenance behaviors and coping strategies. They found that it was effective with their client, who was in a car accident. Similarly, Payne and Edwards (2010) worked with a 15-year-old rape victim who had PTSD. After CT treatment, the client had no PTSD or depressive symptoms. However, this case study included the use of trauma narrative to work on the intrusive memories. Nixon, Sterk, and Pearce (2012), in a randomized trial of children with PTSD, compared CT with trauma-focused cognitive behavioral therapy (TF-CBT) to test the efficacy of these two interventions. However, the only difference between the two intervention protocols was excluding exposure from CT. They found that their clients' mothers influenced clients' recovery if the mothers suffered from depression (13% of the variance) or unhelpful beliefs (31% of the variance). This study's findings regarding mothers are consistent with social support as a therapeutic benefit to clients, especially with CBT and exposure therapy. CT and TF-CBT were both effective, and exposure was not a deterrent to treatment adherence. CT's effectiveness lies in the appraisal of the event and intrusive thoughts.

**Cognitive behavioral therapy.** CBT is used for other psychological problems other than PTSD. The two specific CBT components used to treat PTSD are imaginal exposure and cognitive restructuring, and the TF-CBT specific component with children is the trauma narrative (Lopes, Macedo, Coutinho, Figueira, & Ventura, 2014). Therefore, the discussion is on CBT as it relates to PTSD, imaginal exposure and cognitive restructuring.

In a multisite, randomized, and controlled study, Dorrepaal et al. (2012) compared CBT and treatment as usual (TAU) with clients ( $N=71$ ) who had complex PTSD and other psychiatric disorders due to childhood sexual abuse (CSA). They found that group CBT and TAU were effective, with CBT having a larger effect size. Steil, Jung, and Stangier (2011) studied the efficacy of two cognitive restructuring and imagery modification sessions with adult survivors ( $N=9$ ) of CSA. They found that there was a significant reduction of intensity on feeling being contaminated after the two sessions and a reduction in posttraumatic symptoms. Similarly, Margolies, Rybarczyk, Vrana, Leszczyszyn, and Lynch (2013) found that imagery rehearsal improves insomnia and PTSD symptoms with combat veterans ( $N=40$ ) who served in Afghanistan and/or Iraq.

TF-CBT, a variation of CBT, has also been tested with children to determine efficacy. Seidler and Wagner (2006) conducted a meta-analysis from 1989 to 2005 to ascertain EMDR's superiority over TF-CBT ( $N=8$ ). They could not determine whether one was superior to the other and concluded that both appeared to be equally efficacious. In another meta-analysis conducted from 1996 to 2005 ( $N=8$ ), Kowalik, Weller, Venter, and Drachman (2011) examined the efficacy of CBT with children who had PTSD. They concluded that CBT was effective for treating children with PTSD.

One of the specific components of TF-CBT is the trauma narrative. Deblinger, Mannarino, Cohen, Runyon, and Steer (2011) tested the efficacy of the trauma narrative (TN) in TF-CBT and treatment length with children (ages 4-11) who had a CSA history and PTSD. They randomly assigned children and parents (caregivers) to eight sessions with TN ( $n=52$ ) or without TN ( $n=52$ ), and 16 sessions with TN ( $n=52$ ) or without TN ( $n=54$ ). They found that all groups had efficacious outcomes, and that there was a greater reduction in PTSD symptoms after 16 sessions compared with eight sessions, but only in one PTSD symptom, re-experiencing, and avoidance. Parents who participated in the 16 sessions without TN had greater improvement in parenting practices compared with those who participated in the TN group. Children who received no TN had fewer externalizing behavior problems compared with those who received TN. The researchers attribute this finding to therapists spending more time with parents. However, the parents who participated in the eight sessions with TN had less emotional distress over the abuse. Regardless of treatment length, children had fewer related abuse fears with TN compared with without TN, and significantly less anxiety in the eight-session group with TN. The researchers concluded that the eight-session group with TN is the most efficient and effective in terms of emotional-distress reduction in parents and reduction of fear and generalized anxiety in children.

In a similar study to determine the effectiveness of TF-CBT with younger children (3 to 6 years old), Scheeringa, Weems, Cohen, Amaya-Jackson, and Guthrie (2011) focused on children who experienced trauma or acute injury, witnessed domestic violence, or were a victim of Hurricane Katrina. They randomly assigned children to two groups: immediate treatment (IT,  $n=40$ ) and waitlist (WL,  $n=34$ ) group. They used drawings, imaginal exposure, and *in vivo* exposure to process the trauma (they replaced the trauma narratives of TF-CBT with these methods). The children on the WL met PTSD criteria after the IT group was completed; the WL received treatment after the IT group, and a six-month follow-up was conducted. Their findings show that TF-CBT was effective. However, the younger the child (ages 3-4), the more difficulty the therapist had with implementing the protocol and ensuring the child understood the task. They found that TF-CBT is effective with this age group with those who experience not only sexual abuse, but also with other traumatic experiences as well. Dalglish et al. (2015) reported similar findings with young children ( $N=44$ ; 3-8 years old) who had PTSD. In another randomized, controlled study with TF-CBT and EMDR with children ( $N=48$ ; 8-18 years old), Diehle, Opmeer, Boer, Mannarino, and Lindauer (2015) found TF-CBT and EMDR to be equally effective. This is one of the few studies that showed no statistical significance between EMDR and TF-CBT.

A specific target for treatment is the client's avoidance-coping mechanisms because clients often use these mechanisms to manage PTSD symptoms. Pietrzak, Harpaz-Rotem, and Southwick (2011) examined combat-related severity PTSD symptoms in Operation Enduring Freedom and Operation Iraqi Freedom (OEF and OIF) veterans ( $N=167$ ), relating to thought control and avoidance coping strategies. They compared OEF and OIF veterans with PTSD to those without PTSD. Those without PTSD did not use avoidance coping strategies (worry, self-punishment, social control, behavioral distraction, and avoidance of unwanted thoughts, feelings, and situations), whereas those with PTSD used them. They argued that CBT treatment is effective at addressing these maladaptive patterns. McDevitt-Murphy (2011) went further, arguing that PTSD and alcohol-use disorders with OEF/OIF veterans need to be addressed

simultaneously with CBT protocols, as alcohol maintains maladapted coping responses. McDevitt-Murphy (2011) also argued that involving significant others could enhance CBT outcomes.

Women and men can respond differently to trauma. Felmingham and Bryant (2012), in a randomized, controlled trial, examined PTSD differences between genders. Men and women were separated into two groups, exposure therapy only ( $n=65$ , 32 men and 33 women) or exposure therapy and cognitive restructuring ( $n=43$ , 20 men and 23 women). Participants were all trauma survivors (vehicle accidents or nonsexual assaults). Felmingham and Bryant found that men in the exposure-therapy-only group experienced an increase in PTSD symptoms at six-month follow-ups, compared with men in exposure and cognitive restructuring and women in exposure only. They found that women had smaller increases in PTSD symptoms at the six-month mark in both the exposure-therapy-only and exposure therapy and cognitive restructuring groups. They concluded that this outcome could relate to women having better emotional memories and greater emotional-tolerance capacity to process PTSD and that men perceive emotions as a sign of weakness, which reinforces avoidance and maladapted coping responses.

The research findings indicate that CBT is more effective than treatment as usual. This is particularly important because for CBT, the research indicates that including exposure and cognitive restructuring is most effective. The exposure in CBT is crucial because the findings indicate that clients with PTSD use avoidance coping strategies. These strategies only decrease an individual's recovery. Whereas the findings regarding treatment with children indicate that TF-CBT is effective, but there is no outcome difference between TF-CBT and EMDR. However, these interventions with younger children (3 and 4-year olds) need modifications.

**Cognitive processing therapy.** CPT was validated for PTSD and depression (Iverson et al., 2011; Resick, Nishith, Weaver, Astin, & Feuer, 2002). Chard (2005), in a randomized controlled study, examined the effectiveness of CPT with abuse survivors ( $N=71$ ) who had PTSD, depression, and dissociation. The evaluation concerned conducting individual and group therapy using a CPT protocol. This format of CPT was effective at reducing PTSD and depressive symptoms (only 7% met PTSD diagnosis post-treatment compared with 64% of those on the waitlist). However, Chard noted that CPT might not have reduced the dissociative symptoms. Resick, Suvak, Johnides, Mitchell, and Iverson (2012) examined the effect of dissociation in PTSD and CPT treatment. They found that those with high levels of dissociation had fewer symptoms with CPT than with CPT-C, whereas those with lower levels of dissociation had fewer symptoms with CPT-C. The difference between CPT and CPT-C is the written trauma narrative in the standard CPT protocol (Resick et al., 2008).

CPT and PE have different treatment results. Nishith, Nixon, and Resick (2005) compared CPT and prolonged exposure (PE) with female rape victims ( $N=98$ ) who had PTSD and depression, targeting guilt, as it predicts depression. They found that CPT had a larger effect size than PE. Similarly, in a controlled trial of CPT, Monson et al. (2006) studied veterans ( $N=60$ ) with chronic military-related PTSD. After the treatment, 40% did not meet criteria for PTSD, and there was an improvement in other symptoms (e.g., depression, anxiety, guilt, and social adjustment). However, avoidance and hyper-arousal symptoms did not improve, compared

with the waitlist group. PE was more effective at reducing avoidance and hyper-arousal symptoms than CPT.

In another study with military veterans ( $n=42$ ), Chard, Schumm, McIlvain, Bailey, and Parkinson (2011) examined outcomes using CPT-C with veterans at a residential treatment program who had PTSD and TBI histories. They found that veterans who had mild TBI showed less improvement with PTSD symptoms. Veterans who received the CPT-C intervention showed a significant reduction in PTSD and depression symptoms from pre- to post-treatment. Similarly, Forbes et al. (2012), in a multisite, randomized, and controlled trial in Australia, compared CPT and treatment as usual (TAU) with veterans ( $n=59$ ) who had military-related PTSD. They found no difference between the two groups in treatment credibility, expectancy, and therapeutic alliance. In terms of PTSD symptom reduction, they found that CPT produced significantly larger reductions in PTSD symptoms than TAU.

Like for CPT and TAU, treatment results between CPT and PE are mixed. Rizvi, Vogt, and Resick, (2009) compared CPT and PE dropout rates with PTSD symptom reduction. All participants ( $n=145$ ) were women who met PTSD criteria as rape survivors. They were randomized into CPT or PE groups. No statistical significance was found in dropout rates between CPT and PE groups, but they found that younger women were more likely to drop out than older women. They found that younger women had fewer symptoms with CPT, and older women had fewer symptoms with PE. They also found that those who had higher scores in depression and guilt had better treatment outcomes (fewer symptoms at the end). Thus, those with higher PTSD-symptom scores compared with those who had lower PTSD-symptom scores experienced greater PTSD-symptom reduction in both treatment conditions. In a randomized, controlled trial, MacDonald, Monson, Doron-Lamarca, Resick, and Palfai (2011) investigated PTSD symptom changes during treatment using CPT. Their participants ( $N=30$ ) were military veterans who had military-related PTSD. They found no difference between the treatment and waitlist group at baseline. During the treatment phase, the treatment group's PTSD symptoms declined compared with the controlled group's symptoms. They also found rapid improvements early in the treatment process compared with later, and there was a steady symptom decline as treatment progressed. Furthermore, those in the CPT group experienced no symptom spike during treatment. This could explain the dropout differences in Rizvi, Vogt, and Resick's (2009) study. The rapid change early on could be a motivator for completing treatment. Gallagher and Resick (2012) examined CPT and PE mechanisms of change. They found that CPT's specific mechanism of change was changing hopelessness-maladapted cognitions, whereas PE's mechanism of change was changing symptoms through habituation. Resick, Williams, Suvak, Monson, and Gradus (2012) conducted a long-term outcome follow-up (4.5 to 10 years post-treatment,  $n=126$ ) comparing CPT and PE treatment of female rape survivors ( $n=171$ ). They found that 22.2% (CPT) and 17.5% (PE) of females met PTSD criteria at the long-term follow-up. The two groups did not differ in treatment improvement and maintenance.

The standard CPT and modified CPT-C protocols were found to be effective. Based on the findings, CPT is less effective with dissociation and mild TBI, while PE is more effective at reducing avoidance and hyper-arousal symptoms, with roughly 4% better long-term outcomes than CPT. However, younger women experienced better results with CPT. In addition, CPT specifically helps with hopelessness-maladapted cognitions.

**Prolonged exposure therapy.** PE was validated for PTSD and anxiety (Foa et al., 2007; Institute of Medicine [IOM], 2007). The discussion in this section focuses on additional studies of PE and other treatment interventions not covered elsewhere. Many of the studies have compared PE with other interventions because PE is accepted as the most effective treatment intervention for PTSD (IOM, 2007). Boudewyns and Hyer (1996) conducted one of the earlier randomized controlled studies comparing EMDR and PE, finding no statistical difference between the two interventions. These findings resemble the results from Rothbaum, Astin, and Marsteller's (2005) controlled study. Van Etten and Taylor (1998) conducted a meta-analysis on EMDR and PE, finding that both were among the most effective treatments for PTSD. They found that behavior therapy, serotonin reuptake inhibitors, and EMDR "were the most effective" in treating PTSD (p. 138). However, they found that after PE treatment, clients did not meet criteria for PTSD, and that EMDR and relaxation training did not differ from each other. They also found that people in the PE group showed greater reductions in avoidance and reexperiencing symptoms, and that EMDR was unaffected by the severity of PTSD symptoms. Power et al.'s (2002) controlled study compared EMDR with exposure, cognitive restructuring (E+CR), and a waitlist group in Scotland. They randomized clients who had PTSD ( $N=105$ ) to EMDR ( $n=39$ ), E+CR ( $n=37$ ), or WL ( $n=29$ ) groups. They found that EMDR and E+CR were both equally effective at reducing PTSD symptoms compared with the waitlist.

Virtual-reality exposure is a relatively new approach to PTSD treatment but also found effective especially with military personnel in combat zones. McLay, McBrien, M. Wiederhold, and B. Wiederhold (2010) used virtual-exposure (VR-E) therapy and PE with active military members (U.S. Marines or Navy personnel) in Iraq. All the participants ( $N=10$ ) met PTSD criteria. This report is based on a case series of treatments analyzing the data retrospectively. No control groups were used. They found that VR-E and PE were effective, and no statistical significance was found among treatments. However, none in the PE group met PTSD criteria after treatment, whereas one participant met PTSD criteria in the VR-E group after treatment. Even though the sample is small, this is the first study to report treatment in a theater of operations (combat zone) using VR-E and PE. A note of caution is also warranted on this report, as the last two authors worked for the company that makes the virtual-reality product.

Along with type of treatment, timing of the treatment can impact effectiveness. Rothbaum et al. (2012) conducted a randomized pilot study to prevent PTSD. They used a modified version of PE (three brief sessions) with patients in an emergency room who had experienced a life-threatening event. They had two groups: intervention ( $n=69$ ; modified PE) and assessment ( $n=68$ ; the participants in this group were only assessed and received no treatment, i.e., a control group). They found that those who received the PE intervention experienced significantly fewer PTSD symptoms months after the traumatic event than those assigned to the assessment group. They also found that rape victims who received the intervention had higher effect sizes.

Although generally effective, veterans of different wars may respond differently to PE treatment. Yoder et al. (2012) compared outcomes of PE for veterans of different wars. Their sample comprised veterans with PTSD from OIF/OEF/operation new dawn (OND,  $n=61$ ), Vietnam ( $n=34$ ), and the Gulf War ( $n=17$ ), in which symptom severity was not statistically

significant. They found that PE was effective with the three groups (Gulf War veterans showed the lowest effect size, slower symptom decline, and higher symptoms at the final session). The authors hypothesized that the Gulf War veterans' difference could be attributed to their experiences (these veterans are more likely to have a chronic fear of death due to biological agents rather than combat). They also found that the OIF/OEF/OND group completed treatment at a lower rate compared with the other groups. This finding is also consistent with Tuerk et al.'s (2011) study of OIF/OEF veterans ( $N=65$ ) using PE. They found rapid improvement early in treatment (from one to five sessions) and a slower rate of improvement as treatment progressed.

PE is effective for treating clients with PTSD. The studies found no difference between EMDR and PE. However, PE provided better long-term outcomes compared with other interventions; EMDR was not affected by PTSD severity. Of all the interventions, virtual-reality exposure is the only intervention used in a combat zone with promising results. However, further research is needed to determine efficacy. Another finding, which is crucial, regards PTSD prevention. PE was the only intervention reviewed that tested PTSD-prevention symptoms, showing effectiveness at significantly reducing PTSD symptoms. Furthermore, a consistent finding is that clients usually have earlier improvements during treatment. This finding is crucial because clients need to be educated about their treatment progression, which likely would lead to more clients completing their treatment.

**Eye movement desensitization and reprocessing.** Like PE, EMDR was validated for PTSD and anxiety (Carlson, Chemtob, Rusnak, Hedlund, & Muroaka, 1998; Högberg et al., 2007; Chen et al., 2014; Power et al., 2002; Scheck, Schaeffer, & Gillette, 1998). This section focuses on EMDR and other studies that have not been discussed.

The following studies describe EMDR's effectiveness. Taylor et al. (2003) compared efficacy, speed, and adverse effects of exposure therapy ( $n=15$ ), EMDR ( $n=15$ ), and relaxation training ( $n=15$ ) with PTSD. Participants ( $N=45$ ) were recruited from outpatient clinics: 97% of participants had chronic PTSD, and 65% had experienced more than one traumatic event. These researchers found that exposure therapy was superior to relaxation at posttreatment and follow-up. All treatments reduced posttraumatic symptoms, but EMDR was more effective than relaxation training at symptom reduction, and exposure therapy was more effective than EMDR at symptom reduction. They concluded that EMDR might use mechanisms that resemble those of exposure therapy. However, they did not test specifically for the active ingredient in EMDR. Instead, they showed that exposure therapy is more effective than EMDR.

Another comparative research study, Graca, Palmer, and Occhietti (2014) compared CPT, EMDR, Group CPT, and trauma-group exposure (TGE) therapy with veterans ( $N=51$ ) at a residential treatment program who had PTSD. They found that individual and group CPT and EMDR were significant compared with TGE therapy. EMDR and concurrent group CPT were better at reducing depressive symptoms than individual CPT and TGE.

With support that EMDR is beneficial, Lee, Taylor, and Drummond (2006) investigated the active ingredients in EMDR more closely. They explored whether reliving responses during the desensitization phase was associated with greater improvement in symptoms than distancing or associated responses. There were 44 participants and independent assessors. They found that

distancing during reprocessing created the greatest positive change, while reliving the experience created a negative association. This study demonstrated how the dual attention-focus component is critical to EMDR treatment, which differs from exposure therapy. There is no distancing in exposure therapy. Similarly, Servan-Schreiber, Schooler, Dew, Carter, and Bartone (2006) tested bilateral stimulation to determine its effects. They provided three sessions for participants ( $N=21$ ). They found that all three bilateral stimulation methods were significant in reducing the emotional disturbance level, and that alternating bilateral stimulation was significant only when a new memory was targeted. In van den Hout et al.'s (2012) study ( $N=12$ ), they found that eye movement was superior to alternating tones. This is a slight difference in bilateral stimulation compared with the other studies. Finally, findings by Schubert, Lee, and Drummond (2011) resembled those of Servan-Schreiber et al. (2006), indicating difference between eye movement and no eye movement, and that there was greater distress reduction (emotionality and image vividness) with eye movement. In another study, Sack et al. (2016) tested eye movement, no eye movement (only fixating on the therapist's hand), and fixating on the exposure without dual attention focus. All participants ( $N=139$ ) met PTSD criteria and were randomly placed in one of these three different groups. They found a slight difference compared with the aforementioned studies: There was no difference between eye movement and no eye movement; however, dual attention focus was more effective than only fixating on the exposure without the dual attention focus.

Earlier studies focused on EMDR's mechanism of action. Studies found that bilateral stimulation is different from other treatment modalities. In addition, the dual-focus process of bilateral stimulation and trauma focus produces the greatest symptom reduction (Pagani, Amann, Landin-Romero, & Carletto, 2017). Thus, CPT, CBT, and PE follow different processes than EMDR. Another finding that is important is the comparison between CPT and EMDR; the results were better with concurrent group CPT and EMDR.

### **Conclusion**

The five interventions (CT, CBT, CPT, PE, and EMDR) reviewed are considered the best interventions for PTSD treatment. The best intervention, as reported, for hyper-arousal and avoidance is PE, followed by EMDR and CPT. The reason might be that these interventions are trauma-focused interventions, whereas CT and CBT are not specifically trauma-focused, other than the CBT variation TF-CBT. There is evidence that individual EMDR and group CPT are effective with veterans who have PTSD (Graca, Palmer, & Occhietti, 2014). The best intervention with children is TF-CBT and EMDR. However, the EMDR protocol must be modified with children, and few controlled research studies validate EMDR with this modification (Ahmad, Larsson, & Sundelin-Wahlsten, 2007). More TF-CBT controlled studies with children exist, especially younger children (3 to 4 years old). For both EMDR and TF-CBT, the protocols must be modified with younger children. Young adults have better treatment outcomes (greater symptom reduction) with CPT compared with PE, whereas older adults do better with PE (EMDR falls in between these two interventions, while CBT and CT are comparable). Therefore, it behooves practitioners to pay attention to these research findings' nuances, as they apply to their client population with PTSD. Finally, regardless of which treatment modality a practitioner uses, implementing phase-oriented strategies (techniques) to

increase stabilization and reduce traumatic symptoms is critical to trauma treatment (Cloitre et al., 2011).

### References

- Ahmad, A., Larsson, B., & Sundelin-Wahlsten, V. (2007). EMDR treatment for children with PTSD: Results of a randomized controlled trial. *Nordic Journal Of Psychiatry*, 61(5), 349-354. doi:10.1080/08039480701643464
- Beck, A. T., & Dozois, D. J. A. (2011). Cognitive therapy: Current and future directions. *The Annual Review of Medicine*, 62, 397-409.
- Beck, A. T., Rush, J., Shaw, B. & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford.
- Boudewyns, P. A., Hyer, L. A. (1996). Eye movement desensitization and reprocessing (EMDR) as treatment for post-traumatic stress disorder (PTSD). *Clinical Psychology and Psychotherapy*, 3, 185-195.
- Brewin, C. R. (2003). *Posttraumatic stress disorder: Malady or myth?* New Haven: Yale University Press.
- Carlson, J. G., Chemtob, C. M., Rusnak, K., Hedlund, N. L., Muraoka, M. Y. (1998). Eye movement desensitization and reprocessing (EMDR) treatment for combat-related posttraumatic stress disorder. *Journal of Traumatic Stress*, 11, 3-24.
- Chard, K. M. (2005). An evaluation of cognitive processing therapy for the treatment of posttraumatic stress disorder related to childhood sexual abuse. *Journal of Consulting and Clinical Psychology*, 73, 965-971.
- Chard, K. M., Schumm, J. A., McIlvain, S. M., Bailey, G. W., & Parkinson, R. B. (2011). Exploring the efficacy of a residential treatment program incorporating cognitive processing therapy-cognitive for veterans with PTSD and traumatic brain injury. *Journal of Traumatic Stress*, 24(3), 347-351. doi:10.1002/jts.20644
- Chen, Y. C., Hung, K. W., Tsai, J. C., Chu, H., Chung, M. H., Chen, S. R.,...& Chou, K. Ru. (2014). Efficacy of Eye-movement desensitization and reprocessing for patients with posttraumatic-stress disorder. A meta-analysis of randomized controlled trials. *Plos ONE*, 9(8), 1-17.
- Cloitre, M. L., Courtois, C. A., Charuvastra, A., Carapezza, R., Stolbach, B. C., & Green, B. L. (2011). Treatment of complex PTSD: Results of the ISTSS expert clinician survey on best practices. *Journal of Traumatic Stress*, 24, 615-627.
- Dagleish, T., Goodall, B., Chadwick, I., Werner-Seidler, A., McKinnon, A., Morant, N., ... & Meiser-Stedman, R. (2015). Trauma-focused cognitive behaviour therapy versus treatment as usual for post-traumatic stress disorder (PTSD) in young children aged 3 to 8 years: study protocol for a randomised controlled trial. *Trials*, 16(1), 1-9. doi:10.1186/s13063-01

- Deblinger, E., Mannarino, A. P., Cohen, J. A., Runyon, M. K., & Steer, R. A. (2011). Trauma-focused cognitive behavioral therapy for children: Impact of the trauma narrative and treatment length. *Depression and Anxiety, 28*, 67-75.
- Diehle, J., Opmeer, B. C., Boer, F., Mannarino, A. P., & Lindauer, R. J. L. (2015). Trauma-focused cognitive behavioral therapy or eye movement desensitization and reprocessing: What works in children with posttraumatic stress symptoms? A randomized controlled trial. *European Child Adolescent Psychiatry, 24*, 227-236.
- Dorrepaal, E., Thomaes, K., Smit, J. H., Van Balkom, A. J. L. M., Velman, D. J., Hoogendoorn, A. W., & Draijer, N. (2012). Stabilizing group treatment for complex posttraumatic stress disorder related to child abuse based on psychoeducation and cognitive behavioural therapy: A multisite randomized controlled trial. *Psychotherapy and Psychosomatics, 81*, 217-25.
- Felmingham, K. L., & Bryant, R. A. (2012). Gender differences in the maintenance of response to cognitive behavior therapy for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 80*, 196-200.
- Foa, E., Hembree, E., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences therapists guide* (treatments that work). New York: Oxford University Press.
- Forbes, D., Lloyd, D., Nixon, R. D. V., Elliott, P., Varker, T., Perry, D.,...Creamer, M. (2012). A multisite randomized controlled effectiveness trial of cognitive processing therapy for military-related posttraumatic stress disorder. *Journal of Anxiety Disorders, 26*, 442-452.
- Friedman, M. J., Resick, P. A. & Keane, T. M. (2007). Key questions and agenda for future research. In M. J. Friedman, T. M. Keane, & P. A. Resick (Eds.), *Handbook of PTSD: Science and Practice* (pp. 540-561). New York: The Guilford Press.
- Gallagher, M. W., & Resick, P. A. (2012). Mechanisms of change in cognitive processing therapy and prolonged exposure therapy for PTSD: Preliminary evidence for the differential effects of hopelessness and habituation. *Cognitive Therapy Research, 36*, 750-755.
- Graca, J. J., Palmer, G. A., & Occhietti, K. E. (2014). Psychotherapeutic Interventions for Symptom Reduction in Veterans With PTSD: An Observational Study in a Residential Clinical Setting. *Journal Of Loss & Trauma, 19*(6), 558-567.  
doi:10.1080/15325024.2013.810441
- Högberg, G., Pagani, M., Sundin, Ö., Soares, J., Åberg-Wistedt, A., Tärnell, B., & Hällström, T. (2007). On treatment with eye movement desensitization and reprocessing of chronic post-traumatic stress disorder in public transportation workers—A randomized controlled trial. *Nord J Psychiatry, 61*, 54-61.
- Institute of Medicine (IOM). (2007). *Treatment of posttraumatic stress disorder: An assessment of the evidence*. Washington, DC: The National Academies Press.
- Iverson, K. M., Gradus, J. L., Resick, P. A., Suvak, M. K., Smith, K. F., & Monson, C. M. (2011). Cognitive-behavioral therapy for PTSD and depression symptoms reduces risk

- for future intimate partner violence among interpersonal trauma survivors. *Journal of Consulting and Clinical Psychology, 79*, 193-202.
- Kowalik, J., Weller, J., Venter, J., & Drachman, D. (2011). Cognitive behavioral therapy for the treatment of pediatric posttraumatic stress disorder: A review and meta-analysis. *Journal of Behavior Therapy and Experimental Psychiatry, 42*, 405-413.
- Lee, C. W., Taylor, G., & Drummond, P. D. (2006). The active ingredient in EMDR: Is it traditional exposure or dual focus of attention? *Clinical Psychology and Psychotherapy, 13*, 97-107.
- Lopes, A. P., Macedo, T. F., Coutinho, E. F., Figueira, I., & Ventura, P. R. (2014). Systematic review of the efficacy of cognitive-behavior therapy related treatments for victims of natural disasters: A worldwide problem. *Plos ONE, 9*(10), 1-11.  
doi:10.1371/journal.pone.0109013
- MacDonald, A., Monson, C. M., Doron-Lamarca, S., Resick, P. A., & Palfai, T. P. (2011). Identifying patterns of symptom change during a randomized controlled trial of cognitive processing therapy for military-related posttraumatic stress disorder. *Journal of Traumatic Stress, 24*, 268-276.
- Margolies, S. O., Rybarczyk, B., Vrana, S. R., Leszczyszyn, D. J., & Lynch, J. (2013). Efficacy of a cognitive-behavioral treatment for insomnia and nightmares in Afghanistan and Iraq veterans with PTSD. *Journal Of Clinical Psychology, 69*(10), 1026-1042.  
doi:10.1002/jclp.21970
- McDevitt-Murphy, M. E. (2011). Significant other enhanced cognitive-behavioral therapy for PTSD and alcohol misuse in OEF/OIF veterans. *Professional Psychology: Research and Practice, 42*, 40-46.
- McLay, R. N., McBrien, C., Wiederhold, M. D., & Wiederhold, B. K. (2010). Exposure therapy with and without virtual reality to treat PTSD while in the combat theater: A parallel case series. *Cyberpsychology, Behavior, and Social Networking, 13*, 37-42.
- Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M.,... & PRISMA-P Group. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews, 4*, 1-9. Doi.10.1186/2046-4053-4-1
- Monson, C. M., Schnurr, P. P., Resick, P. A., Friedman, M. J., Young-Xu, Y., & Stevens, S. P. (2006). Cognitive processing therapy for veterans with military-related posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 74*, 898-907.
- Nishith, P., Nixon, R. D. V., & Resick, P. A. (2005). Resolution of trauma-related guilt following treatment of PTSD in female rape victims: A result of cognitive processing therapy targeting comorbid depression? *Journal of Affective Disorders, 86*, 259-265.
- Nixon, R. D. V., Sterk, J., & Pearce, A. (2012). A randomized trial of cognitive behaviour therapy and cognitive therapy for children with posttraumatic stress disorder following single-incident trauma. *Journal of Abnormal Child Psychology, 40*, 327-337.

- Pagani, M., Amann, B. L., Landin-Romero, R., & Carletto, S. (2017). Eye Movement Desensitization and Reprocessing and Slow Wave Sleep: A Putative Mechanism of Action. *Frontiers in psychology, 8*, 1935. doi: 10.3389/fpsyg.2017.01935
- Payne, C., & Edwards, D. (2010). What services supports are needed to enable trauma survivors to rebuild their lives? Implications of a systematic case study of cognitive therapy with a township adolescent girl with PTSD following rape. *Child Abuse Research in South Africa, 10*, 27-40.
- Pietrzak, R. H., Harpaz-Rotem, I., & Southwick, S. W. (2011). Cognitive-behavioral coping strategies associated with combat-related PTSD in treatment-seeking OEF-OIF veterans. *Psychiatry Research, 189*, 251-258.
- Power, K., McGoldrick, T., Brown, K., Buchanan, R., Sharp, D., Swanson, V., & Karatzias, A. (2002). A controlled comparison of eye movement desensitization and reprocessing versus exposure plus cognitive restructuring versus waiting list in the treatment of post-traumatic stress disorder. *Clinical Psychology and Psychotherapy, 9*, 299-318.
- Resick, P. A., Galovski, T. E., Uhlmansiek, M. O. B., Scher, C. D., Clum, G. A., & Young-Xu, Y. (2008). A randomized clinical trial to dismantle components of cognitive processing therapy for posttraumatic stress disorder in female victims of interpersonal violence. *Journal of consulting and clinical psychology, 76*(2), 243.
- Resick, P. A., Nishith, P., Weaver, T. L., Astin, M. C., & Feuer, C. A. (2002). A comparison of cognitive processing therapy, prolonged exposure and a waiting condition for the treatment of posttraumatic stress disorder in female rape victims. *Journal of Consulting and Clinical Psychology, 70*, 867-879.
- Resick, P. A., Suvak, M. V., Johnides, B. D., Mitchell, K. S., & Iverson, K. M. (2012). The impact of dissociation on PTSD treatment with cognitive processing therapy. *Depression and Anxiety, 29*, 718-730.
- Resick, P. A., Williams, L., Suvak, M. K., Monson, C. M., & Gradus, J. K. (2012). Long-term outcomes of cognitive-behavioral treatments for posttraumatic stress disorder among female rape survivors. *Journal of Consulting and Clinical Psychology, 80*, 201-210.
- Rizvi, S. L., Vogt, D. S., & Resick, P. A. (2009). Cognitive and affective predictors of treatment outcome in cognitive processing therapy and prolonged exposure for posttraumatic stress disorder. *Behaviour Research and Therapy, 47*, 737-743.
- Rothbaum, B. O., Astin, M. C., & Marsteller, F. (2005). Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims. *Journal of Traumatic Stress, 18*(6), 607-616.
- Rothbaum, B. O., Kearns, M. C., Price, M., Malcoun, E., Davis, M., Ressler, K. J.,...& Houry, D. (2012). Early intervention may prevent the development of posttraumatic stress disorder: A randomized pilot civilian study with modified prolonged exposure. *Biological Psychiatry, 72*, 957-963.
- Sack, M., Zehl, S., Otti, A., Lahmann, C., Henningsen, P., Kruse, J.,... & Stingl, M. (2016). A comparison of dual attention, eye movements, and exposure only during eye movement

- desensitization and reprocessing for posttraumatic stress disorders: Results from a randomized clinical trial. *Psychotherapy and Psychosomatics*, 85, 357-365.
- Scheck, M. M., Schaeffer, J. A., & Gillette, C. (1998). Brief psychological intervention with traumatized young women: The efficacy of eye movement desensitization and reprocessing. *Journal of Traumatic Stress*, 11, 25-44.
- Scheeringa, M. S., Weems, C. F., Cohen, J. A., Amaya-Jackson, L., & Guthrie, D. (2011). Trauma-focused cognitive-behavioral therapy for posttraumatic stress disorder in three through six year-old children: A randomized clinical trial. *Journal of Child Psychology and Psychiatry*, 52, 853-860.
- Schubert, S. J., Lee, C. W., & Drummond, P. D. (2011). The efficacy and psychophysiological correlates of dual-attention tasks in eye movement desensitization and reprocessing (EMDR). *Journal of Anxiety Disorders*, 25, 1-11.
- Seidler, G. H. & Wagner, F. E. (2006). Comparing the efficacy of EMDR and trauma-focused cognitive-behavioral therapy in the treatment of PTSD: a meta-analytic study. *Psychological Medicine*, 36, 1515-1522.
- Servan-Schreiber, D., Schooler, J., Dew, M. A., Carter, C., & Bartone, P. (2006). Eye movement desensitization and reprocessing for posttraumatic stress disorder: A pilot blinded, randomized study of stimulation type. *Psychotherapy and Psychosomatics*, 75, 290-297.
- Steil, R., Jung, K., & Stangier, U. (2011). Efficacy of a two-session program of cognitive restructuring and imagery modification to reduce the feeling of being contaminated in adult survivors of childhood sexual abuse: A pilot study. *Journal of Behavior Therapy and Experimental Psychiatry*, 42, 325-329.
- Taylor, S., Thordarson, D. S., Maxfield, L., Fedoroff, I. C., Lovell, K., & Ogradniczuk, J. (2003). Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology*, 71, 330-338.
- Tuerk, P. W., Yoder, M., Grubaugh, A., Myrick, H., Hamner, M., & Acierno, R. (2011). Prolonged exposure therapy for combat-related posttraumatic stress disorder: An examination of treatment effectiveness for veterans of the wars in Afghanistan and Iraq. *Journal of Anxiety Disorders*, 25, 397-403.
- van den Hout, M. A., Rijkeboer, M. M., Engelhard, I. M., Klugkist, I., Hornsveld, H., Toffolo, M. J., & Cath, D. C. (2012). Tones inferior to eye movements in the EMDR treatment of PTSD. *Behaviour Research and Therapy*, 50(5), 275-279.
- Van der Kolk, B. A. (1994). The body keeps the score: Memory and the evolving psychobiology of post-traumatic stress. *Harvard Review of Psychiatry*, 1, 253-265.
- Van Etten, M. L., & Taylor, S. (1998). Comparative efficacy of treatments for post-traumatic stress disorder: A meta-analysis. *Clinical Psychology and Psychotherapy*, 5, 126-144.
- Wild, J., & Ehlers, A. (2010). Self-study assisted cognitive therapy for PTSD: A case study. *European Journal of Psychotraumatology*, 1. doi: 10.3402/ejpt/v1i0/5599.

Yoder, M., Tuerk, P. W., Price, M., Grubaugh, A. L., Strachan, M., Myrick, H., & Acierno, R. (2012). Prolonged exposure therapy for combat-related posttraumatic stress disorder: Comparing outcomes for veterans of different wars. *Psychological Services, 9*, 16-25.