

# Post-traumatic stress disorder: Definition, contexts, neural correlations and cognitive-behavioral therapy.

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## Abstract

**Starting from the definition of "post-traumatic stress disorder", as defined in the DSM-V and in the previous version, we proceed to define the clinical contexts and the neural correlates, to conclude with the most functional psychotherapeutic techniques to solve the problems related to psychopathology analyzed.**

**Keywords:** Psychology, Neuroscience, Post-traumatic stress disorder, Frontal cortex, Amygdala.

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## Introduction

Post-traumatic stress disorder is a psychiatric disorder that was recognized as a distinct nosological entity in the 1900s. It is a disorder that generally develops after a particularly traumatic event, a fact that has endangered the health and physical or mental integrity of the subject. It is characterized by particularly disabling symptoms, such as very intense and frequent anxiety, drop in mood, thoughts, images or intrusive memories of the traumatic event and often a very intense emotional experience, as if you were reliving the traumatic episode. Although descriptions of post-traumatic stress disorder are found even in classical texts such as Homer's Iliad, the systematic study of this disorder began only during the First World War and is only with the war in Vietnam, where very high rates were recorded of PTSD in American soldiers, that the disorder began to be known and to become a topic of public debate. It was only after the introduction of the DSM-III in 1980 that post-traumatic stress disorder was officially introduced and recognized.

Post-traumatic stress disorder can manifest itself in different ways but the main feature is the development of a series of anxiety-depressive symptoms following a traumatic event. In some patients symptoms related to fear, avoidance and anxiety prevail, in others a drop in mood and anhedonia is observed, others can show dissociative symptoms, although a combination of these symptoms is often observed in patients suffering from PTSD.

The symptoms of post-traumatic stress disorder can be classified into:

Intrusive symptoms (intrusion) associated with the event such as:

- Recurrent, involuntary unpleasant memories of the traumatic event;
- Recurrent unpleasant dreams in which the content and / or emotions of the dream are connected to the traumatic event;
- Flashbacks in which the subject feels or acts as if the traumatic event were recurring.

- Marked reactivity (psychophysiological hyperactivation) associated with the traumatic event:
- Hypervigilance and strong alarm responses;
- Concentration problems;
- difficulties related to sleep;
- Marked physiological reactions to internal or external triggers than to the traumatic event.

Persistent avoidance (avoidance) of the stimuli associated with the traumatic event:

- Avoidance or attempts to avoid unpleasant memories, thoughts or feelings relating to or closely associated with the traumatic event;
- Avoidance or attempts to avoid external factors (people, places, conversations, activities, objects, situations) that arouse unpleasant memories, thoughts or feelings relating to or closely associated with the traumatic event.

Negative alterations of thoughts and emotions associated with the traumatic event:

- Inability to recall any important aspect of the traumatic event;
- Persistent and exaggerated convictions or negative expectations relating to oneself, to others or to the world (e.g., I am bad, nobody can be trusted, the world is absolutely dangerous);
- Persistent negative emotional state (e.g., fear, horror, anger, guilt or shame).

All these symptoms can be particularly disturbing and significantly worsen the subjects' quality of life. This is why it is important to deal with the traumatic event within a psychotherapeutic setting.

However, it should be remembered that not all traumatic life events lead to the development of a post-traumatic stress disorder. It is common that traumatic events naturally provoke a form of psychological distress but, in many cases (in about 70-80% of

cases), these symptoms tend to resolve spontaneously over time. However, when these symptoms do not resolve, they occur very intensely for a prolonged period (the DSM-5 defines a month as the minimum period to be able to diagnose PTSD) then we are faced with a disorder and as such should be recognized and addressed thanks also to the help of a professional who facilitates the natural processing of the traumatic event. Moreover, in these years, the concept of "micro-traumas" is spreading in clinical psychology and psychiatry. So not only a serious or catastrophic event can cause a PTSD, but also the presence of multiple small stressful or adverse events (for example mobbing) can lead to developing the same symptoms of a single larger and more relevant PTSD. For this reason it is important to promptly deal with situations of psychological distress, through appropriate psychotherapeutic strategies, to favor a rapid processing of the trauma.

In order to diagnose post-traumatic stress disorder, the DSM-IV-TR (now replaced by the DSM-V), the Statistical and Diagnostic Manual of Mental Disorders, usually distinguished PTSD patients in three categories, based on their type of involvement in the critical event that caused the disorder:

- Primary, direct victims who have personally suffered the traumatic event;
- Secondary, direct witnesses to the event, or relatives of primary victims (for example, in the case of a death);
- Tertiary, emergency personnel (voluntary or professional) who work with primary or secondary victims

The DSM-V proposes instead the criteria that guide the modern clinician in the diagnostic process. The DSM-V criteria for PTSD concern adults and adolescents as well as children over six years. Under six years the diagnostic criteria change. The DSM-V criteria for post-traumatic stress disorder are:

**Being exposed to a traumatic event that has endangered your life, or a serious injury or sexual abuse in one of the following ways:**

- Having a direct traumatic experience;
- Having witnessed someone else's traumatic experience;
- Being aware of a traumatic event happened to a family member or friend;
- Being exposed repeatedly or in an extreme way to unpleasant details of a traumatic event (this criterion does not apply to events or details known through television, newspapers or other media).

**The presence of one or more of the following intrusive symptoms:**

- Recurrent, involuntary and intrusive disturbing memories of the traumatic event;
- Recurrent nightmares in which the content is linked to the trauma;
- Dissociative reactions (such as flashbacks) that lead the subject to feel and behave as if they were reliving the trauma;

- Intense and prolonged states of psychological distress that are triggered by internal or external stimuli (for example feeling a particular odor) that are linked to the trauma;
- Marked physiological reactions that are activated by internal or external stimuli connected to the trauma.

**Constant avoidance of stimuli associated with traumatic events. This avoidance must be initiated following the traumatic event and can be of two types:**

- Avoidance or efforts to avoid memories, thoughts or feelings related to the traumatic event;
- Avoidance or efforts to avoid people, places, conversations, activities, objects and situations that recall the traumatic event and trigger unpleasant thoughts, memories and feelings.

Changes in thought or mood that begin or worsen following the traumatic event. To satisfy the criterion at least two symptoms among these are necessary:

- Inability to remember an important aspect of the trauma;
- Exaggeratedly negative and persistent thoughts and beliefs that affect themselves, others and the world;
- Persistent distorted knowledge of the causes and consequences of the traumatic event that lead the individual to blame himself for the incident;
- A persistent negative emotional state (e.g. constant feeling of guilt, shame, anxiety, terror);
- Marked decrease in interests and participation in daily activities;
- Feeling of detachment or alienation from others;
- Persistent inability to feel positive emotions.

Marked alterations in arousal and reactivity associated with the traumatic event that begin or worsen after the traumatic event. At least two of the following symptoms are required:

- Irritable mood and anger shots expressed with verbal or physical aggression towards objects or people;
- Reckless or self-destructive behavior;
- Hyper vigilance;
- Exaggerated startle reactions;
- Concentration problems;
- Sleep disorders.

All the criteria must have been present for at least one month. The disorder must cause significant social disadvantage or disability in the workplace, in other important areas of functioning. The disorder is not attributable to the use of substances or drugs or other medical condition.

Furthermore, the diagnosis of post-traumatic stress disorder can be better specified if "depersonalization" is present (the constant feeling of not being in contact with oneself, as if one

were looking at from outside, e.g., having an altered sense of self or own body) and “derealization” (the feeling of unreality of the surrounding world, as if what is perceived were unreal, distant or distorted). Post-traumatic stress disorder is comorbid with anxiety disorders, mood disorders, obsessive-compulsive disorder and personality disorders.

### **The Neural correlates in Post-Traumatic Stress Disorder**

More and more often we hear of trauma especially in relation to many of the natural disasters that have recently been upsetting different parts of the world (earthquakes, floods, etc.) or even in reference to the growing episodes of physical and psychological violence (terrorist attacks, sexual abuse, bullying). But what does the word "trauma" mean? It literally indicates a "wound" that in a broad sense can concern both our body and our mind. If a wound on the skin progressively tends to heal due to specific cells, the psychological wound caused by a highly stressful event (or perceived as such) could remain open and become a chasm difficult to heal. The perception of risk and the impact that these experiences have on the well-being of the individual suffer from individual variability; it is mainly determined by the cognitive, emotional and behavioral resources available to each individual, as well as by his social resources. Suppose you survived a car accident or were a victim of neglect by one of our caregivers during childhood. Some conditions, if present, could make us more resilient, or put us in a position to react positively to unfavorable events: good self-esteem, adequate problem-solving skills, good cognitive flexibility, adequate communication skills and a supportive social network. On the other hand, the traumatic experience could strongly condition our whole existence and evolve into a real symptomatic picture: Post-traumatic stress disorder.

Intrusive memories represent a key symptom of PTSD that emerges early after exposure to a trauma, predicting its evolution [1]. The act of remembering is not always the result of a conscious attempt; many memories resurface in the mind triggered by activating stimuli present in the external or internal environment. And so while we are on the road we can feel a perfume that can make us remember the memory of a person, or experience an emotional state of sadness can bring to awareness one or more unpleasant memories of our past. According to some researchers, after the traumatic event, people can repeatedly make sense-perceptive experiences of the episode without a deliberate and conscious attempt to recall; they typically have the form of visual images but also of sounds, smells, bodily and tactile sensations of such intensity as to generate painful emotions [2].

Due to their strong destabilizing and predictive power of psychopathology, intrusive memories have been the subject of multiple studies and considered as potential intervention goals [2]. In the scientific field, the main experimental paradigm that has been, and still is, used to study intrusive memories involves the vision of stressful / potentially traumatic events that are powerful enough to induce intrusive memories in everyday life for several days [3]. On the basis of one of the most recent

researches, in some individuals there would be specific brain circuits able to be reactivated following exposure to traumatic experiences experienced by the individual during the course of his life. These circuits once reactivated would be responsible for the intrusive and automatic memory of past traumatic episodes. It is precisely this neural sensitivity that scholars believe could explain the different individual vulnerability to the development of PTSD. In their study to 53 women (in good health) it was required to view films concerning episodes of violence and neutral films: the participants subjected to the vision of violent scenes reported annoying intrusive memories during the following days. Brain activity records confirmed the hypothesis of the involvement of some brain regions in predicting the appearance of intrusive memories of the traumatic event. More specifically, they would be the same brain areas involved in the storage of memories and emotional processing: amygdala, anterior insula, anterior dorsal and rostral cingulate cortex, and hippocampus. Furthermore, the predictive effect of this activation concerned only the participants who reported more than five traumatic events in their lives (accidents, assaults, physical and sexual abuse or natural disasters); in the participants reporting from few or even no traumatic episodes no relationship was recorded.

According to the authors of the study, this experimental evidence opens the door to the possibility of preventing the development of PTSD in subjects considered at risk for two reasons: the sensitivity of specific brain regions together with exposure to repeated traumatic events during the course of life [4].

Rumination is defined as a repetitive, negative, cyclical and self-referential mode of thinking referring to unsolved personal problems of the past, which is activated in the absence of related environmental stimuli. Specifically, rumination is described as an unpleasant, costly, useless and sometimes self-destructive form of thinking that begins with the intention of finding a solution to a problem, but then fixes itself on the dysfunctional and repetitive evaluation of the latter [5].

What characterizes rumination is the presence of an abstract style that involves asking questions that do not find an answer: "Why did it happen to me? Why do I react in this way to situations?" Rumination has always been uniquely associated with depression, taking the name of Depressive Rumination (RD) [6,7].

More recent research, however, has suggested that rumination is a transdiagnostic factor (a mechanism associated with multiple psychiatric disorders) that extends to other mood disorders, anxiety disorders and trauma-related disorders, characterized by a modality of uncontrollable and repetitive thinking [8-10].

Regarding this last group of disorders, a study conducted by Michael and collaborators in 2007 showed a positive correlation between Post Traumatic Stress Disorder (PTSD) and the tendency to rumination [11]. Furthermore, the tendency to rumination prior to the traumatic event appears to be associated with the development of post-traumatic stress disorder, thus acting as a vulnerability [12], while rumination appears after experience of a traumatic event is associated with the severity of PTSD symptoms [13-15]. These results seem to suggest that rumination

may be a possible facilitating factor in the development and maintenance of post-traumatic stress disorder [16]. To confirm this hypothesis, Ehlers and Clark, in their cognitive model of post-traumatic stress disorder, have incorporated rumination interpreted as an avoidant coping strategy [17].

This model describes rumination as a maladaptive cognitive strategy because, on the one hand, it destroys the ability to process traumatic memory in a functional way and, on the other, it interferes with the possibility of modifying the thought inherent in trauma due to the continuous repetition of negative evaluations of the same. Rumination induces the individual to focus thought on "irrelevant" negative information instead of memory related to the traumatic event, thus preventing him from engaging in a functional cognitive and emotional elaboration of the event. This contributes to the implementation of avoidance behaviors associated with Post Traumatic Stress Disorder, and provides internal triggers that stimulate the intrusive memories of the traumatic event [17].

In healthy subjects, rumination involves a wide range of cognitive and affective processes, underlying the activation of various brain areas (mainly the mesial cortical structures), which include attention, self-referential processes (focused on self) and recall of autobiographical memories [18]. Studies using functional Magnetic Resonance Imaging (fMRI) have identified that the brain areas involved in rumination are the Dorsolateral Prefrontal Cortex (DLPFC), the Medial Prefrontal Cortex (MPFC) and the anterior cingulate cortex (ACC) [18,19].

A study conducted in 2009 by Kross et al. showed that rumination in healthy subjects is associated with the increase in ACC and DLPFC activity compared to event acceptance. Vanderhasselt and collaborators in 2011, during an emotional inhibition task in fMRI, showed a positive correlation between the level of DLPFC activation and the intensity of rumination [20]. The same research group in 2013, during a cognitive control task in healthy subjects in fMRI, showed a positive association between the intensity of rumination and the activation of the posterior part of the Anterior Cingulate Cortex (pdACC) [21].

The only study to date that has investigated the neural correlates of PTSD rumination is that conducted by Buchholz and collaborators in 2016 [22]. The study hypothesis considered rumination in post-traumatic stress disorder similar to that in healthy subjects and in depressed patients, in terms of brain activity patterns. Therefore, a positive correlation between rumination levels and activation of the ventromedial Prefrontal Cortex (vmPFC), the ACC and the DLPFC in the experimental disorder sample was hypothesized, in the light of the research of Vanderhasselt et al. [20]. 39 right-handed women aged between 18 and 55 were recruited with an average school attendance of 15.37 years who were diagnosed with PTSD, according to the DSM-IV TR diagnostic criteria [23]. Only those participants who received a score greater than or equal to 45 [24] were included in the study at the Clinician-Administered PTSD Scale test [25] in addition to the diagnosis made with the Structured Clinical Interview for DSM-IV [26]. The age of participants in the onset of the trauma ranged from 5 to 47 years, 74.4% had

childhood abuse, and 76.9% had chronic trauma. The presence of rumination was investigated using the Ruminative Thought Style Questionnaire [27]. Functional imaging data were acquired using a Siemens 3T TrioTim MRI scanner (Siemens, Erlangen, Germany). During the fMRI scans, the participants were subjected to an emotional interference test in which they were asked to ignore or pay attention to a series of images of frightened faces [28].

The results of the study showed a positive correlation between the RTS test score and the increase in activity in the right lower orbitofrontal cortex. This data is therefore in agreement with the activation of vmPFC observed by Vanderhasselt et al. [20]. However, this study did not find a corresponding activation of the ACC. Since the activation of the ACC is associated with the voluntary inhibition of negative emotions, the authors concluded that, unlike healthy subjects, patients with Post Traumatic Stress Disorder have a deficit of emotional inhibition associated with the tendency to rumination.

In conclusion, although the studies on rumination as a transdiagnostic factor are only in its infancy, the results seem to suggest that this process is a factor of vulnerability for the development of a series of psychopathological disorders, such as Post Traumatic Stress Disorder. The intensity of rumination, among the symptomatological peculiarities of this disorder, is in fact correlated with the activation of areas typically involved in the processing of emotions, such as the orbitofrontal-ventromedial cortex, and the deactivation of areas typically implicated in the voluntary control of emotions, like the anterior cingulate cortex.

The brain areas, which appear to be activated in subjects with post-traumatic stress disorder or as a response to environmental threats, have in common the fact of mediating the different aspects of memory and visual spatial processing processes. The medial prefrontal cortex is composed of other connected areas including the orbitofrontal cortex, the anterior cingulate (subcallosa area) and anterior prefrontal cortex. The dopaminergic system of the medial prefrontal area is one of the most sensitive brain areas in dealing with even the slightest stresses. In fact, injuries in this area cause a lower cortisol release as well as a lower response to stress from the sympathetic nervous system. This area also plays a role in inhibiting amygdala inputs that mediate the extinction of a response connected to fear. Animals with lesions of the medial prefrontal cortex are in fact unable to extinguish fear responses after being subjected to fear conditioning processes.

These results have therefore suggested that dysfunction of the medial prefrontal cortex may play an important role in the coding of those "pathological" emotions determined by exposure to extreme stress factors such as child sexual abuse. The other areas interconnected with the medial prefrontal cortex play an important role in stress response. The amygdala is fundamental in those conditions of response to fear; Declarative memory functions of the hippocampus are important in accurately identifying the threat signal during stressful situations.

The hippocampus is involved in fear responses in the context of stressful situations and stress, where it causes damage to

the hippocampal neuronal circuits, is also associated with memory deficits. The motor, parietal, anterior cingulate cortex, and the cerebellum are in fact correlated to the anterolateral prefrontal cortex, with the task of mediating the visuospatial processes that are fundamental for survival in life-threatening situations. The excessive vigilance observed in patients with post-traumatic stress disorder can be associated with an increase in the "demands" of those brain areas involved in visuospatial processing and memory functioning, as well as in planning the response to potentially threatening stimuli. Neuroimaging studies have indeed shown abnormalities in memory-related brain areas in patients with post-traumatic stress disorder.

Many of these studies have found in war veterans, the presence of a post-traumatic stress disorder related to a lower hippocampal volume compared to healthy control subjects. By means of Positron Emission Tomography (PET) a decrease in metabolic activity in the temporal and prefrontal cortex was observed in subjects with post-traumatic stress disorder related to the experience of war, and in the parietal cortex in those subjects with disorder post-traumatic stress disorder and comorbidity with substance dependence. The pharmacological uptake of "Yohimbine", an alkaloid with stimulating effects on the central nervous system and with a psychoactive action determining altered responses such as anxiety and manic reactions, has led to a relative failure of activation of the orbitofrontal cortex in patients with post-traumatic stress disorder compared to control subjects, as well as different functional responses in the prefrontal, parietal and temporal cortex.

These results are consistent and consistent with an increase in the noradrenergic response to Yohimbine in patients with post-traumatic stress disorder. Exposure of patients with this traumatic script disorder also results in increased blood flow in the limbic regions (insula, amygdala, orbitofrontal cortex and anterior cingulate), and a decrease in blood flow in the left inferior frontal and central temporal cortex, as measured by PET. Patients with post-traumatic stress disorder also report an increase in blood flow in the motor cortex, inferior parietal cortex, posterior cingulate, lingual gyrus (posterior paraippocampal gyrus) and a decrease in blood flow in the central temporal gyrus. Studies on subjects with post-traumatic stress disorder related to abuse have shown the presence of a lower hippocampal volume compared to healthy subjects.

The purpose of this study was therefore to use PET in examining the neural correlates of memories and memories of childhood sexual abuse. Women with a history of this kind listened to autobiographical scripts regarding the traumatic experience, and the blood supply to the brain was compared in women with and without post-traumatic stress disorder. Based on the results presented above, the authors hypothesized that exposure to trauma such as sexual abuse in women with and without post-traumatic stress disorder would lead to group differences in the patterns of activation of the medial prefrontal cortex, posterior cingulate, motor and parietal cortex, hippocampus and adjacent cortex.

### **Cognitive-Behavioral Therapy and Resolution Techniques**

Post-Traumatic Stress Disorder can be tackled clinically in more

ways than one, since it falls into the general category of Anxiety Disorders for which cognitive behavioral psychotherapy has developed multiple widely effective means. The purpose of cognitive-behavioral therapy is to help the subject to identify and control negative thoughts and beliefs, identifying the logical errors contained in the beliefs, the most functional and advantageous alternatives of thought and behavior in relation to the traumatic event experienced. Some techniques used are:

**Exposure:** For reducing avoidance situations. The subject is invited to relive the event in his own imagination and to tell it to the therapist. The exposure procedure has the objective of allowing the patient to perceive and assess in a "controlled" way the object of his fear. This method, if gradual, allows the patient to regain possession of those social and daily functions that he has lost due to significant avoidance due to acute symptoms of anxiety and anticipatory anxiety syndrome. The meaning of these procedures must be well explained in planning and carrying out the expositions and therefore seeking the full cooperation of the patient and possibly of one of his relatives.

**Re-labeling of somatic sensations:** The concrete discussion on the nature of different sensations favors a categorization and a more realistic adherence to a model of anxiety symptoms as effects of stress syndrome. The possibility of discussing with the patient the causes of the single symptoms, with possible examples also calibrated on the common experiences of daily life has the function of normalizing and "decatastrophilizing" the subjective condition of the patient.

**Abdominal relaxation and breathing:** Relaxation techniques and respiratory education is an "under control" tool for the patient, who can use them daily and independently to relieve tension and stress.

**Cognitive restructuring:** The subject can be helped to recognize his own automatic and spontaneous thoughts linked to the traumatic event, thoughts that are often intrusive, rapid and instantaneous. Training in perceiving one's thoughts and attitudes is very important as through in this procedure the patient becomes aware of how he actually changes his emotional state. From this ability also derives the subsequent work of revision and modification of the general assumptions. Through this work the subject can modify his own schemes in favor of more realistic, adaptive and concrete alternative explanations. An important role is represented by the work with family members (or with a family member) through which it is possible not only to obtain the collaboration for any direct involvement in live exhibition procedures, as explained above, but it is also useful to have a collaboration in managing relationships at home.

**EMDR:** desensitization and reprocessing through eye movements (Eye Movement desensitization and reprocessing) is a new technique developed by F. Shapiro in 1989 [29]. It is based on the discovery that some external stimuli can be particularly effective in overcoming a severe trauma. In particular, the execution of some eye movements by the patient during the re-enactment of the event allows resuming or accelerating the processing of information related to the trauma. EMDR (from the English Eye Movement Desensitization and

Reprocessing, Desensitization and reprocessing through eye movements) is a therapeutic approach used to treat trauma and problems related to stress, especially traumatic stress. EMDR focuses on the memory of the traumatic experience and is a complete methodology that uses eye movements or other forms of alternating right / left stimulation to treat disorders directly related to emotional or particularly stressful traumatic experiences. After one or more EMDR sessions, the disturbing memories related to the traumatic event have desensitization; they lose their negative emotional charge. The change is very rapid, regardless of the years that have passed since the event. The image changes in the contents and in the way it is presented, intrusive thoughts generally muffle or disappear, becoming more adaptive from a therapeutic point of view and physical emotions and sensations are reduced in intensity. The elaboration of the traumatic experience that occurs with EMDR allows the patient, through desensitization and the cognitive restructuring that takes place, to change perspective, changing the cognitive assessments about himself; incorporating emotions appropriate to the situation as well as eliminating physical reactions. This ultimately allows for more adaptive behavior. From the clinical and diagnostic point of view, after a treatment with EMDR the patient no longer presents the typical symptomatology of post-traumatic stress disorder, therefore the aspects of intrusiveness of thoughts and memories, avoidance behaviors and hyperarousal neurovegetative against stimuli related to the event, perceived as a danger. Another significant change is the fact that the patient better discriminates the real dangers from the imaginary dangers conditioned by anxiety. We really feel that the memory of the traumatic experience is part of the past and therefore is experienced in a detached way. Patients in general report that, thinking back on the event, they see it as a "distant memory", no longer disturbing or emotionally pregnant. After EMDR, the patient remembers the event but the content is fully integrated into a more adaptive perspective. The experience is used constructively by the individual and is integrated into a positive cognitive and emotional pattern. That is, the patient makes the connections of appropriate associations, what is useful is learned and stored with the corresponding emotion and is available for future use. The EMDR approach, adopted by an ever increasing number of psychotherapists worldwide, is based on the model of adaptive information processing (AIP). According to the AIP, the traumatic event experienced by the subject is stored in memory together with the disturbing emotions, perceptions, cognitions and physical sensations that characterized that moment. All this information stored in a dysfunctional manner remains "frozen" within neural networks and unable to connect with other networks with useful information. The information "frozen" and enclosed in neural networks, not being able to be processed, continue to cause discomfort in the subject, leading to the onset of diseases such as post-traumatic stress disorder (PTSD) and other psychological disorders. The scars of the most painful events, in fact, do not easily disappear from the brain: many people continue after decades to suffer from symptoms that affect their well-being and prevent them from resuming a new life. The goal of EMDR is to restore the natural process of processing information in memory to reach an

adaptive resolution through the creation of new, more functional connections. Once this is done, the patient can see the disturbing event and himself from a new perspective. EMDR considers all aspects of a stressful or traumatic experience, both cognitive and emotional as well as behavioral and neurophysiological ones. Using a structured protocol the therapist guides the patient in describing the traumatic event, helping him to choose the important disturbing elements. At the end of the EMDR session, when the re-elaboration process has reached the adaptive resolution, the experience is used constructively by the person and is integrated into a positive cognitive and emotional scheme. Through treatment with EMDR it is therefore possible to alleviate emotional suffering, allow the reformulation of negative beliefs and reduce the patient's physiological arousal. This approach is also effective with patients who have difficulty verbalizing the traumatic event they have experienced. The EMDR, in fact, uses techniques that can provide the patient with greater control towards the experiences of exposure (since it is not based on verbal interventions), and that can help him in the regulation and management of the intense emotions that could arise during the phase of processing. In the thirty years since its discovery, by American researcher Francine Shapiro, EMDR has received more scientific confirmation than any other method used in the treatment of trauma. Today it is recognized as an evidence-based method for the treatment of post-traumatic disorders, approved, among others, by the American Psychological Association, by the American Psychiatric Association, by the International Society for Traumatic Stress Studies and by our Ministry of Health in 2003. The World Health Organization, in August 2013 [30], recognized EMDR as an effective treatment for the treatment of trauma and related disorders. The efficacy of EMDR has been demonstrated in all types of trauma, both for Post-Traumatic Stress Disorder and minor trauma. Recent research shows that, through the use of EMDR, people can benefit from the effects of psychotherapy that would once have taken years to make a difference. Indeed, some research has shown that between 84% and 90% of patients reporting a single traumatic event no longer showed symptoms of Post-traumatic Stress Disorder after only 3 EMDR sessions of 90 minutes each. The efficacy of EMDR in the treatment of PTSD is now widely recognized and documented, but currently EMDR is a therapeutic approach widely used also for the treatment of various psychological pathologies and disorders. Given the importance that traumatic events (whether they are single or cumulative and relational traumas) play in the development of different pathologies, it becomes important to address them through an approach that takes into account and manages to intervene on the traumatic origin of these disorders. Research concerning EMDR is one of the first in which the neurobiological changes that occur during each psychotherapy session were highlighted, making EMDR the first psychotherapeutic treatment with proven neurobiological efficacy. The findings in this field confirm the association between the clinical results of this therapy and some changes in brain structures and functioning.

**Homework:** another important aspect is that of the procedures to be implemented between sessions, the so-called "homework" or homework's. It is useful to insist on the need to implement

the tasks as very often the planned work has a precise meaning and its result is necessary for the continuity of the treatment. The specific tasks are designed in collaboration with the patient and consist frequently in diaries of recording of target elements, or self-monitoring diaries, or in analysis sheets of the cognitions associated with the events.

**NET (Narrative exposure therapy):** it's a treatment for post traumatic disorders, useful for those who have suffered severe or complex traumas. NET is based on the theory of the double traumatic representation of the memories of Elbert and Schauer. NET is useful for contextualizing and integrating the elements of the fear network, the sensorial, emotional and cognitive memories connected to the trauma, in order to rework the memory of a traumatic event by inserting it in the path of a person's life. Through the NET, the patient, with the help of the therapist, reconstructs the chronological narration of his life story, with particular attention to traumatic experiences. The patient is encouraged to reconstruct his life path and face the emotions related to the trauma. This facilitates the integration of autobiographical memories with emotional memory. The NET allows a reflection on the life of the person as a whole, promotes the restructuring of the sense of personal identity. Working through autobiography, it helps to recognize the meaning of emotional networks related to trauma, facilitates the integration and understanding of patterns and behavioral patterns that have evolved during development. NET helps to regain the dignity and satisfaction of the need for recognition of pain after a traumatic event.

“It makes our neighbours and people that we share with love and respect our family and makes them very friendly towards us and our children” (Interviewee 19, Female, Muslim)

In tandem with the views of females, the Christian and Muslim males view meal sharing as a way of building relationship with others. Meal sharing provides the platform for oneness and for bridging the gap between the family and its extended relations, and neighbours. Dining with others create a sense of belongingness and act as a forum for supporting and sharing ideas with others. It is a way of propagating affection and a sense of peaceful co-existence with people in the community, particularly neighbours. Many argued that, sharing meal helps one understand the problems faced by members of his/her family, neighbours, and people in the community. This, they argued is triggered by religious beliefs, which mandate individuals to share especially with the less privileged in society.

## Conclusion

Trauma-based Cognitive Behavioral Therapy (TCC) helps patients identify and modify distorted patterns of thought about themselves, the traumatic event and the world, also teaching them to manage anxiety and negative emotions, for the purpose to reduce the persistent symptoms of hyper-arousal that present survivors.

Trauma-centered TCC protocols particularly emphasize exposure interventions. The exposure carried out on people who have suffered a trauma is based on two principles: habituation and information processing. The therapeutic benefits obtained

with TCC are mainly due to the activation of fear networks during protocols of prolonged exposure. It has been suggested, in fact, that the reworking of the traumatic experience requires a prolonged activation of the mental representations associated with the traumatic memory, to allow the habit of anxiety and the change of the beliefs associated with the trauma. This is consistent with the observation that PTSD symptoms are also due to a lack of access to traumatic memories.

The efficacy of TCC protocols in the treatment of PTSD in victims with a history of sexual abuse has been demonstrated, supporting the hypothesis that this treatment produces a significant reduction in the symptomatological pattern even in people with complex traumatic histories. Furthermore, trauma-centered TCC has produced effects comparable to those obtained with the use of the EMDR technique.

## Conflict of Interest

The author declares no competing interests.

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