

# Cognitive Models Explaining Post-Traumatic Stress Disorder and Cognitive Therapy Methods Frequently Used in Trauma Victims

## *Travma Sonrası Stres Bozukluğunu Açıklayan Bilişsel Modeller ve Travma Mağdurlarında Sık Kullanılan Bilişsel Terapi Yöntemleri*

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### ABSTRACT

Trauma is considered a significant event that causes intense fear and anxiety and frequent avoidance owing to its unfolding and persistence. Post-traumatic stress disorder (PTSD) may develop when the distress and symptoms caused by the development and acute nature of the trauma do not resolve spontaneously over time. Incompatibility with one's existing schemas and the emergence of new nonfunctional schemas are both effective in the development of PTSD. Thus, while working with trauma victims, attempts to restructure the existing traumatic cognitions by doing assessments about traumatic cognitions play an effective role in reinterpreting the traumatic experience. This review study examines the nature of trauma, the expression of trauma according to cognitive therapy, widely recognized cognitive models explaining trauma, and frequently utilized effective cognitive methods for trauma victims. The impact of cognitive processes on the development and continuation of trauma was expressed, and the models of different experts explaining trauma were discussed in detail. Furthermore, considering the contribution of cognitive therapy intervention techniques for PTSD in healthily reevaluating the trauma, cognitive therapy methods that are thought to contribute to both the victim and mental health professionals are included.

**Keywords:** Trauma, traumatic cognitions, cognitive therapy, review

### ÖZ

Travma, gelişimi ve devamı nedeniyle kişide yoğun korku ve kaygıyla birlikte sık kaçınmalara yol açan ciddi bir durum olarak değerlendirilmektedir. Travmanın gelişimi ve akut doğasının kişide yarattığı sıkıntı ve belirtiler zamanla kendiliğinden düzelmediğinde travma sonrası stres bozukluğu (TSSB) gelişebilmektedir. TSSB gelişiminde kişinin var olan şemalarıyla uyumsuzluk yaşaması ve işlevsel olmayan yeni şemaların ortaya çıkışı etkili olmaktadır. Bu bağlamda travma mağdurlarıyla çalışırken kişide var olan travmatik bilişler hakkında değerlendirmeler yaparak yeniden yapılandırma girişimlerinin, travmatik olayın yeniden anlamlandırılmasında etkili rol oynadığı vurgulanmaktadır. Bu derleme çalışmasında travmanın doğası, bilişsel terapiye göre travmanın ifadesi, travmayı açıklayan kabul görmüş yaygın bilişsel modeller ve bilişsel terapi kapsamında travma mağdurlarında etkisi kanıtlanmış sık kullanılan bilişsel yöntemler literatür kapsamında ele alınmıştır. İlgili literatür araştırmaları kapsamında travmanın gelişimi ve devamında bilişsel süreçlerin etkisi ifade edilerek travma sonrası gelişen bilişleri yakından tanımanın önemli olduğu görülmüş ve bu kapsamda farklı uzmanların travmayı açıklayan modelleri detaylı olarak ele alınmıştır. Ayrıca alanyazındaki araştırma sonuçlarına göre TSSB'de bilişsel terapi müdahale tekniklerinin travmayı sağlıklı olarak yeniden değerlendirmedeki katkısı dikkate alınarak hem mağdura hem de ruh sağlığı profesyonellerine katkı sağlayacağı düşünülen bilişsel terapi yöntemlerine yer verilmiştir.

**Anahtar sözcükler:** Travma, travmatik bilişler, bilişsel terapi, derleme

## Introduction

Earthquakes, floods, human-induced partner violence, acts of terrorism, war, and migration are examples of traumatic events that people have experienced throughout history. Given that more than 70% of people worldwide have experienced at least one traumatic event (Benjet et al. 2016), developing posttraumatic stress disorder (PTSD) after a traumatic event is expected. In this context, research results show that the lifetime prevalence of PTSD varies between 1.3% and 12% (Gradus 2007, Karam et al. 2014, Atwoli et al. 2015, Lewis et al. 2019). Most studies undertaken to determine the prevalence of PTSD in Turkey have focused on earthquake-

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related traumas. A study after the 1999 Marmara earthquake reported a PTSD prevalence rate of 43% (Başoğlu et al. 2002). This high prevalence rate could be attributed to the fact that the study was conducted immediately after the earthquake and included only those who were exposed to the earthquake. Similarly, Önder et al. (2006) found a PTSD prevalence rate of 19.2% three years after the 1999 Marmara earthquake. Aside from earthquake-oriented studies, Gül (2014) estimated the prevalence of PTSD to be 10.8% in a study including 740 adults, while Karancı et al. (2012) found the prevalence of PTSD to be 9.9% in another study carried out in three different provinces.

PTSD is a disorder in which a person develops a characteristic set of symptoms after a traumatic event directly experienced or witnessed. General symptoms include the persistence of an intense and fearful state after the traumatic experience, avoidance of reminiscent people, situations, or places, restlessness, and insomnia (Shalev et al. 2017). Biological causes (Sherin and Nemeroff 2022, Çiller et al. 2022), which include genetic effects, differentiation in the body's cortisol level, and some changes in the neurochemistry of the brain, may play a role in the development of PTSD. In addition, psychological factors (Speckens et al. 2007, Cyniak-Cieciura and Zawadzki 2021), which represent factors such as sensitivity arising from previous life events, incorrect coping attitudes, emotional reactivity and generalization of the fear response that develops after avoidance behavior, and stressful life, low social support and exposure to multiple traumatizing events (Dworkin et al. 2019, Zalta et al. 2021) may also have an impact on the development of PTSD.

The diagnostic criteria for PTSD were updated with the recent changes in the 5th edition (DSM-5) of the Diagnostic and Statistical Manual of Mental Disorders (DSM) (APA 2013), and the symptoms were listed in 19 items and four clusters in total. Symptoms include intrusion/reexperiencing symptoms, avoidance symptoms, negative cognitions and mood, and symptoms of hyperarousal and reactivity. A diagnosis of PTSD can be made in case of symptoms that meet eight or more of the 19 items. In addition, the items of extreme fear, helplessness, and terror experienced during the traumatic event, which was included in DSM-IV (APA 2000), were removed in DSM-5 because they were also included in other criteria such as emotional blunting or numbing. This review will explain cognitive models for PTSD and discuss commonly used cognitive therapy techniques in two groups: children and adolescents and adults.

## **Cognitive Therapy's Approach to Trauma**

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The development and continuation of trauma, according to cognitive therapy, is caused by the person's incompatibility with the existing schemas following the traumatic event and thus having difficulty in making sense of the event and displaying avoidance behaviors (Foa et al. 1989, Foa et al. 1991, Ehlers and Wild 2022). Following the traumatic event, the trauma victim contradicts some positive schemas ("The world is safe," "I can cope with the events") about himself/herself, his/her environment, and the world and cannot develop adaptive behaviors again by having difficulties in making sense of the traumatic event. The person who develops irrational cognitions in response to the traumatic event activates his/her fear structure, gives intense emotional reactions, and starts to stop or avoid his/her thoughts to get rid of this emotion. The process becomes a vicious circle for the person who alternates between attempts to make sense of the event and attempts to evade it. The effect of the trauma gains continuity due to over-arousal. At this point, cognitive therapy aims to work with the irrational cognitions of the trauma victim to restructure them and thus make the traumatic event more meaningful and balanced (Cohen et al. 2010, Monson et al. 2012). Cognitive restructuring interventions aim to work with trauma-specific automatic thoughts, dysfunctional assumptions, and negative schemas to reinterpret the fear structure (Leahy et al. 2011). In order to make the infrastructure and basic actions of the techniques used in cognitive restructuring interventions related to trauma more understandable, it is imperative to have knowledge about cognitive models explaining trauma.

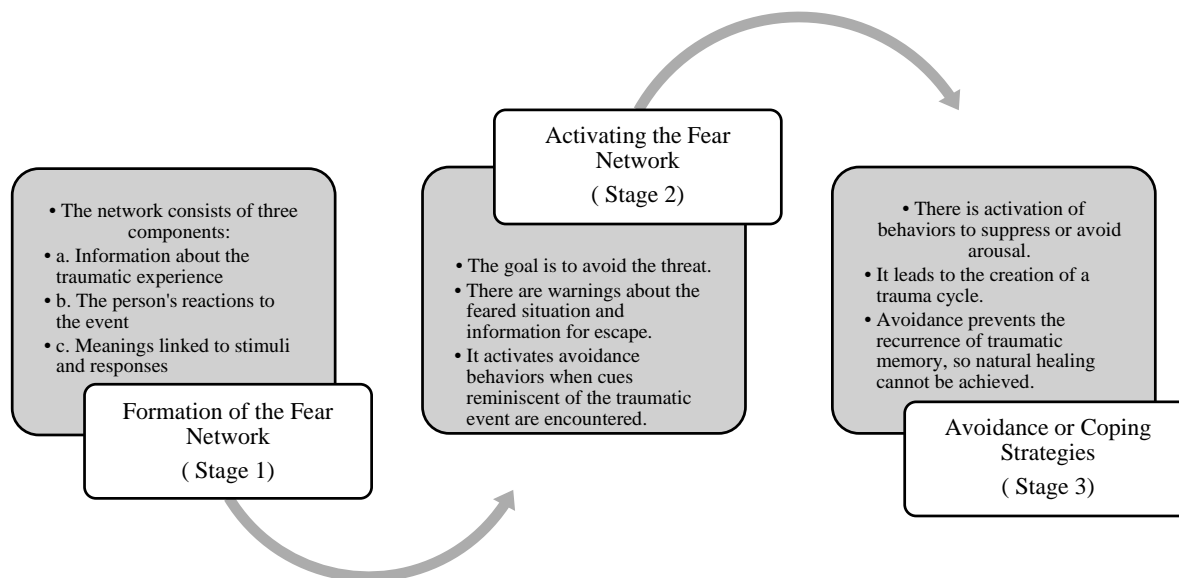
## **Cognitive Models Explaining Trauma**

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Since traumatic events are sudden and unexpected, they challenge individuals' fundamental beliefs and lead to difficulties in making sense of the event. While some symptoms such as post-traumatic fear, anger outbursts, or general state of arousal cause the development of PTSD in some individuals, some do not have a manifestation of trauma owing to the factors such as family and social support, psychological resilience and functional cognition structures (Brewin and Holmes 2003, Agaibi and Wilson 2005, Bolu et al. 2014). Several cognitive models have been proposed to respond to this disparity and explain how PTSD develops. This article will mention four cognitive models that are widely acknowledged and comprehensively explain the information processing process in a cognitive sense.

### Foa and Kozak's Fear Network Model

This model postulates that when a person experiences a traumatic event, he/she creates a "fear structure" in memory to avoid danger and accomplishes this through three stages. These three stages are defined as the formation and activation of the fear network and coping strategies to avoid the memory of the traumatic event, and their details are visualized in Figure 1.



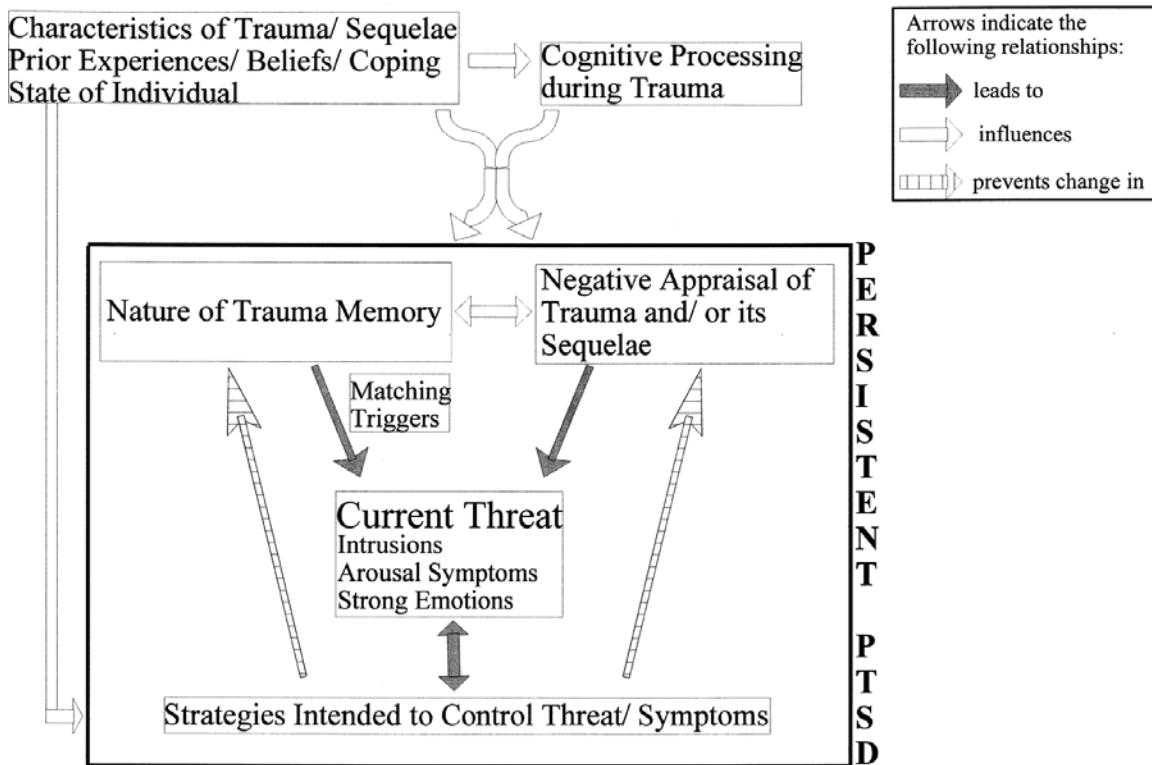
**Figure 1. Foa and Kozak's fear network model** (adapted from Foa and Kozak (1986))

According to the model, when the traumatic event challenges the existing schemas of the person (e.g., "The world is safe," "It depends on me that nothing happens to me"), the natural healing process of the trauma is disrupted if the current functional meanings related to the traumatic moment (e.g., "It can happen to me too," "Anything can happen at any time in life") cannot be assimilated into the existing schemas. The disruption of the natural healing process leads to the formation of a fear network. This cycle, embedded in the memory, is activated every time stimuli related to the traumatic event are encountered. The alternation between the person's efforts to assimilate the event and avoidance due to the fear structure triggers a constant state of arousal, leading to a chronic trauma course (Foa and Kozak 1986; Foa et al. 1989, Bryant 2019). According to the model, the way out of this cycle is possible by analyzing and reevaluating the traumatic experience without avoiding it. Activating the traumatic memory formed by the fear network through frequent repetition and thus providing alternative explanations for cognitive avoidance, dysfunctional assumptions, and trauma-related schemas using cognitive techniques are crucial to recovery (Marks et al. 1998, Ehlers et al. 2010).

### Ehlers and Clark's Ongoing Threat Perception Model

The basic assumption of this model is that people cannot evaluate the traumatic event as "experienced/past" in the formation of trauma. The person evaluates the traumatic event as "an event that poses a threat at any moment" and acts vigilantly by constantly worrying about the future through perceiving the current threat. Being vigilant leads to avoidance behaviors with the instinct of protection from harm, and the natural healing process is hindered. Avoidance behaviors cause the development of PTSD by preventing the person from re-assimilating the previous and subsequent experiences related to the traumatic memory by organizing them to form a functional view in the context of himself/herself and the situation. The current threat perception of the person continues to exist with dysfunctional cognitions developed during or after the trauma. A stimulus that may trigger the traumatic event activates negative cognitions in the person, leading to the activation of the current threat perception. Emotions such as fear, anger, guilt, and sadness prevent healthy appraisals of the event. Re-experiencing these strong emotions and negative cognitions leads the person to feel pessimistic that he/she will never be well again and to experience the feeling of being entrapped in the event. The idea of controlling this feeling brought about by negative cognitions and emotions pushes the person to develop several dysfunctional cognitive and behavioral strategies. Maladaptive strategies such as thought suppression, selective

attention to threat cues, attempting not to think about the event actively, and ruminative (repetitive) thoughts about the trauma and its consequences create a temporary sense of control in the person. However, in the long term, they cause the trauma to persist (Ehlers and Clark 2000, Bryant 2019). A visualized summary of the model is given in Figure 2.

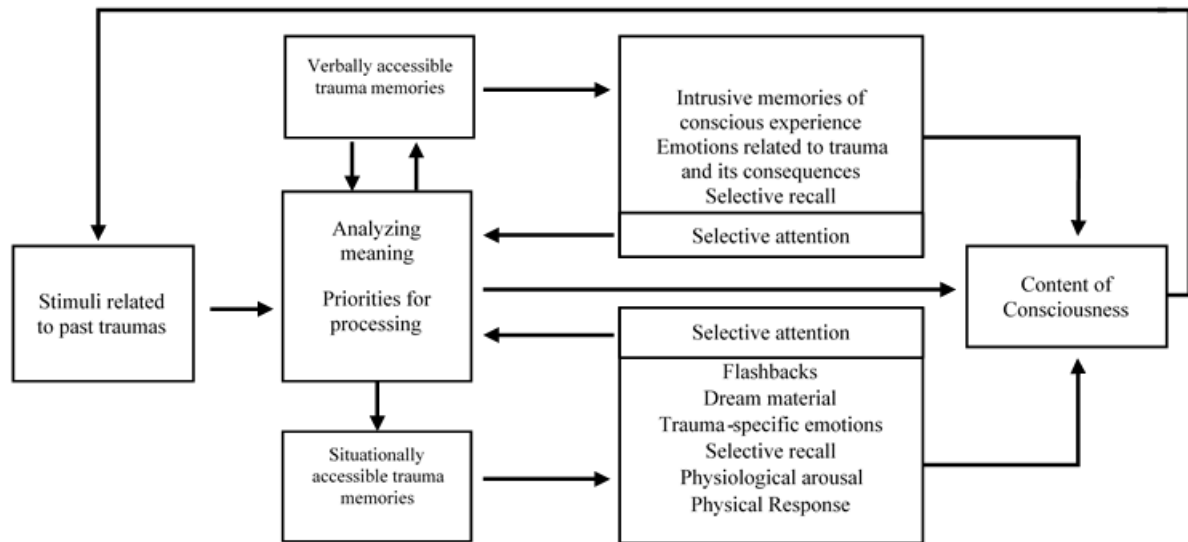


**Figure 2. Cognitive model of PTSD** (Ehlers and Clark 2000)

The model emphasizes the importance of focusing on the content of the trauma memory, appraisals of the trauma, and strategies to control perceived threats/symptoms when working with the cognitions developed in response to trauma. It is also recommended that factors such as the type of trauma, exposure time, stereotypical beliefs, and previous negative experiences be considered in cognitive restructuring attempts in these areas. Ehlers and Clark (2000) also emphasize that normalization by stating that every person experiences traumatic symptoms at first (1), that the coping strategies used are not functional (2), and that reducing the impact of trauma memories by repeatedly discussing and evaluating them (3) are three important methods and highlight the key points of cognitive techniques.

### Dual Representation Theory

In this model, Brewin et al. (1996) proposed that two different forms are used in the coding and recalling of memories in the cognitive process of the traumatic event. In one of these forms, verbally accessible memory, autobiographical memories of the trauma are stored in the form of situations that are easy to access and think about verbally. In situationally accessible memory, on the other hand, memories are usually recalled through non-verbal images and include the emotional aspects of the event. In the trauma survivor, the emotional and verbal contents of the experience are represented and coded separately, but the memories stored in situationally accessible memory are selectively recalled. This recall is activated in response to stimuli that evoke the traumatic memory and prevents the natural healing process of the trauma by constantly keeping itself fresh with compelling images and memories due to its mood-laden nature. PTSD is often emotionally charged in memory and manifests in intrusive thoughts and imagery. The cognitive processing of the model is visualized in Figure 3. In the model, the responses to previous stimuli related to the trauma are stored in two different, but parallel working forms of memory and are effective in the perpetuation of the traumatic event through meaning analysis. The model aims to re-evaluate and functionally address the memories processed into verbally accessible memory while working with the cognitions of trauma victims and to activate the information processed into situationally accessible memory by confronting them with the necessary stimuli and updating them within functional new moods (Brewin et al. 1996, Karancı 2009, Sarp and Tosun 2011).



**Figure 3. Cognitive processing according to dual representation theory** (Brewin et al. 1996)

### Clark and Beck's Cognitive Model

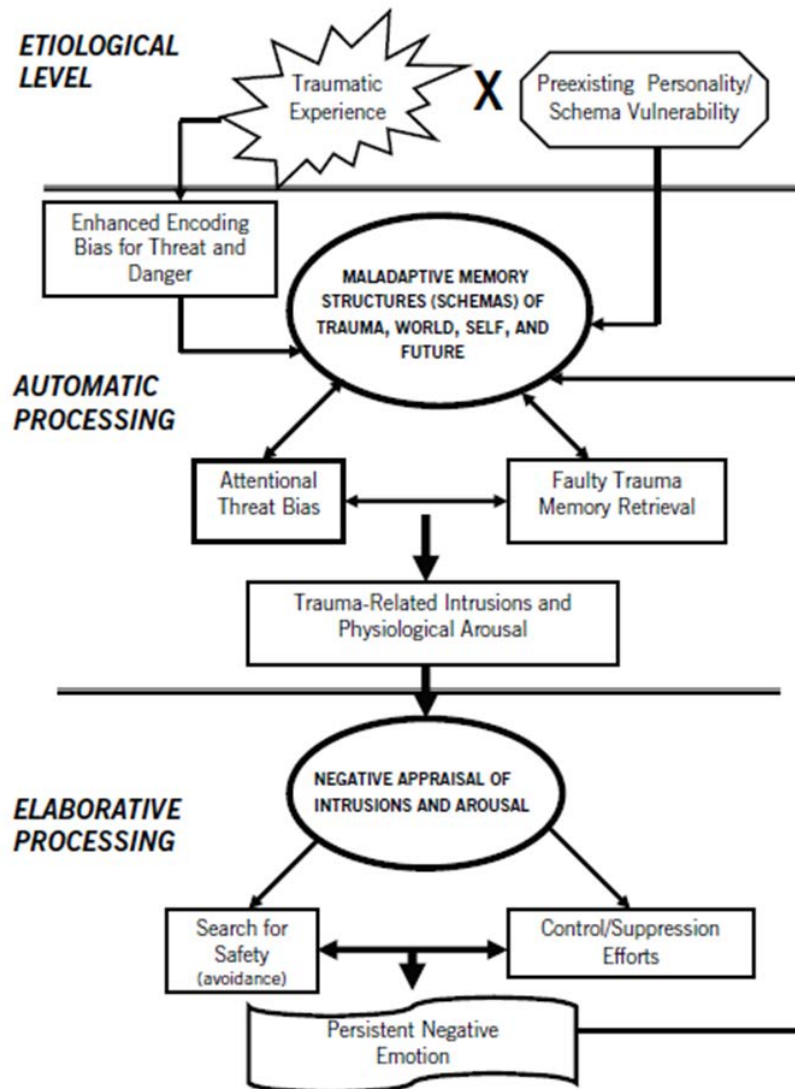
Clark and Beck (2010) express their cognitive model of trauma as a hybrid of the models explained by Foa and Kozak (1986), Ehlers and Clark (2000), and Brewin et al. (1996). According to this model, the interruption of the natural healing process of the traumatic event and its persistence takes place in 3 stages. In the first stage, the person interprets the traumatic event through the experiences gained through previous experiences, personality structure, and existing fragile schemas. This step is referred to as the etiological stage of the model. The interpretation made at the etiological level is selectively coded into the memory in a dysfunctional way as incomplete, biased, and erroneous trauma memories due to the person's incompatible schemas about himself/herself, his/her environment and the world, and the automatic processing stage, which is the second step of the model, becomes active. In the detailed processing stage, which is the last step of the model, when the person encounters stimuli that evoke the biased traumatic memory shaped in the automatic processing stage, he/she tries to control the situation by attempting to avoid and control the situation. However, the enduring negative emotions caused by these dysfunctional strategies constantly feed the negative schemas. While this detailed processing causes the traumatic memory to be constantly disturbing for the person, it also causes it to assume a chronic dimension with avoidance behaviors (Clark and Beck 2010). A visualized summary of the model is shown in Figure 4.

The model argues that cognitive interventions for prolonged trauma should be based on a detailed cognitive conceptualization. During conceptualization, the structure of existing beliefs about oneself, one's environment, and the world before the trauma, the type of trauma, its emotional and behavioral consequences, the way the trauma is encoded in memory, existing maladaptive schemas and their consequences, dysfunctional control strategies, avoidance, and safety-seeking strategies before the trauma are thoroughly defined. After conceptualization, interventions are implemented for existing schemas and dysfunctional strategies using cognitive restructuring techniques frequently utilized in cognitive therapies (Clark and Beck 2010).

### Commonly Used Cognitive Interventions for Trauma Victims

The main goal in working with the cognitions of trauma survivors is to change dysfunctional beliefs about the trauma and thus restore the dysfunctional thoughts that develop after the trauma to a balanced state. The most frequently observed cognition contents in trauma survivors are overgeneralization tendency towards events and/or people, extreme all-or-nothing thoughts, and exaggerated personal responsibility. These mindsets cause individuals to develop cognitions, such as perceiving everyone as dangerous after the traumatic event, blaming themselves for the event, or thinking that their life was destroyed because of their weakness. At this point, through intervention attempts, also called cognitive restructuring, the person is made to realize that the world is a safe place under certain conditions and that events are generally controllable. It is demonstrated that people can have the skills to cope with difficult situations and that every event experienced is not due to the weakness or incompetence of the person but that experiencing sudden and negative events is a part of the world's reality

(Ehlers et al. 2010, Leahy et al. 2011, Goulston 2012). The main operational areas of cognitive intervention techniques related to cognitions commonly observed in trauma victims are detailed below under two sub-headings: children, adolescents, and adults.



**Figure 4. Clark and Beck's cognitive model of PTSD** (Clark and Beck 2010).

### Cognitive Interventions for Traumatized Children and Adolescents

The primary purpose of cognitive interventions is to give the child and adolescent a new and functional perspective on trauma and to develop constructive thoughts. Thus, it is ensured that they can take more constructive steps in interpersonal interactions and life and view the world from a different perspective. The first prerequisite for cognitive interventions to be effective in children and adolescents is to make them aware of the interaction between thoughts, emotions, and behaviors, defined as the cognitive triangle, and to make them accept that these thoughts and behaviors are not functional and helpful (Cohen et al. 2016, Kliethermes et al. 2017). Some children may have difficulty understanding the cognitive process as they may not be able to conceptualize identification and discussion of their negative thoughts due to their level of cognitive development. At this point, the cognitive restructuring process can be conceptualized with simpler expressions, and it can be effective to make instructive metaphors by using concretizations. For example, trauma-specific cognitions can be explained to the child to help him/her identify his/her thoughts as "useful" or "upsetting." Then, instead of these dysfunctional thoughts, expressions containing "useful internal conversations" can be taught. Instead of "I should not have told anyone," the child can be encouraged to say simple statements such as "I was brave to tell." Thus, the child will be enabled to reconsider his/her thoughts according to his/her cognitive development level and with his/her own expressions (Kendall 2011). In addition, the family and other people

with whom the child interacts should also be included in these intervention processes, especially taking into account the effect of environmental connections and social learning in the development of children's thinking and behavioral structures (Türkçapar et al. 1995). Although many techniques can be used in the cognitive restructuring process of trauma victims, frequently used techniques are defined below and listed with examples, considering the development, language, and cognition patterns of children and adolescents.

### ***A-B-C Method***

With this widely used method of cognitive therapy, it can be shown how thoughts, feelings, and behaviors specific to the traumatic event are linked and can affect each other. In addition, this technique, which can identify thoughts and distinguish them from reality, can be very functional when working with children and adolescents (Beck and Beck 2011). In the example of "Being sexually assaulted (A) - I can never be the same again (B) - Depression and withdrawal (C)," the child's existing thought (B) causes maladaptive behavior (C) and thus, even if the traumatic event itself is not experienced again, its effect is sustained and (A) causes the persistence of thought and behavior. In the continuation of the intervention, this dysfunctional cycle is targeted to be reconstructed functionally by reconsidering it with questions such as "Do you think this cycle is helpful for you?" and "Does it make you feel better?"

### ***Thought Recording Form***

This form, utilized in developing alternative and functional thoughts by addressing the cognitions specific to the trauma experienced in the child/adolescent, can also be considered a technique. In addition to the A-B-C method in the general framework of the form, it is essential to ask questions about the trauma-specific automatic thoughts and beliefs identified to gain a healthier and more balanced perspective and reconsider the emotions after the resulting alternative responses (Resick et al. 2016). The adolescent who lost his family in a traffic accident in the car used by his father has developed a belief that driving a car is very dangerous. The following questions can be asked to restructure the thoughts about this belief: "What is your evidence? (My family died), What is your counter-evidence? (The risk of an accident is lower for someone who sets out on the road after getting sleep)", "Do you think your reaction is excessive, or would everyone react the same way as you?" "Are your emotions or facts at the forefront when you say these things?" "Are you looking at the event from a single perspective?" "Does what you say valid for all information? (Does everyone who drives a car have an accident?)."

### ***Detection of Automatic Thoughts***

Children or adolescents often express traumatic events and their effects through their emotions and behaviors. The detection of automatic (instantaneous) thoughts aims to identify and reveal the thoughts underlying these emotions and behaviors and to categorize them. In order to provide a cognitive change in the traumatized child/adolescent, reaching the cognitive content related to the traumatic event and making the victim aware of these cognitive changes are achieved by detecting these thoughts (Foa et al. 2010, Beck and Beck 2011). The most frequently observed automatic thoughts in traumatized child/adolescent victims are "overgeneralization, discounting the positive, personalization, all-or-nothing thinking and catastrophizing" (Cohen et al. 2016). The questioning and thought recording form technique described in this section can also be used to identify automatic thoughts. In this section, examples will be given regarding the technique of asking questions to access the content of thoughts from the emotions and behaviors of children/adolescents. "I am very scared" → "What goes through your mind when you are scared?" "I feel terrible" → "What is the thought that makes you feel terrible?" "Can you tell me what happened when you behaved like that?" "What bothered you at that moment?" "What did you react to?"

### ***Expressing the Traumatic Memory:***

In this technique designed for trauma-focused cognitive behavioral therapy treatment, the traumatized child or adolescent is asked to gradually tell the story of the traumatic event through a book, poem, song, or other written narrative. With this technique, the child/adolescent expresses the traumatic memory instead of avoiding it, creating a trauma narrative in his/her own words, helps to reveal cognitive distortions and places the traumatic memory in a context within his/her life, which is considered an essential prerequisite for assimilation (Cohen and Mannarino 2008, Foa 2011, Cohen et al. 2016). "Would you like to describe your experience as if you were reading a book or singing a song? If you want, I can join you so we can see what happened."

### ***Normalizing***

The main purpose of this technique is to increase the trauma victim's adaptation to the cognitive intervention process, to enable him/her to have a more optimistic and hopeful view of himself/herself, and to emphasize that

these are specific to trauma by showing that most people who experience traumatic experiences have similar thought structures and reactions. With this technique, the trauma victim is assured that unintentional thoughts, hyperarousal, and depression reactions are not abnormal or indicative of insanity, thus instilling hope and enabling the person to review the symptoms of the traumatic memory in detail without avoiding them (Ehlers and Clark 2000; Türkçapar 2018). (1) "I was frozen, I could not do anything" → "This is not weakness or incapacity; freezing is one of the reflexes in human nature that our body uses to protect itself" (2) "If I had not gone there, all this would not have happened to me" → "Wouldn't others have gone there if they were in your place?"

### ***Examining the Evidence***

Rather than accepting the truth of an automatic thought or belief, it is based on objectively examining the evidence for and against it. In this technique, which is used to illustrate that the child/adolescent's trauma-specific dysfunctional cognitions are contradictory to the facts and to cast doubt on them, it is recommended to start with the evidence that supports their thoughts in order to reduce their initial prejudices and to enable them to look at the event objectively. In addition, children/adolescents generally have difficulty expressing evidence supporting their cognitions specific to the traumatic event, but not in expressing contrary evidence. Thus the therapist is recommended to help the person more in this regard (Leahy 2017). "After experiencing the earthquake, the adolescent who developed the belief "The world is very dangerous, I am no longer safe" is asked the question, "Let us say you need to prove this belief to a friend; how would you do it?" and the adolescent is first asked to list the explanations that support this belief (such as "The earthquake happened, I just stood there, I waited for it to pass"). Then, with the question, "What would you say to your friend if you had to prove the opposite of this belief (The world is a safe place)?" the adolescent is asked to list the evidence that contradicts his/her belief (Sturdy buildings reduce the risk of being affected by earthquakes, earthquake drills can raise awareness and prepare for earthquakes). Finally, the percentages of this evidence are calculated, the participants discuss which makes them feel better, and the belief is placed in a logical framework.

### ***Socratic Questioning***

This method, which forms the basis of the questioning style of cognitive therapies and is thought to reflect the general framework of the techniques, aims to reveal the automatic thoughts of the child/adolescent, examine them, and develop alternative beliefs closer to reality. Through functional and appropriate questions, it is ensured to arouse curiosity in the child/adolescent and to reveal realistic information that exists but cannot be brought to awareness due to the emotions created by the traumatic event being at the forefront (Padesky 1993; Türkçapar 2018). For traumatic beliefs such as "What if it happens to me again?", "Worse will happen to me" → she/he can be ensured to challenge his/her current thinking with questions like "How do you reach this conclusion?", "Can you say with certainty that this will happen like this?", "Can there be an alternative explanation?", "What would you say to a friend if they experienced this?", "How would a friend see this situation?".

### ***Double Standard Technique***

Based on the assumption that people can be more fair and rational when evaluating other people, this technique asks the child/adolescent to evaluate the effects and consequences of his/her beliefs about the traumatic event by considering that a friend of his/her also holds these beliefs. This technique aims to show that the child/adolescent cannot look at himself/herself and the event objectively due to the emotional intensity of the traumatic event and thus distances himself/herself from reality. In order to make the technique more understandable, the child/adolescent may be asked to evaluate the existing beliefs and suggest alternative ways of thinking by creating a scenario in which the same traumatic event happened to someone else (Leahy et al. 2011). "A child who witnessed his/her father inflicting violence on his/her mother developed a belief that "It is all my fault." The therapist can invite this child to a logical perspective with direct questions such as "If you had a friend who faced a similar situation, would you blame him/her?" or "What would someone else say if they were in your place?" or "Person A also witnessed violence in the family but blames himself/herself even though he/she has no responsibility or blame for the incident. What would you think about person A, or would you see him/her as guilty?".

### ***Pie Chart Technique***

The aim of this technique, which can be used to address the all-or-nothing thinking and labeling frequently observed in traumatized children/adolescents, is to ensure that responsibilities for the traumatic event are shared. The traumatized child/adolescent tends to personalize the event with self-blaming and labeling



statements such as "It is my fault; I am an idiot." Here, the child/adolescent is asked to think of a pie with different measurements (charts) expressing the levels of responsibility for the event and to place all the reasons that may be responsible for the event in proportion to this chart. The child/adolescent is then asked to reconsider all the reasons listed and realize there cannot be a single cause or responsible party (Greenberger and Padesky 2015). The adolescent who witnessed his younger brother being hit by a car developed beliefs such as "It was my fault, I should have guessed, I could have prevented it" after the incident. In the technique, the adolescent is first helped to write down all the other factors that could have caused the traffic accident (such as the speed of the driver, the inattention of his/her brother, the absence of a pedestrian crossing, and the absence of a warning sign). The child/adolescent is then asked to place each of these causes on the pie charts and asked how much of the remaining portion of the pie corresponds to his/her belief. Finally, it is ensured that the child/adolescent assesses the degree of his/her initial belief and the belief he/she holds after the pie chart with other techniques, thus enabling the belief to be shifted in a functional direction.

### ***Star Plan Technique***

This technique, proposed by Feather and Ronan (2010), aims to help children recognize the emotional distress caused by the traumatic event and see how these emotions interact with their thoughts in a concrete and understandable way. With this technique, the child is encouraged to build a more hopeful future by reconsidering the pessimistic view of the future arising from the traumatic event. The first stage of the technique aims to train the child to recognize and manage their emotions and body reactions (S). In the second stage, the child is helped to recognize the thoughts and self-talk that make them feel bad (T). The third stage involves transforming dysfunctional thoughts and self-talk into functional ones and developing plans to do so (A). The final stage emphasizes self-evaluation and reward for maintaining new skills and well-being, even for partial successes (R). The basic format of "(S) Scary feelings? (Do you have scary feelings?) (T) Thinking bad things? (A) Activities that can help (R) Rating and rewards (Rate your feelings again and give yourself a reward)" is changed to "(S) Stop! (Stop, I think badly) (T) Think! (What do I think?) (A) Act! (Take action and do something that can help you) (R) Rewards (I feel better)" to make it more straightforward and more understandable for some children.

### **Cognitive Interventions for Adult Trauma Victims**

Similar to children and adolescents, cognitive interventions in adult trauma survivors aim to raise awareness by working on misinterpretations and misconceptions that cause trauma-related distress and lead to avoidance behaviors and to help replace them with realistic and compatible thoughts (Foa et al. 2010, Lewis et al. 2020). Dysfunctional coping strategies such as rigid attitudes, cognitions of blaming others, and thought suppression can be seen in the interpretation and appraisal of the traumatic event in adults who are trauma victims (APA 2013). In addition, since adults can be more successful in distinguishing their thoughts and emotions compared to children and adolescents, they may be treated early for displaying dysfunctional thoughts in the intervention process (Cohen 1998, Feather and Ronan 2010). Along with some of the differences and similarities mentioned, most of the cognitive techniques used were first developed for the adult group of trauma victims, and their effects were examined and then adapted for the child and adolescent group (Foa et al. 1991, Foa and Rothbaum 2001, Horesh et al. 2017). In this context, the cognitive intervention techniques used with traumatized children/adolescents in the previous section can also be used when working with traumatized adults. In this section, other cognitive intervention techniques and examples that can be used for adult trauma victims are listed.

### ***Deep Dive Technique***

The aim of this technique, which can be used to reveal automatic thoughts and intermediate beliefs related to trauma, is to reach deeper beliefs through questions, starting from thoughts close to the surface. After the automatic thought of the trauma victim is found through various questions or forms (such as "What is going through your mind?"), assuming that this thought is true, questions aimed at determining its meaning (Assuming that this is true, what does this mean for you? What is the difficult part of this for you?) and intermediate beliefs about the traumatic memory are investigated. Thus, each question directed to the meaning of automatic thoughts about trauma will pave the way to the core belief (Murdock 2016, Türkçapar 2018). By working on a more specific and selected thought compared to the Socratic questioning technique, this technique aims to repeat the questions until there is no more negative thought and thus reach common themes related to thoughts. Instead of "What does this mean?", thoughts are examined with the expression "Let us say...?" (Türkçapar 2018). The person who had a traffic accident developed the thought, "I cannot drive a car anymore" after the incident. The questions that can be asked here and the stages of deepening can be carried out as follows: "Let us say this thought is true; what does it mean for you?" → "I will have an accident again" → "What will

happen if you have an accident again?" → "I may become disabled" → "What will happen if you become disabled?" → "No one will take care of me" → "If no one takes care of you...?" → "I will be alone" → "What will happen if you are alone?" → "I cannot be happy" (The underlying intermediate belief is that I should not be alone to be happy).

### ***Cost-Benefit Analysis***

In this technique, which can be used to reveal the positive and negative consequences of the beliefs held by traumatized adults and to address the appropriateness and inappropriateness of the beliefs, the aim is to reveal whether the belief is functional rather than whether it is true or false. The person is first asked about the benefits of his/her belief about the traumatic event, then the negative consequences of this belief are listed, and both are evaluated together. Thus, the belief results are clarified, and motivation for change is created (Leahy 2017). The woman subjected to violence by her partner developed the belief that "I will no longer trust people." "What are the costs and benefits of your belief? What happens if you believe this less? What will change if you believe this more?" the benefits (such as no one can harm me) and costs (such as I may become lonely and unhappy) of the belief are listed, and a ratio is made between the two and the functionality of the belief is examined.

### ***Resisting Self-Criticism***

Trauma victims' most frequently observed dysfunctional evaluations include being cruel and critical towards themselves (Foa et al. 2010). By attributing the responsibilities of the traumatic event to themselves, they can constantly feed their negative emotional states with a critical perspective. With this technique, the trauma victim can be made aware of the critical vicious circle, and alternatives can be offered to get out of the trapped area (Beck and Beck 2011). The person who was sexually harassed developed the belief that "It was my fault, I should have made a noise, I could have shouted" after the incident. Here, the person can be made aware of the area in which they are trapped with an explanation such as "You constantly criticize yourself because you hold yourself responsible for this event, you refuse to see the other factors of the event because you constantly criticize, and thus you cannot get out of the effect of the traumatic event."

### ***Declaration of Human Rights***

Trauma victims, especially those subjected to violence, are asked to read the sections on freedom, the right to life, and happiness in the Declaration of Human Rights. The existing beliefs of the victim are re-evaluated by taking this declaration into consideration, and it is tried to make them realize that these rights are a necessity of being human. In the technique, the person is asked to write a list of the rights he/she wishes to have contrary to the assumptions he/she developed after the traumatic event. While creating this list, some victims may be forced to be patient with the event, keep silent to be moral, or be under the influence of some ideas imposed due to social norms. At this point, it may be useful to ask her to write down these rights by thinking that they apply not only to herself but also to people worldwide (Leahy 2017). A woman subjected to physical and emotional violence from her husband for years has developed the belief that "Women have to endure certain things for their marriages." Here, the victim is asked, "If we asked you to create your personal declaration of human rights, what would you write?" and asked to write the opposite of the situations that she suffered but endured due to her belief (such as the right not to be subjected to violence, the right to be happy, the right to have her ideas valued, the right not to be criticized). Then, by comparing this list with his/her current situation, he/she can be made to question his/her belief again through a cost-benefit analysis.

### ***Countering Overgeneralization***

In overgeneralization, which is one of the cognitive distortions frequently observed in trauma victims, the person makes generalizations about his/her environment or events with the ideas of controlling the effects of the traumatic event, controlling the anxiety caused by the possibility of experiencing the same things again in the future, and feeling safe by protecting himself/herself against the environment. Although these generalizations may seem convincing to the person, they prevent the trauma from being processed in a healthy way to reduce its impact. The aim is to bring the victim to a balanced way of thinking by eliminating overgeneralization (Clark and Beck 2011). The woman victim of sexual harassment has developed the belief that "No man can be trusted." The victim is asked, "What is the evidence that supports and does not support this belief? If no man can be trusted, then should you not trust your father, brother, or husband? Do other people think this way too? If yes, why, and if no, why not? How would you explain the situation of couples around you who have healthy relationships?"

The techniques mentioned above can be used alone or intertwined with or in support of each other, including cognitive intervention techniques for children and adolescents. For example, the use of cost-benefit analysis

may be appropriate for a trauma victim who has the belief "This is terrible, I will never be okay," and the functionality of thoughts can be tested with the evidence examination technique after the normalizing technique. In the selection and use of techniques, the type of trauma and how the victim appraises it, the content and rigidity of his/her beliefs, the strategies he/she uses to control the process, and the mood assessment appropriate for cognitive intervention are considered to be significant (Ehlers and Clark 2000, Leahy et al. 2011, Taylor 2017).

## Conclusion

When the cognition structures of people with PTSD are taken into account, avoidance, and hyperarousal of almost every situation that directly or indirectly evokes the traumatic event seem to be characteristics. Considering this situation, this review explains different models that address the general cognition of people with PTSD and also presents various and frequently used methods to improve existing dysfunctional schemas. Thus, the current study provides essential information for providing psychological first aid to people in possible traumatic events that almost everyone can experience and for the victims' relatives. The current study is expected to contribute to mental health professionals working with trauma victims by enriching the literature and explaining the proven cognitive techniques with examples.

## References

- Agaibi CE, Wilson JP (2005) Trauma, PTSD, and resilience: A review of the literature. *Trauma Violence Abuse*, 6:195-216.
- APA (2000) *Diagnostic and Statistical Manual of Mental Disorders 4th edition Text Revision (DSM-IV-TR)*. Washington, American Psychiatric Association.
- APA (2013) *Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5)*. Washington, American Psychiatric Association.
- Atwoli L, Stein DJ, Koenen KC, McLaughlin, KA (2015) Epidemiology of posttraumatic stress disorder: prevalence, correlates and consequences. *Curr Opin Psychiatry*, 28:307-311.
- Başıoğlu M, Salcıoğlu E, Livanou M (2002) Traumatic stress responses in earthquake survivors in Turkey. *J Trauma Stress*, 15:269-276.
- Beck JS, Beck, AT (2011) *Cognitive Behavior Therapy: Basic and Beyond*. New York, Guilford Press.
- Benjet C, Bromet E, Karam EG, Kessler RC, McLaughlin KA, Ruscio AM et al. (2016) The epidemiology of traumatic event exposure worldwide: results from the World Mental Health Survey Consortium. *Psychol Med*, 46:327-343.
- Bolu A, Erdem M, Öznur T (2014) Travma sonrası stres bozukluğu. *Anatolian Journal of Clinical Investigation*, 8:98-104.
- Brewin CR, Holmes EA (2003) Psychological theories of posttraumatic stress disorder. *Clin Psychol Rev*, 23:339-376.
- Brewin CR, Dalgleish T, Joseph S (1996) A dual representation theory of posttraumatic stress disorder. *Psychol Rev*, 103:670-686.
- Bryant RA (2019) Post traumatic stress disorder: a state of the art review of evidence and challenges. *World Psychiatry*, 18:259-269.
- Clark DA, Beck AT (2011) *Cognitive Therapy of Anxiety Disorders: Science and Practice*. New York, Guilford Press.
- Cohen JA (1998) Practice parameters for the assessment and treatment of children and adolescents with posttraumatic stress disorder. *J Am Acad Child Adolesc Psychiatry*, 37:4S-26S.
- Cohen JA, Mannarino AP (2008) Trauma focused cognitive behavioural therapy for children and parents. *Child Adolesc Ment Health*, 13:158-162.
- Cohen JA, Berliner L, Mannarino A (2010) Trauma focused CBT for children with co-occurring trauma and behavior problems. *Child Abuse Negl*, 34:215-224.
- Cohen JA, Mannarino AP, Deblinger E (2016) *Treating Trauma and Traumatic Grief in Children and Adolescents*. New York, Guilford Press.
- Cyniak-Cieciura M, Zawadzki B (2021) The relationship between temperament traits and post-traumatic stress disorder symptoms and its moderators: Meta-analysis and meta-regression. *Trauma Violence Abuse*, 22:702-716.
- Çiller A, Köskün T, Akca AYE (2022) Post traumatic stress disorder and behavioral therapy intervention techniques used in treatment. *Psikiyatride Güncel Yaklaşımlar*, 14:499-509.
- Dworkin ER, Brill CD, Ullman SE (2019) Social reactions to disclosure of interpersonal violence and psychopathology: A systematic review and meta-analysis. *Clin Psychol Rev*, 72:101750.
- Ehlers A, Clark DM (2000) A cognitive model of posttraumatic stress disorder. *Behav Res Ther*, 38:319-345.
- Ehlers A, Clark DM, Hackmann A, Grey N, Liness S, Wild J et al. (2010) Intensive cognitive therapy for PTSD: A feasibility study. *Behav Cogn Psychother*, 38:383-398.
- Ehlers A, Wild J (2022) Cognitive therapy for PTSD: Updating memories and meanings of trauma. In *Evidence Based Treatments for Trauma-related Psychological Disorders: A Practical Guide for Clinicians*, 2<sup>nd</sup> ed. (Eds U Schnyder, M Cloitre):181-210. Cham, Springer.

- Feather JS, Ronan KR (2010) *Cognitive Behavioural Therapy for Child Trauma and Abuse: A Step-by-Step Approach*. London, UK, Jessica Kingsley.
- Foa EB (2011) Prolonged exposure therapy: Past, present, and future. *Depress Anxiety*, 28:1043-1047.
- Foa EB, Kozak MJ (1986) Emotional processing of fear: exposure to corrective information. *Psychol Bull*, 99:20-35.
- Foa EB, Rothbaum BO (2001) *Treating the Trauma of Rape: Cognitive-Behavioral Therapy for PTSD*. New York, Guilford Press.
- Foa EB, Keane TM, Friedman MJ, Cohen, JA (Eds.) (2010) *Effective Treatments for PTSD: Practice Guidelines from the International Society For Traumatic Stress Studies*. New York, Guilford Press.
- Foa EB, Rothbaum BO, Riggs DS, Murdock TB (1991) Treatment of posttraumatic stress disorder in rape victims: a comparison between cognitive-behavioral procedures and counseling. *J Consult Clin Psychol*, 59:715-723.
- Foa EB, Steketee G, Rothbaum BO (1989) Behavioral/cognitive conceptualizations of post-traumatic stress disorder. *Behav Ther*, 20:155-176.
- Gradus JL (2007) *Epidemiology of PTSD*. Washington DC, National Center for PTSD (United States Department of Veterans Affairs).
- Goulston M (2012) *Post Traumatic Stress Disorder for Dummies*. Hoboken, NJ, Wiley.
- Gül E (2014) *Prevalence rates of traumatic events, probable PTSD and predictors of posttraumatic stress and growth in a community sample from İzmir (Doctoral thesis)*. Ankara, Orta Doğu Teknik Üniversitesi.
- Horesh D, Qian M, Freedman S, Shalev A (2017) Differential effect of exposure-based therapy and cognitive therapy on post-traumatic stress disorder symptom clusters: A randomized controlled trial. *Psychol Psychother*, 90:235-243.
- Karam EG, Friedman MJ, Hill ED, Kessler RC, McLaughlin KA, Petukhova M et al. (2014). Cumulative traumas and risk thresholds: 12-month PTSD in the World Mental Health (WMH) surveys. *Depress Anxiety*, 31:130-142.
- Karancı N (2009) *Travma Sonrası Stres Bozukluğu Tedavisinde Bilişsel-Davranışçı Yaklaşımlar In Bilişsel Davranışçı Terapiler (Eds E Barışkın, I Savaşır, G Soygüt): 149-175*. Ankara, Türk Psikologlar Derneği.
- Karancı AN, Işık S, Aker AT, Gül Eİ, Erkan BB, Özkol H et al. (2012) Personality, posttraumatic stress and trauma type: Factors contributing to posttraumatic growth and its domains in a Turkish community sample. *Eur J Psychotraumatol*, 3:17303.
- Kendall, PC (Ed.) (2011) *Child and Adolescent Therapy: Cognitive-Behavioral Procedures*. New York, Guilford Press.
- Kliethermes MD, Drewry K, Wamser-Nanney R (2017) Trauma-focused cognitive behavioral therapy. In *Evidence-based treatments for trauma related disorders in children and adolescents:167-186*. Cham, Springer .
- Leahy RL (2017) *Cognitive Therapy Techniques: A Practitioner's Guide*. New York, Guilford Press.
- Leahy RL, Holland SJ, McGinn LK (2011) *Treatment Plans and Interventions for Depression and Anxiety Disorders*. New York, Guilford Press.
- Lewis SJ, Arseneault L, Caspi A, Fisher HL, Matthews T, Moffitt TE et al. (2019) The epidemiology of trauma and post-traumatic stress disorder in a representative cohort of young people in England and Wales. *Lancet Psychiatry*, 6:247-256.
- Lewis C, Roberts NP, Andrew M, Starling E, Bisson JI (2020) Psychological therapies for post-traumatic stress disorder in adults: systematic review and meta-analysis. *Eur J Psychotraumatol*, 11:1729633.
- Marks I, Lovell K, Noshirvani H, Livanou M, Thrasher S (1998) Treatment of posttraumatic stress disorder by exposure and/or cognitive restructuring: A controlled study. *Arch Gen Psychiatry*, 55:317-325.
- Monson CM, Fredman SJ, Macdonald A, Pukay-Martin ND, Resick PA, Schnurr PP (2012) Effect of cognitive-behavioral couple therapy for PTSD: A randomized controlled trial. *JAMA*, 308:700-709.
- Murdock, NL (2016) *Theories of Counseling and Psychotherapy: A Case Approach*. London, UK, Pearson.
- Önder E, Tural Ü, Aker T, Kılıç C, Erdoğan S (2006) Prevalence of psychiatric disorders three years after the 1999 earthquake in Turkey: Marmara Earthquake Survey (MES). *Soc Psychiatry Psychiatr Epidemiol*, 41:868-874.
- Padesky CA (1993) Socratic questioning: Changing minds or guiding discovery. In *A keynote address delivered at the European Congress of Behavioural and Cognitive Therapies, London (Vol. 24)*.
- Greenberger D, Padesky CA (2015) *Mind Over Mood: Change How You Feel by Changing the Way You Think*. New York, Guilford Press.
- Resick PA, Monson CM, Chard KM (2016) *Cognitive Processing Therapy For PTSD: A Comprehensive Manual*. New York, Guilford Press.
- Sarp N, Tosun A (2011) Emotion and autobiographical memory. *Psikiyatride Güncel Yaklaşımlar*, 3:446-465.
- Shalev A, Liberzon I, Marmar C (2017) Post-traumatic stress disorder. *N Engl J Med*, 376:2459-2469.
- Sherin JE, Nemeroff CB (2022) Post-traumatic stress disorder: the neurobiological impact of psychological trauma. *Dialogues Clin Neurosci*, 13:263-278.
- Speckens AE, Ehlers A, Hackmann A, Ruths FA, Clark DM (2007) Intrusive memories and rumination in patients with post-traumatic stress disorder: A phenomenological comparison. *Memory*, 15:249-257.
- Taylor S (2017) *Clinician's Guide to PTSD: A Cognitive-Behavioral Approach*. New York, Guilford Press.
- Türkçapar H (2018) *Bilişsel Davranışçı Terapi: Temel İlkeler ve Uygulama (12nd ed.)*. İstanbul, Epsilon.
- Türkçapar MH, Sungur MZ, Akdemir A (1995) Çocuk ve ergenlerde bilişsel terapiler. *Çocuk ve Gençlik Ruh Sağlığı Dergisi*, 2:93-100.

Zalta AK, Tirone V, Orłowska D, Blais RK, Lofgreen A, Klassen B et al. (2021) Examining moderators of the relationship between social support and self-reported PTSD symptoms: A meta-analysis. *Psychol Bull*, 147:33-54.

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