

REVIEW ARTICLE

Psychotherapy of post-traumatic stress disorder in the context of process and outcome studies

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Abstract

Therapeutic methods and techniques are quite diverse in the treatment of cognitive, emotional and behavioral problems that emerge as a result of traumatic experiences. Post-Traumatic Stress Disorder (PTSD) is a syndrome often triggered by extreme traumatic events. PTSD has been studied with various groups using different therapy techniques. The aim of the current study is to systematically review the extant literature on PTSD with a focus on efficacy of distinct forms of therapies including cognitive behavior therapy (CBT), eye movement desensitization and reprocessing (EMDR), group psychotherapy integrated with CBT (CBGT), hypnosis, cognitive behavioral writing therapy (CBWT), virtual reality exposure (VR), also group music therapy, narrative revealing therapy (NET). This article presents a review of the literature on effectiveness of various some therapies widely used in treating PTSD in studies with process and outcome research designs. It includes discussion of methods and results of studies as well as suggestions for future research avenues.

Keywords: Post-traumatic stress disorder, Process and outcome research, Psychotherapies

INTRODUCTION

The history of PTSD diagnosis and treatment approaches dates back to the late 1800s and early 1900s. Pierre Janet was the first psychologist to formulate a systematic therapeutic approach to post-traumatic psychopathology and to argue that treatment should be adapted to the distinct phases of post-traumatic stress reactions. Developing an eclectic treatment approach based on clinical experience for patients with hysterical (dissociative) or psychasthenic (obsessive-compulsive) post-traumatic stress symptoms in the early 1880s, Janet's publications spanned 50 years and focused on the treatment of PTSD [1].

Exposure to war, sexual assault and other types of traumas can cause traumatic stress syndromes. These criteria used

for diagnosis in Diagnostic and Statistical Manual of Mental Disorders (DSM III) have led to further research seeking answers to PTSD. Consequently, research has focused on an array of traumas such as criminal victimization, sexual assault, natural disaster and exposure to war in detail. Furthermore, the empirical knowledge and conceptual adjustments produced by the studies conducted in this context have significantly improved the general understanding of PTSD and led subsequently revisions in the PTSD criteria in DSM III-R. The symptoms of PTSD were listed as the exposure to a traumatic event other than a normal human experience, having nightmares, flashbacks or repeated intrusive thoughts, avoidance, and hypersensitivity to stimuli reminding the trauma, all of which would necessarily continue for at least one month [2].

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Continuous experience of the traumatic event, the tendency to avoid traumatic events, and high level of stimulation-hypersensitivity constitute the three main symptom schemes of PTSD in DSM-V. PTSD, which is approached with a single psychiatric diagnosis in terms of its origin, is a clinical case that can be explained by psychological processes rather than physical. Many psychotherapy methods have been developed for the treatment of the common complaints for PTSD and using process and outcome research studies. Process research usually examine how the counseling or psychotherapy processes, namely intervention styles and approaches, are structured. Whereas outcome studies focus on and examine the long or short-term changes that occur after the completion of the counseling or psychotherapy process [3-4].

Using document analysis method, I reviewed the existing literature up to 2017 of process and outcome studies, specifically cognitive behavioral therapy (CBT), eye movement desensitization and reprocessing (EMDR), CBT enriched group psychotherapy (BDGT), hypnosis, cognitive behavioral writing therapy (CBWT), virtual reality exposure therapy (VR), group music therapy apart from CBT and CBT-based therapies, and narrative exposure therapy (NET) which are widely used in the treatment of PTSD [5]. I aimed to create the pattern by making a connection between process and outcome research while explaining the methods used in these two types of research on PTSD using comparison. In the next sections, I focused on the level of effectiveness of therapies in the treatment of PTSD.

Cognitive Behavioral Therapies for PTSD

In the treatment of PTSD, Foa and Kozak drew attention to a context emphasizing cognitive processes and defined as fear constructs. The structures are separated from other mental structures by their emotional intensity and high number of stimuli. Moreover, they pointed out that the extreme sensitivity, tolerance and reactivity to fear stimuli, avoidance and resistance to change are the source of these structures. They suggested the method of emotional processing (transformation of memory that feeds emotions) for treatment of PTSD. This can be possible by initially transforming the cognitions that activate the fear structures and then weakening the connection between these structures. At this phase, emotional processing method suggests in-session habituation. In-session habituation or in-session experiences based on exposure to a fear-inducing situation cause the threatening memory to change, thus weakening the traumatic event and the cognitive context developed for it [6].

Traumas may evolve into cognitive schemas involving cognitive distortions and maladaptive beliefs about self and interpersonal life. Traumatic phenomena, in which emotions such as negative self-evaluation, guilt, helplessness, hopelessness, isolation, powerlessness, and anger cluster, can be easily integrated into the information processing model that enables the restructuring of underlying beliefs. Thus, the curative intervention is to be able to transform the schemas that lead to fear and avoidance into a

different form via assimilation into new experiences containing information that is inconsistent with existing cognitions. In order to achieve it, effective therapeutic interventions such as recording automatic thoughts, examining hypothetical processes, and creating imagery (imaginary exposure) to identify core beliefs can be used [7].

The interpretation of the trauma and the deteriorated-decreased self-perception after the response to the traumatic event can negatively affect the behavior, lifestyle and human relations of the person. In this context, cognitive restructuring is the treatment approach that is recommended. Then, the treatment involves exposure to a harmless but triggering stimulus that does not actually cause trauma and continues with providing confirmatory information about this stimulus. Related to this Rothbaum and Foa developed a three-stage prolonged exposure therapy. The first stage involves exposure to stimuli that activate fear and in-session exposure to be monitored systematically. In second stage; repeated and prolonged exposure follows which is based on altering fear structures by initiating corrective information processing, thereby relieving anxiety. The third stage starts with in-session habituation and continues as inter-session habituation, all of which aim for reducing anxiety gradually [8-9].

In studies that focused on the effect of cognitive behavioral therapies (CBT) in the treatment of post-traumatic stress disorder, the specific contributions of the treatment components are not fully unveiled although CBT is among the most effective treatments for PTSD. However, prolonged exposure (PE) and cognitive restructuring (CR) were found to be highly effective in reducing PTSD symptoms. Imaginary exposure (IE) enabled the reprocessing of emotional information via prolonged activation of traumatic memories. Treatment applications that combine the two, rather than PE or CR alone, are found to be more effective [10].

In another study conducted on cognitive behavioral therapy (CBT), a three-stage prolonged exposure therapy, exposure to a harmless but triggering stimulus that does not actually cause trauma and then providing confirmatory information about this stimulus (cognitive restructuring-CR), creating treatment rationale by detailing and evaluating coping styles for thought fragments in trauma memory with cognitive interventions (cognitive restructuring-CR) in the form of CBT techniques, initiating in-session re-experiencing for cognitive restructuring and evaluation of avoidance behavior and traumatic memories in this process, approaching the stressful event in a more realistic way, using metaphors, in vivo or inter-session exposure are found to be highly effective in the treatment of PTSD [11].

Similarly, another study found that the treatment methods and efficacy of CBT as well as the interventions made in this context were quite effective in reducing PTSD symptoms. In this regard, Identifying the conceptualizations arising from client's specific-distorted-dysfunctional thoughts, identifying the assumptions that impede compliance, identifying and testing them in which

the client can see them, and using the ABC method, which will be used to examine the mental process between the stimulus and the reaction with the client, forming therapeutic alliances, questioning hypotheses, and processing the information generated from the traumatic experience into the human mind as "fear constructs" in the form of verbal, behavioral and physiological responses through an exposure-based approach, using cognitive and behavioral processes and thus extinguishing the avoidance caused by cognitive distortion are the main focus and pillars of the cognitive behavioral therapy approach [12].

For treatment of PTSD, it is important to investigate new methods and approaches as well as proven techniques (e.g., exposure therapy). Acceptance and commitment therapy (ACT), as an alternative to cognitive-behavioral treatments that can facilitate exposure by reducing avoidance behavior, is a contextual behavioral therapy that targets the effects of symptoms in a wide spectrum of psychopathology on emotions, thoughts, memories and all other special experiences, avoidance efforts and suppression behaviors [13].

In another study, when the effect sizes of the treatments considered, one third of the participants did not respond to EMDR and CBT or stopped the treatments. Therefore, alternative treatments were needed in the treatment of PTSD. In this regard, Acceptance and Commitment Therapy (ACT), which is in the CBT group but has its own treatment methods, can lead to highly remarkable treatment. Thanks to its unique treatment methods, ACT indeed addresses processes that are not directly targeted by other CBT treatments. In addition, it does not focus on the form and frequency of inner experiences, but rather on their effects on behavior. ACT uses mindfulness-based cognitive therapy techniques to increase the quality of the individual's life. While it uses acceptance and mindfulness procedures for operation of the emotions, thoughts, and bodily functions, it uses traditional behavioral procedures for behavior changes [14].

Since repeated exposure therapies in a classical style do not meet the expected level of clients' participation, maintenance and completion of therapy, habituation-focused exposure therapies, which are structured on the emphasis on anxiety, fear and related reactions are not normal, are found to cause some of the clients to focus more on anxiety-causing stimuli and to develop further avoidance behavior or consequently to abandon the treatment altogether. Therefore, considering that experiential avoidance is one of the most key factors forming the psychopathological case, acceptance and determination therapies (ACT) which aim to plan behavior in line with mindfulness, acceptance and values, are promising to eliminate some of the drawbacks of other therapies [11].

Eye Movement Desensitization and Reprocessing

People are born with an information processing system which stores experiences through physiological processes. The purpose of storing information is to ensure the continuity of an emotionally healthy life. However, with the deactivation of this system,

pathologies can occur. The process of re-accessing information and processing that information causes neural changes in the balance between the stimulating and suppressive systems of the brain, and this distorted balance can be re-established with eye movements for the recovery. This treatment, which is based on the monitoring of therapist's bilateral hand movements while focusing on traumatic internal representations, is the Eye Movement Desensitization and Reprocessing (EMDR) method developed by Shapiro [8].

Shapiro structured the EMDR process on a three-step protocol, namely a) past experiences and their manifestations that underlie the pathology, (e.g., nightmares, physical sensations), b) conditions that trigger or exacerbate the current situation, c) establishing and incorporating templates for appropriate future actions. This protocol is integrated into an eight-step treatment approach. These stages are: 1. History taking, 2. Preparing the client, 3. Processing the traumatic memory-experience, 4. Desensitization, 5. Recollecting the target memory without any distress, 6. Body scanning; probing whether there is a physical tension, 7. Closing: When faced with new feelings, thoughts, memories and dreams, focusing on these and current feelings, 8. Re-evaluation [15].

In one phenomenon study, an inmate who felt responsible the miscarriage of her wife, having nightmares and attempted suicide was studied to find out the effectiveness of EMDR in the treatment of PTSD in a correction facility. In order to monitor and evaluate the case scales were used, and evaluated four times as pre-therapy, after therapy, one month after, and finally four months after the therapy. There were five sessions in total. In the first session, inmate whose positive cognition was rated 4 (of 1-7 scale) was asked to focus on the worst memory, and to express the feelings and bodily sensation in the process. Moreover, inmate was asked to track the therapist's hand your movements with his eyes, while the sensations and expressions were evaluated. As reached to stated high goodness in 6-7 scale, positive cognitions were in the focus and then continued with a new EM application. The application that lasted in total of 60 minutes sessions that are consecutive, finalized with body scan. In the three-month follow-up appointment (5th session), according to the monitoring and clinical evaluations, improvement was seen in recurrent nightmares, anger crises and complaint related to symptoms, and the inmate expressed to join new fun activities to brought joy [16].

In Kitchiner's study, nature of the prison environment, genetics predispositions, unable to adapt to new situations, real life trauma and loss can escalate the anxiety symptoms and disorders in individuals. As method that improves the cases in brief time, EMDR is an effective technique in controlled environments such as prisons. Therefore, EMDR can be used to improve the staff's competency, to empower staff, to improve equipment and to address inmates' needs [16].

EMDR was used in another clinical case for the PTSD's

treatment observed after traffic accidents. In the first stage, the trauma history of the case was collected and information related to EMDR was provided. EMDR has been initiated on images of the traffic accident and the moment of the accident; the moment of being removed from the vehicle, the images of his relatives at the moment of the accident and the accompanying thinking styles of "I am in danger, I am guilty, I am lonely". In the first two sessions of the EMDR treatment, it was found that the client's complaints decreased to a great extent, the tendency to avoid and self-blame over time, the anxious cognitions created by the belief against the bad things that he and his relatives could experience disappeared and were replaced by a positive statements that "it is over, done, it was not my fault" [17].

In EMDR, the information stored in the memory as images; the sensations and perceptions of the traumatic event were reprocessed and desensitization was achieved to the stimulus, the source of stress. Over time, new positive and adaptive cognitions are tried to be developed. Thus, appropriate attitudes and approaches have replaced the dysfunctional responses arising from "blunt thought patterns." In the case as the focus of the study, negative thought patterns that first developed due to traumatic memories and were stored in the memory were reprocessed, after the depersonalization, an improvement was observed in destructive thoughts about the self through the development of positive-functional cognitions. [17].

In a similar study, a case study was conducted with therapist-client dialogues through detailing the first session of EMDR. The condition of the person who had a history of traffic accident and lost his father met the DSM IV-R diagnostic criteria and was determined as PTSD according to the results of the Post Traumatic Stress Disorder Scale (PTSD-S). At the end of the treatment, which was combined with homework and lasted for six sessions, the PTSD-S score, which was 99 at the beginning, decreased to 14 in the post-treatment evaluation. It was observed that there were significant decreases in re-experiencing, avoidance, blunting and evoking, which were frequently observed before. Moreover, complaints such as repetitive dreams, inability to remember some aspects of the traumatic memory, alienation from people, limited affect, sleep problems and anger outbursts, difficulty in focusing, and hypersensitivity were completely cured. It is important to support case studies with proven efficacy with EMDR with literature. EMDR is an effective therapy option for PTSD, which takes a brief time to learn and apply, and results can be obtained in a brief time [18].

CBT-Based Alternative Therapies for PTSD

In this part of the research includes studies on CBT-enriched hypnosis, CBT-Based Group therapy, Cognitive Behavioral Writing Therapy, and Virtual Reality Exposure Therapy for PTSD.

Hypnosis, which is not defined as a stand-alone psychotherapy, is a treatment method that can be used together with different psychotherapy approaches and increase the effectiveness of these

therapeutic processes. It can take place in psychoanalysis as well as in behavioral interventions. The knowledge and experience of the therapist in this regard is important in the success of hypnotherapy. Another key factor in hypnosis being a supportive treatment technique is the client's potential for hypnosis. Özer and by Özmen (1999) conducted a study in which they provided the effectiveness of the hypnotherapy on a case with a trauma history. They defined treatment groups with high levels of hypnotizability potential. Their study results support literature regarding hypnotherapy's effectiveness on PTSD cases [19].

Previous research has examined the relation between hypnotizability and dream power and found direct correlation between the indicators of PTSD and hypnotizability and dream power of indicators. The likelihood of high hypnotic predisposition in PTSD cases were linked to dissociative symptoms. Dissociation was regarded as defense mechanism that was developed during or after a trauma. Relevantly, hypnotherapy was found to be effective in the treatment of the PTSD like other dissociative cognitions, and these dissociative cognitions can be positively reconfigured via hypnotherapy [19].

Along with medication, five sessions of hypnotherapy were conducted with a 23-year-old female whose vital life functions were deteriorated after being fired abusively and in a threatening manner by bank management. In the first session, anxiety was alleviated and relaxation followed it. In the second session, the things she avoided and feared were repeated over and over and the things she avoided were administered with a controlled manner. She was suggested that she could do things she feared without hypnosis, and behaviorist treatment methods were used for the development of possible fear related avoidance in post-hypnosis. In the third session, experiences were planned in a less-controlled environment to face her fears. In the 4th session, suggestions were given to go to sleep smoothly and to sleep without dreaming, and taught autohypnosis in order to sleep seamlessly at home. In the fifth, the last, session, other processes in previous sessions were repeated and she did not have any of her previous complaints or reported any further complaints. Moreover, in the re-evaluation made after one year, she maintained her well-being which aids to the effectiveness of the hypnosis in the treatment of PTSD [19].

Although there is no generally accepted theoretical explanation about the processes/mechanisms of hypnosis as a specific treatment method, it is seen that the literature clearly supports the clinical effectiveness of hypnosis in treatment of PTSD. Hypnosis can also be used in combination with many treatment methods such as psychoanalytic- psychodynamic therapy, behavioral therapy, cognitive behavioral therapy, EMDR, ego state therapy. There are empirical studies showing that any treatment combined with hypnosis is clinically more effective than the same treatment without hypnosis [20].

An experimental study that focused on the long-term impact and effectiveness of CBT only versus CBT combined with hypnosis and other supportive consultations in preventing evolution of

acute stress to PTSD, recruited 30 female and 28 male participants with a few weeks of trauma history, who met autism spectrum disorder (ASD) criteria, experienced non-sexual attack and involved in motorized vehicle accident. In order to evaluate the participants' status 6 months and 3 years follow-up periods were scheduled. PTSD Scale (CAPS) for research treatment post and follow-up evaluations, ASDI (structural clinical interview based on DSM IV criteria) for ASD diagnosis, impact of event scale (IES), Beck Depression Inventory, state-trait anxiety inventory (STAI), Stanford scale for hypnosis susceptibility (SCHS) were used. Sessions were spanned to eight weeks with once a week 90-minute therapy which consisted of cognitive therapy, anxiety management, imaginary and in vivo exposure. During CBT/ hypnosis, there were 15-minute-long hypnotic induction tapes before each hypnotic exposure session along with CBT procedures. This tape included suggestions for focusing, muscle relaxation exercise, immersion-concentration suggestions [21].

CBT integrated hypnosis was found to be significantly more effective than supportive counseling (SC) in reducing symptoms, more effective than CBT alone in re-experiencing symptoms after treatment, but there was no significant difference at 6-month follow-up. It was reported that no significant difference was observed in the 3-year follow-up evaluations. In this research, hypnosis was limited to being only a stage of imaginary exposure. Anxiety management was used in combination with cognitive therapy and prolonged or in vivo exposure therefore, limited use of hypnosis may not have influenced its effectiveness. However, the most significant finding from this study is that the early provision of CBT within a few weeks after trauma is highly effective in improving PTSD symptoms [21].

Imaginary exposure is highly effective in the treatment of PTSD, as it allows the patient to confront and reprocess the emotions and memories that have been avoided about the trauma. However, many patients can be unwilling and unsuccessful in producing and re-experiencing painful images on their own. In a case study, status of a patient in this group who developed acute PTSD as survivor of the September 11, 2001, World Trade Center attack was evaluated in a structured clinical interview for the PTSD scale (CAPS), DSM-IV. A trauma history checklist was used in clinical interviews. Beck Depression Inventory and Post Traumatic Diagnostic Scales were used for standardized self-report measurement. These measurements were made one week before the beginning of Virtual Reality Exposure Therapy , and self-report measurements were repeated after each session of the treatment. The client showed emotional bluntness, limitation in emotional transfer, rejecting the situation he is in, speaking in a monotonous voice, avoiding all kinds of stimuli (newspaper news, TV, high towers, etc.) related to the event [22].

After having received four sessions of imaginary exposure therapy but did not show any change in the measures of PTSD and major depression, patient was included in virtual reality exposure therapy (VR). Over the course of six one-hour VR exposure sessions, the patient was exposed to slowly and systematically

into virtual planes flying over the World Trade Center, jets crashing into the World Trade Center with animated explosions and sound effects, images of individuals' deaths due to burning buildings, collapsing towers and dust clouds. A decrease in PTSD symptoms was observed in the self-report measurements made after each session of the patient who underwent six VR sessions. In the measurements made by an independent evaluator after completion of treatment, the individual did not meet the diagnostic criteria for PTSD, major depression, or any psychological disorder, thus systematic exposure therapy with VR was successful in reducing acute PTSD symptoms [22].

Difede and Hoffman's research showed a major reduction in depression and PTSD symptoms after completing virtual reality exposure therapy, as measured by the Beck Depression Inventory and the Clinician-Applied PTSD Scale with 83 % decrease in depression and 90% decrease in PTSD symptoms. These strong findings reveal that virtual reality exposure therapy is promising for the treatment of acute PTSD although the case reports are not scientifically certain due to its nature. In an experimental study based on the implementation of a VR exposure-based software program, the survivors of the civilian bus bombing in Israel were treated with exposure therapy based on the illusion of entering a computer-generated virtual world in the treatment of their PTSD, and effectiveness of VR therapy was studied [22-23].

In this research, subjects wore a screen made of VR devices designed to give the illusion of standing on a virtual sidewalk, next to a cafe, opposite a bus stop. On the screen, the virtual simulation of the bus bombing event is given in an increasingly real and progressive manner. The images given to the people are controlled from the keyboard by a therapist who has received special training for it. The most advanced stage includes scenarios consisting of explosion, sound effects, burning bus including screams and real photos of the event. The program consisted of 10 sessions, each lasting 90-120 minutes. The treatment program includes training about common responses to trauma (1st and 2nd sessions), breathing exercises (1st and 2nd sessions), in vivo exposure (2nd through 10th sessions), VR exposure to the traumatic event (3rd and 10th sessions), watching DVD and in vivo exposure assignments for at-home VR practices [23].

A treatment protocol was created to assess the effectiveness of the treatment process, and tools such as PTSD Scale (CAPS), DSM IV diagnostic criteria, Post Traumatic Diagnostic Scale (PDS), Beck Depression Inventory (BDI) were used in the treatment protocol. The analogue study of the research, which was developed via VR techniques based on original photographs, was completed by exposing 30 non-symptomatic people to various levels of bus bombing footage. Moreover, as a preliminary test of the program's effectiveness, 5 people who developed PTSD as a result of their exposure to the suicide bus bombing were selected as participant for treatment. The study presented a VR-based therapy program demonstrating the effect of VR exposure therapy in reducing PTSD symptoms [23].

The purpose of cognitive behavioral writing therapy (CBWT), which is used to reduce the symptoms of PTSD by confronting with memories of the traumatic event, is to integrate the typically fragmented, gap-filled memories of traumatic experiences into a coherent narrative and to build a habit of emotional response to reminders of the traumatic event. With aim of determining the effectiveness of therapy (CBWT), an experimental study was conducted with 23 children (8-18 years old) who experienced a series of single and repetitive traumatic experiences initially in the Netherlands. A CBWT treatment protocol was prepared, a guidebook specially developed for the treatment was followed, and a series of scales were used to report the pre-test-post-test application and statistical analysis of the results for the selected sample group. These scales were the Child Behavior Checklist (CBCL), which was given as both a pre-test and post-test, and the Children's Response to Trauma Inventory (CRTI), which was used as a self-report form [24].

The sample group of the study consisted of children aged 8-18 years who were referred to a community mental health clinic in the Netherlands. After getting informed consent from the parents, interviews were conducted with both parents and children using the Anxiety and Related Disorders Interview Schedule (ADIS) parent-child version for the diagnosis of PTSD disorder. Children with IQ 80 and below, meeting different diagnostic criteria or living in a disrupted housing conditions were excluded from the study. The criteria for inclusion in treatment for each child were discussed in detail by a multidisciplinary team of psychologists, social workers and psychiatrists [24].

Before the CBWT begin, all therapists received specific training by a licensed CBT therapist (first and second authors) with a therapist with 20 years of experience in the field. They also collaborated with these individuals to evaluate each session. The therapists followed a guide covering the treatment procedure and traumatic cognitions as determined by the pediatric version of the Posttraumatic Cognitions Inventory developed during therapy. The CBWT guide contains content that includes a general treatment outline and specific sections (abuse, loss of a loved one, having a parent with a psychiatric disorder, etc.). The most crucial elements of treatment are psycho-education, exposure, cognitive restructuring, coping, and social sharing [24].

The treatment procedure was adjusted according to each specific child. Older children drafted the story on computer by themselves, while younger ones received the help of the therapist for writing. Child participants defined the most traumatic event and narrated this event in detail with the therapist. During the treatment, the traumatic event narration was shaped as story. The story began with introduction of the child and followed by child's feelings, thoughts and behaviors during and after the traumatic event. In each stage, story included cognitive to distortions and cognitive restructuring related content, and Socratic questioning, exposure and verbal cognitive restructuring techniques used on the story. At the end of story, child and therapist developed

coping strategies (e.g., what should I do when I encounter my abuser?), and these were included in the story. The next step was social sharing. Child and therapist decided on whom to read the story with appropriate criteria, and the story was read by chosen parent or any adult where child was not present [24].

This study evaluated the potential effectiveness of short, computer-assisted, cognitive-behavioral writing therapy for children with PTSD. The study yielded promising results: with an average of just 5.5 sessions, a significant reduction in children's existing PTSD and depressive symptoms was seen, and this effect was sustained at six months follow-up too. The effect size on the PTSD outcome measure was quite significant. The results showed that CBWT treatment can be performed in a clinical setting, is effective in a wide-range of ages (8-18) and in a comprehensive-wide context that includes specific episodes (e.g., abuse, loss of a loved one, having a parent with a psychiatric disorder, etc.) [24].

Moreover, empirical studies were reviewed to find out the effectiveness of cognitive behaviorist group therapies designed for individuals to focus on their current problems via benefits of group life on treatment of PTSD.²⁵ Although there are studies focusing on the effectiveness of group therapy regarding treatment of PTSD, there is not enough study on the effectiveness of group therapies that are based on CBT. The studies on CBGT are fairly new covering recent six-seven years, increasing every year, effective in treatment of psychological distress arising in post-trauma, and useful on anxiety and depression that is common in PTSD. Moreover, the effects of CGBT continues even after group therapy and more effective than CBT [25].

In the reviewed literature, effectiveness of the setting and criteria such as therapy duration, number of therapists, session count on the treatment is incredibly difficult as the application process and details of the therapy are limited. Moreover, it was found that there are very few studies that classified the groups according to types of trauma, and the therapy types differ greatly between the studies [25].

Other Effective Therapies for PTSD

In this part of the study, the process and outcome studies of music therapy and narrative exposure therapy used for the treatment of post-traumatic stress disorder are included.

Music therapists have observed that music, with its accessibility feature, has the potential to evoke traumatic memories in the discussion and processing of the past, and the traumatic associations that arise with music are gradually reduced, especially in a therapy process based on group experience. Group music therapy is a social process that addresses the avoidance behaviors of patients with PTSD. Musical improvisation requires active participation not only in music but also in others' music and lyrics. Music therapy addresses overstimulation in the physical, cognitive, and emotional domains. Hypersensitivity and startle responses can be regulated by promoting tolerance to silence and

loud sounds. Poor concentration can be treated by making people pay attention to their own and others' voices [26].

In treatment of PTSD cases who was not responsive to CBT, in a mixed method study with experimental and qualitative content analysis and wrap up interviews, individuals who showed signs of PTSD even after CBT were randomly assigned to treatment and control groups. Both groups received group music of therapy for 10 weeks. Events Scala-Revised and Back Depression Inventory II was applied to both the groups before and after the therapy, and their symptoms were evaluated. Researchers reached to qualitative findings via using detailed data on process and subjective experiences [26].

Details were provided regarding getting to know music instruments and improvisation, usage of sounds to reduce anxiety, listening, music instrument choice (drums while angry; piano, flute, and other low resonant tools for relaxation) and usage, emerging emotions via interactions with instruments, examining self-expression and group harmony, listening and discussion of your mood and emotions (positive and negative), coping strategies with intolerable sounds, value of group support, interactions with pre-trauma ego and memories. Experiences based on re-experience and differentiation of reemerging symptoms during sessions were recorded [26].

Based on the findings of the research, group music therapy was effective in interacting, establishing trust, identifying and expressing emotions, tolerating the dominant qualities of the instruments, gradually increasing the capacity of resistance to sounds that are hard to cope with, thus reducing stimulation. Music is a stimulus that can be difficult to avoid played actively. Music enabled greater attention and focus, allowing traumatic memories to be associated and combined with safer memories and experiences. The supportive dynamism of group life and the social opportunities it offers have been one of the most key factors supporting music therapy. Considering its results, this study has been inspiring to understand the importance of non-verbal therapy techniques and to conduct similar research [26].

War, abuse, natural disasters, torture, consecutive stressful experiences, increased fear and stimulation can nest in memory and become threatening and permanent issue. In such cases, a treatment with a low threshold may be the solution. Narrative exposure therapy can enable individuals to reexperience the situations in their authentic real life with a chronological order via biographical approach. Prioritizing a traumatic event among other events during reexperiencing the trauma and aiming to choose the worst can not only causes ethical issues but also complicates the complex context by oversimplifying and ignoring chronological impacts. Working on an individual's biography with a consistent and step by step process helps to acknowledge the network of interconnected emotional experiences, and thus enables remembering the traumatic event as a whole by connecting the events in the memory. The states of disconnectedness and contextlessness of numerous implicit

associative neural networks can be treated via narrative therapy [27].

In narrative exposure therapy, fragmented and complex pieces of memories of traumatic experiences are converted in to a meaningful and complete ones. The therapist approach is crucial since continual empathetic understanding, active listening, unconditional acceptance, respect and persistence are key factors in narrative therapy. Individuals are encouraged to keep the relation between now and here while reexperiencing the emotions. Therapy links the events with time and location by reminding that emotional and physiological reactions are rooting from moments. So, reprocessing, meaning making and integration become easier [27].

Narrative exposure therapy consists of three main phases. The first phase (one or two sessions, 90-120 minutes each) includes creation of event related control lists and doing a short psycho-training, which addresses trauma memory and symptoms. In the second phase, life is on the focus with a chronological order. The third phase is 4-12 sessions and aims for creating a biography with a chronological order related to trauma. Re-procession of the traumatic event via reimagining is done in this phase [27].

It was found that narrative exposure therapy is a robust treatment for individuals in real life and clinical environment as an in-patient or out-patient, for traumas with high levels of stress related to sexual and physical exploitation in childhood, immigration, suffering from political violence and torture, natural disasters. Trained counselors, psychologists, psychiatrists, health care workers can administer narrative exposure therapy in a relatively brief time period by reprocessing the memory via emotional re-exposure and narration of trauma [27].

CONCLUSION AND SUGGESTIONS

In light of the studies reviewed in this literature, I found that CBT and EMDR in treatment of PTSD were the most effective techniques in rehabilitation of dysfunctional thoughts, emotions, avoidance and decrease in life quality caused by trauma. CBT in experimental and comparative studies and EMDR in case studies were found to be effective in treatment of PTSD. In some cases, the concept of exposure, the emphasis on abnormality of reactions rooting from anxiety and fear impacts the expected engagement and involvement of patients in the therapy.

Thus, acceptance and commitment therapy that uses mindfulness-based cognitive therapy techniques can give more effective results in treatment by easing the re-exposure and increasing the life quality via decreasing avoidance behavior. It was found that cognitive behaviorist therapy is found to be more effective when combined with hypnosis and group therapy unlike just using CBT. While group therapies for treatment of PTSD is common, group therapies based on CBT is significantly rare. Indeed, healing process can be faster and subsequent when CBT techniques and strong dynamics of group experiences used in combination. The studies that explained the structure and the contents of the

sessions are quite limited as the research focusing on PTSD via cognitive behaviorist group therapy is scarce. In this regard, a new and original study that aims to focus on particularly to process of the therapy can be planned to reveal the results of such process. There was only one experimental study that used CBWT and found effectiveness of using CBWT on treating children with PTSD. This relatively new study is promising for the future of the research direction in this matter. Experimental studies showed that exposure to virtual reality (VR) is effective in treatment on those individuals with no reaction to exposure therapy.

Music therapy, as an alternative to CBT and CBT based therapies, is nonverbal, life focused and effective technique which can decrease stimulation sensitivity via sound and harmony for the PTSD treatment. Music therapy can be implemented in experimental studies to examine the effectiveness in PTSD. In narrative exposure therapy (NET), patients are encouraged to keep the relation between now and here while reexperiencing the emotions while narrating the traumatic events in an historical order. NET decreases the avoidance and supports the restructuring of emotional cognition. In this regard, NET is one of the effective technique to treat PTSD that can be used in future studies. Considering the variety of PTSD cases in Turkish context, an experimental study design with implementation of the techniques reviewed in this paper can be unprecedented in in Turkish context.

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Conflict of interests

The authors declare that there is no conflict of interest in the study.

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