Cognitive Therapy for PTSD: Updating Memories and Meanings of Trauma

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9.1 Understanding PTSD from a Cognitive Perspective

In the initial days and weeks after a traumatic event, most people will experience at least some symptoms of posttraumatic stress disorder (PTSD) such as intrusive memories, sleep disturbance, feeling emotionally numb, or being easily startled (Rothbaum et al. 1992). Most people will recover in the ensuing months, but for some the symptoms persist, often for years. What prevents these people from recovering? A lesson that we learned in treating and interviewing many trauma survivors is that what people find *most* distressing about a traumatic event varies greatly from person to person. Understanding the *personal* meanings of trauma and their relationship with *features of trauma memories* appears key to helping people with PTSD.

9.1.1 A Cognitive Model of PTSD

Ehlers and Clark (2000) suggested a cognitive model that explains why persistent PTSD develops. It guides the individual case conceptualization in the corresponding treatment approach, cognitive therapy for PTSD (CT-PTSD). This model suggests that PTSD develops if individuals process the traumatic experience in a way that produces a sense of a *serious current threat*. Once activated, the perception of current threat is accompanied by reexperiencing and arousal symptoms and strong emotions such as anxiety, anger, shame, or sadness. It is proposed that two key processes lead to a sense of current threat (see Fig. 9.1), namely, personal meanings of the trauma and the way traumatic experiences are laid down in memory.

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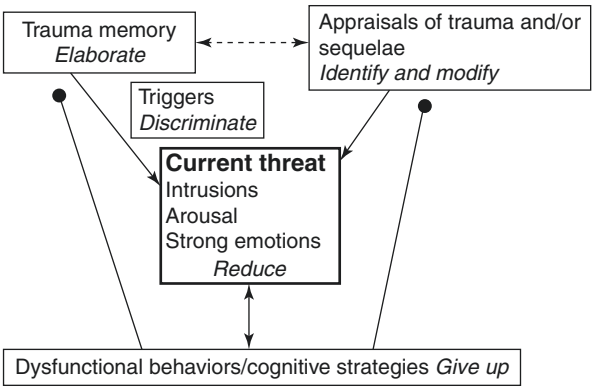

Fig. 9.1 Treatment goals in cognitive therapy for PTSD (Ehlers and Clark 2000). *Pointed arrows* stand for "leads to." *Round arrows* stand for "prevents a change in." *Dashed arrows* stand for "influences." (Reprinted with permission from Ehlers 2013)

First, it is suggested that individual differences in the personal meaning (appraisal) of the trauma and/or its consequences (e.g., reactions of other people, initial PTSD symptoms, physical consequences of the trauma) determine whether persistent PTSD develops. For people with PTSD, the trauma and/or its aftermath have highly threatening personal meanings that go beyond what other people would find horrific about the situation. The perceived threat can be external or internal and leads to a range of negative emotions that are meaningfully linked with the type of appraisal. Perceived external threat can result from appraisals about impending danger (e.g., "I will be assaulted again," "I cannot trust anyone"), leading to excessive fear, or a preoccupation with the unfairness of the trauma or its aftermath (e.g., "I will never be able to accept that the perpetrator got away with a minor sentence"), leading to persistent anger. Perceived internal threat often relates to negative appraisals of one's behavior, emotions, or reactions during the trauma and may lead to guilt (e.g., "It was my fault," "I should have prevented it") or shame (e.g., "I am inferior," "I am a bad person," "My actions are despicable"). A common negative appraisal of consequences of the trauma in PTSD is perceived permanent change (e.g., "I have permanently changed to the worse," "My life is ruined"), which can lead to sadness and hopelessness. People who experienced multiple interpersonal traumas also tend to show generalized negative self-appraisals (e.g., "I am worthless," "I do not matter," "I deserve bad things happening to me"), leading to an enduring sense of degradation, defeat, or low self-worth (Ehlers et al. 2000).

Second, it is suggested that the worst moments of the trauma are poorly elaborated in memory, namely, inadequately integrated into their context (within the event and within the context of previous and subsequent experiences/information). This has the effect that people with PTSD remember the trauma in a disjointed way. While they recall the worst moments, it may be difficult for them to access other information that could correct impressions they had or predictions they made at the time. In other words, the memory for these moments has not been updated with what the person knows now. This has the effect that the threat they experienced during these moments is reexperienced as if it were happening right now rather than

being a memory from the past. For example, when John[1] nearly drowned during a ferry disaster, he thought that he would never see his children again. Whenever he recalled this particularly distressing moment, he was not able to access the fact that he still lived with his children and reexperienced the overwhelming sadness he had experienced at that moment.

Ehlers and Clark (2000) also noted that intrusive trauma memories are easily triggered in PTSD by sensory cues that overlap perceptually with those occurring during trauma, for example, a similar sound, color, smell, shape, movement, or bodily sensation. They suggested that cognitive processing that focuses on perceptual features of the experience (data-driven processing) leads to strong perceptual priming (a reduced threshold for perception) for stimuli (and their sensory features) that occurred at the time of the traumatic event. Through learned associations, the stimuli also become associated with strong affective responses. This increases the chances that similar cues evoke distressing reexperiencing symptoms after the trauma.

In line with a role of associative learning, reexperiencing includes strong affective responses that are clearly related to the trauma, without the person recognizing that a trauma memory has been triggered (*affect without recollection*). For example, Anna, whose trauma involved being chased by a bull, felt an overwhelming urge that she had to "get out of here" when going for a walk in the country and jumped into an icy river. She was unaware of what had triggered this urge. Her partner spotted that she had responded to a cow grazing at a distance. Together, the proposed memory processes (poor elaboration, priming, and associative learning) explain why trauma memories remain so threatening in people with PTSD and why parts of these memories can be easily triggered by sensory reminders.

Why do the negative appraisals and the problematic nature of trauma memories persist in PTSD? Ehlers and Clark proposed that the negative appraisals and emotions prompt cognitive and behavioral responses that have the short-term aim of reducing distress but have the unhelpful long-term consequence of preventing cognitive change and therefore maintain the disorder. Common examples include rumination about the trauma, avoidance of trauma reminders, suppression of trauma memories, excessive precautions (safety behaviors), substance use, and hypervigilance.

These maintain PTSD in three ways. First, some behaviors directly lead to increases in symptoms, for example, suppression of trauma memories leads to paradoxical increases in intrusion frequency. Second, other behaviors prevent changes in the problematic appraisals, for example, constantly checking one's rear mirror (a safety behavior) after a car accident prevents change in the appraisal that another accident will happen if one does not check the mirror. Third, other behaviors prevent elaboration of the trauma memory and its link to other experiences. For example, avoiding thinking about the event prevents people from updating the memory of the worst moments with information that could make them less threatening, for example, that they did not die or are not paralyzed, or that it was not their fault.

[1] Names and some details are changed in case examples to preserve anonymity.

9.1.2 Empirical Studies Testing the Proposed Factors

Studies have (1) compared trauma survivors with and without PTSD on the factors specified in Ehlers and Clark's (2000) model, (2) measured these factors soon after trauma and tested whether they predict PTSD later, and (3) tested them experimentally.

9.1.2.1 Negative Appraisals

Studies have found strong empirical support for a relationship between PTSD and negative personal meanings (appraisals). Trauma survivors with PTSD endorsed negative appraisals of the trauma and its aftermath more strongly than those without PTSD and negative appraisals correlate highly with the severity of PTSD symptoms. It is noteworthy that negative appraisals about the self (e.g., "What happened showed that I am a bad person," "My reactions since the event show that I am going crazy") correlate more strongly with PTSD severity than those about external danger (e.g., "The world is unsafe") (e.g., Duffy et al. 2013). Negative appraisals also help identify who is at risk of chronic PTSD after trauma. Prospective studies recruited trauma survivors soon after their trauma and found that early negative appraisals strongly predicted PTSD 6 months or 1 year later (e.g., Beierl et al. 2019; Ehring et al. 2008). Again, negative appraisals about the self were the most predictive.

9.1.2.2 Memory Processes

There is evidence from prospective studies of trauma survivors that a predominance of *data-driven processing* during trauma (i.e., predominantly processing perceptions and sensations as opposed to conceptual processing) predicts subsequent PTSD (e.g., Ehring et al. 2008; Halligan et al. 2003). Similar results were found in studies that experimentally induced intrusive memories of analogue traumatic pictures in healthy volunteers (e.g., Sündermann et al. 2013).

The hypothesis that cues are strongly *primed* during trauma and therefore more easily spotted afterwards has also gained empirical support. In a series of experiments, volunteers saw unpleasant picture stories that included some neutral objects that were unrelated to the content of the stories and parallel neutral stories. When participants were later asked to identify blurred pictures, they were better at identifying neutral objects that they had previously seen during a trauma story than those that they had seen in a neutral story (for a review, see Ehlers et al. 2012). Similarly, Kleim et al. (2012b) found that accident and assault survivors with PTSD identified blurred trauma-related pictures, but not general threat pictures, with greater likelihood than neutral pictures. The lower perceptual threshold in identifying trauma-related pictures also predicted PTSD 6 months later.

There is some evidence that PTSD is related to slow extinction learning of *conditioned associations* between neutral stimuli and fear responses, enhanced generalization and poor discrimination learning. Individual differences in the degree to which such learned associations generalize to related stimuli also seem to play a role in the persistence of PTSD symptoms (for a review, see Ehlers et al. 2012).

The nature of trauma memories has been a matter of considerable debate (see Ehlers 2015, for a review). There is some evidence from questionnaire studies and analyses of trauma narratives that people with PTSD recall the trauma in a disorganized and incoherent way, for example, gaps in memory and/or problems remembering the temporal order of events (e.g., Halligan et al. 2003). Five prospective longitudinal studies showed that objective measures of trauma memory disorganization taken in the initial weeks after the trauma predicted the severity of PTSD symptoms at follow-up (see Ehlers 2015, for a review). It is less clear whether the observed memory disorganization is specific to trauma narratives in PTSD, as some studies found that people with PTSD also recall other events in a disorganized way.

Some of the inconsistencies in the literature may be due to the fact that not all parts of the trauma memory are equally disorganized. The hypothesis that trauma memories are disjointed from other autobiographical information concerns moments of the trauma that are reexperienced (Ehlers et al. 2004). There is indeed some evidence that the memory for the worst moments of trauma is particularly disorganized (e.g., Evans et al. 2007). People with PTSD experienced intrusive memories to a greater extent as more disconnected from their context than those without PTSD (e.g., Michael et al. 2005). In an experimental study, assault survivors with PTSD took longer than those without PTSD to retrieve autobiographical information when imagining the worst moment of their trauma, but not another negative life event (Kleim et al. 2008). In line with the hypothesized role of disjointed memories in reexperiencing, volunteers exposed to a trauma film reported greater disjointedness, but better recall, than those who had seen a neutral film. Memory disjointedness, but not recall, was related to subsequent intrusions and PTSD symptoms and mediated the relationship between cognitive processing and intrusions (Sachschal et al. 2019).

9.1.2.3 Behaviors and Cognitive Responses That Maintain PTSD

Several prospective studies of trauma survivors found that rumination, suppression of trauma memories, and safety behaviors predicted chronic PTSD over and above what could be predicted from initial symptom levels (e.g., Ehring et al. 2008; Kleim et al. 2012a).

Experimental studies investigated whether suppression of trauma memories and rumination play a causal role in maintaining PTSD symptoms. Most of the results are consistent with this hypothesis (for a review, see Ehlers et al. 2012).

9.2 How to Do Cognitive Therapy for PTSD

9.2.1 Theory-Informed Individual Case Formulation

Cognitive therapy is a formulation-driven treatment. Treatment is tailored to the individual formulation and focuses on changing cognitions and cognitive processes that are directly relevant to the individual's problems. In CT-PTSD, Ehlers and Clark's cognitive model (2000) serves as the framework for an individualized

formulation of the patient's problems and treatment. This model suggests three treatment goals that are targeted in treatment (Fig. 9.1):

- *To modify excessively negative appraisals of the trauma and its consequences.*
- *To reduce reexperiencing by elaboration of the trauma memories and discrimination of triggers.*
- To *reduce behaviors and cognitive strategies that maintain the sense of current threat.*

Therapist and patient collaboratively develop an individualized version of the model, which serves as the case formulation to be tested and revised in therapy. The core of the formulation is the patient's experience of current threat, such as threat to safety or self-worth, and the therapist helps identify the processes that maintain this. The maintaining processes are addressed with the procedures described below. The relative weight given to different treatment procedures and their order is tailored to the case formulation.

Videos demonstrating how to carry out CT-PTSD treatment components (including remote delivery), questionnaires to assess cognitive and behavioral processes that maintain PTSD, and other therapy resources can be accessed free of charge at www.oxcadatresources.com.

9.2.2 Therapeutic Style

Guided Discovery is central to the therapeutic style in cognitive therapy. Patient and therapist can be compared to a team of detectives that set out to *test* how well the patient's perceptions and ideas match up with reality. Together, they consider the patient's cognitions like hypotheses, exploring the evidence the patient has for and against them. A commonly used treatment technique is *Socratic questioning*. The therapist gently encourages the patient towards considering a wider range of evidence or alternative interpretations by asking questions that help the patient consider the problem from different perspectives, with the aim to generate a less threatening alternative interpretation. For example, after being assaulted, Derek believed that he looked weak and was likely to be attacked again. In therapy, he considered the alternative hypothesis that his flashbacks gave him the impression that another assault was likely. Generating an alternative interpretation (insight) is usually not sufficient to generate a large emotional shift. A crucial, but sometimes neglected, step in therapy is therefore to facilitate *experiential* learning. Examples include demonstrating experientially that certain coping strategies such as thought suppression are unhelpful, testing the patient's appraisals in behavioral experiments, which create *experiential* new evidence against the patient's threatening interpretations, or conducting surveys to find out what other people think about the patient's behavior during the trauma or their present appearance to address appraisals related to shame or perceived physical disfigurement.

CT-PTSD follows these general principles, with some modifications. Therapists need to take extra care to establish a good therapeutic relationship with the patient (as many patients with PTSD feel they can no longer trust people) and make sure the patient feels safe in the therapeutic setting (as subtle trauma reminders can make the patient feel unsafe in many situations). CT-PTSD is a focused intervention that concentrates on changing cognitions that induce a *sense of current threat* (external or internal) after trauma. Careful assessment of the relevant appraisals is necessary. Patients may have other unhelpful negative thoughts that are not relevant to their sense of current threat and thus do not need to be addressed in treating their PTSD, unless they hinder the patient's engagement and progress in therapy.

Importantly, the main problematic appraisals that induce a sense of current threat are usually linked to particular moments during the trauma. The patient's evidence for their problematic appraisals typically stem from what they remember about their trauma. Disjointed recall makes it difficult to assess the problematic meanings by simply talking about the trauma and has the effect that insights from cognitive restructuring may be insufficient to produce a large shift in affect. Thus, work on appraisals of the trauma is closely integrated with work on the trauma memory in CT-PTSD.

9.2.3 Individual Case Formulation and Treatment Rationale

At the start of treatment, therapist and patient discuss the patient's symptoms and treatment goals. The therapist normalizes the PTSD symptoms as common reactions to an extremely stressful, overwhelming event and explains that many of the symptoms are a sign that the memory for the trauma is not fully processed yet.

The therapist asks the patient to give a brief account of the trauma and starts exploring the personal meanings ("What was the worst thing about the trauma?" "What were the worst moments and what did they mean to you?"). The *Posttraumatic Cognitions Inventory* (PTCI, Foa et al. 1999) can help with identifying cognitive themes, such as overgeneralized sense of danger that will need to be addressed in treatment. The therapist also asks the patient about the content of their intrusive memories and their meaning, as the moments that are reexperienced are often omitted from trauma narratives and the intrusions point to moments that are important for understanding the sense of current threat.

The therapist asks the patient what strategies they have used so far to cope with their distressing memories. Suppression of memories, avoidance, and numbing of emotions (including substance use) are commonly mentioned, as well as rumination (dwelling on the memories). The therapist then uses a *thought suppression experiment* (asking the patient to try hard not to think about an image such as a green rabbit or a black and white cat sitting on the therapist's shoulder) to demonstrate that suppressing mental images has paradoxical effects. After discussing this experience, the therapist encourages the patient to try to experiment with letting intrusive memories come and go during the next week (an exception to this homework

assignment are patients who spend much time ruminating about the trauma, as they need to learn the distinction between intrusive memories and rumination first).

The therapist then uses the information gathered so far to develop an individual case formulation with the patient. This formulation contains the following core messages (in individualized form, using the patient's words as much as possible):

1. Many of the patient's current symptoms are caused by problems in the trauma memory. Therapy will help the patient in getting the memory in a shape where it no longer pops up as frequent unwanted memories and feels like a memory of the past rather than something that is happening now.
2. The memory of the trauma and what happened in its aftermath influences the patients' current view of themselves and the world. The patient perceives a threat; a threat from the outside world, a threat to their view of themselves, or both. In therapy, the therapist and patient will discuss whether these conclusions are fair representations of reality and consider the possibility that the trauma memory colors their perception of reality.
3. Some of the strategies that the patient has used so far to control the symptoms and threat are understandable but counterproductive and maintain the problem. In therapy, the patient will experiment with replacing these strategies with other behaviors that may be more helpful.

The graphic presentation of the treatment model shown in Fig. 9.1 is usually not presented to the patient, because it is quite complex as patients usually have several maintenance cycles between specific appraisals of moments from the trauma or its aftermath and corresponding behaviors. Instead, individual maintenance cycles, such as the vicious circle between intrusive memories and memory suppression, or the relationship between beliefs about future danger, safety behaviors, and hypervigilance may be drawn out for the patient to illustrate particular maintenance cycles that the patient is trying to change.

9.2.4 Modifying Excessively Negative Appraisals of the Trauma and Its Sequelae

9.2.4.1 Reclaiming or Rebuilding Your Life Assignments

People with PTSD often feel that they have permanently changed for the worse and have become a different person since the trauma (e.g., Dunmore et al. 2001). Related to this perceived permanent change, patients with PTSD often give up activities and relationships that used to be important to them. This usually goes beyond avoidance of reminders of the traumatic event and may include activities that were previously a significant part of the patient's life. Some activities may not have been possible in the immediate aftermath of the event and have just dropped out of the patient's repertoire. Giving up these activities maintains the perception of permanent change by providing confirmation that they have become a different person and that their life is less worthwhile since the trauma.

Each treatment session contains a discussion of what the patient can do to reclaim their life and corresponding homework assignments are agreed. In the first session, the rationale for these assignments is introduced. The therapist refers to the patient's treatment goals, which usually include an improvement in their ability to work and to have satisfying relationships. The initial discussion aims to map the areas where patients would like to reclaim their lives and to agree on an achievable first step in one area, and the first homework is agreed. This intervention helps install hope that therapy will help the patient get back on track. It is also helpful for the therapist to get an idea of the patient's life and personality before the trauma so that they can build on their previous strengths and interests.

The therapist will address "blocking thoughts" to carrying out reclaiming/rebuilding life activities by discussion, in-session role plays if indicated or by planning behavioral experiments to test the accuracy of the patient's thoughts. For example, for thoughts like "I don't deserve to sit still or relax" or "All the memories will come flooding back in if I don't keep myself busy," the therapist may suggest a behavioral experiment for the patient to take a tea break for 5 min rather than keeping busy to see what happens. The therapist and patient may create a flashcard of useful information that will help the patient to try the experiment, such as "I deserve a short break, it's only 5 minutes and will give me helpful information. If memories come back, I will treat them like a train going through a station: let them come and go, not push them out and not dwell on them." The patient is encouraged to try the experiment before the next session and to note afterwards what happened, how they felt, and what they learned.

9.2.4.2 Changing Meanings of Trauma by Updating Trauma Memories

CT-PTSD uses a special procedure to shift problematic meanings (appraisals) of the trauma and their linked emotions, termed *updating trauma memories*. This involves three steps and depending on the number of hot spots and cognitive restructuring needed to generate updating information requires between one and several sessions:

- *Step 1*: *Identifying threatening personal meanings*. To access the personal meanings of the trauma that generate a sense of current threat, the moments during a trauma that create the greatest distress and sense of "nowness" during recall (hot spots) are identified through *imaginal reliving* (Foa and Rothbaum 1998) or *narrative writing* (Resick and Schnicke 1993) and discussion of the content of intrusive memories. The personal meaning of these moments is explored through careful questioning (e.g., "What was the worst thing about this?" "What did you think was going to happen?" "What did this mean to you at the time?" "What does this mean to you now?" "What would it mean if your worst fear did happen?"). It is important to ask direct questions about patients' worst expected outcome, including their fears about dying, to elicit the underlying meanings, as this guides what information is needed to update their trauma memory.

  Imaginal reliving and narrative writing both have particular strengths in working with trauma memories, and can be used in conjunction. The relative weight

given to each in CT-PTSD depends on the patient's level of engagement with the trauma memories and the length of the event. *Imaginal reliving* is particularly powerful in facilitating emotional engagement with the memory and accessing details (including emotions and sensory components). In our experience, it usually takes about 2–3 imaginal relivings of a traumatic event to access the hot spots sufficiently to assess their problematic meanings, although it may take longer if patients suppress their reactions or skip over difficult moments because, for example, they are ashamed about what happened.

Writing a narrative is particularly useful when the traumatic event lasted for an extended period of time and reliving the whole event would not be possible. The narrative covers the whole period and is then used to identify the moments or events with the greatest emotional significance so that their meaning can be explored further. Narrative writing is also particularly helpful for patients who dissociate and lose contact with the present situation when remembering the trauma or those who show very strong physical reactions when remembering the trauma (e.g., patients who were unconscious during parts of the trauma may feel very faint). Writing a narrative on a whiteboard or computer screen with the support of the therapist can help introduce the necessary distance for the patient to take in that they are looking back at the trauma rather than reliving it. Narrative writing is also especially helpful when aspects of what happened or the order of events are unclear, as it can be easily interwoven with a discussion about possible scenarios. Reconstructing the event with diagrams and models and a visit to the site of the trauma (which provides many retrieval cues) can be of further assistance in such instances. The narrative is useful for considering the event as a whole and for identifying information from different moments that have implications for the problematic meanings of the trauma and for updating the memory (see steps 2 and 3). After therapy, patients at times find it helpful to refer back to their updated narrative when memories are triggered, for example, around anniversaries of the trauma.

- *Step 2. Identifying updating information*. The next step is to identify information that provides evidence against the problematic meanings of each hot spot (updating information). It is important to remember that some of the updating information may be about what happened in the trauma. It can be something that the patient was already aware of, but has not yet been linked to the meaning of this particular moment in their memory, or something the patient has remembered during imaginal reliving or narrative writing. Examples include knowledge that the outcome of the traumatic event was better than expected (e.g., the patient did not die, is not paralyzed); information that explained the patient's or other people's behavior (e.g., the patient complied with the perpetrator's instructions because he had threatened to kill him; other people did not help because they were in shock); the realization that an impression or perception during the trauma was not true (e.g., the perpetrator had a toy gun rather than a real gun); or explanations from experts of what happened (e.g., explanations about medical procedures).

  For other appraisals, cognitive restructuring is necessary, for example, for appraisals such as "I am a bad person," "It was my fault," "My actions were disgraceful," "People will look down on me if they knew what happened," "If I stop

thinking about the event, justice will never be done," or "I attract disaster." Cognitive therapy techniques such as socratic questioning, systematic discussion of evidence for and against the appraisals, behavioral experiments, discussing of hindsight bias, pie charts, or surveys are helpful. Imagery techniques such as looking at the scene from a different perspective (e.g., bird's eye perspective) can also be helpful in widening the patient's awareness of other factors that contributed to the event or in considering the value of alternative actions. For example, assault survivors who blame themselves for not fighting back during the trauma may visualize what would have happened if they had. This usually leads them to realize that they may have escalated the violence further and the assailant may have hurt them even more. Please see www.oxcadat.resources for guidance on cognitive techniques that are particularly helpful for different cognitive themes.

- *Step 3. Active incorporation of the updating information into the hot spots*. Once updating information that the patient finds compelling has been identified, it is actively incorporated into the relevant hot spot. Patients are guided to bring the hot spot to mind and emotionally engage with it (either through imaginal reliving this moment or reading out aloud the corresponding part of the narrative) and to then—while holding the hot spot in mind—remind themselves (prompted by the therapist) of the updating information either (a) verbally (e.g., "I know now that …"), (b) by imagery (e.g., visualizing the perpetrator in prison; looking at a recent photo of the family or of oneself; visualizing a deceased person at peace), (c) by performing movements or actions that are incompatible with the original meaning of this moment (e.g., moving about or jumping up and down for hot spots that involved predictions about dying or being paralyzed), or (d) through incompatible sensations (e.g., touching a healed arm). This helps the updating information "sink in" emotionally, and often an emotional shift is observed in the session. To summarize the updating process, a written narrative is created or extended that includes and highlights the new meanings in a different font or color (e.g., "I know now that it was not my fault"). Hot spots are addressed one at a time once their meaning and the updating information has been identified. Updates may generalize to hot spots with similar meanings. For longer hot spots, there may be several meanings that may need to be updated and linked to the relevant precise moment in memory.

Case Example Updating Hot Spots

Zahra lost her sister Keisha to cancer. When she received the phone call that Keisha had died, she had an image of Keisha in the hospital bed struggling to breathe. Through imaginal reliving and the discussion of this hot spot and its meaning in the previous session, the therapist and patient had discovered this moment meant to Zahra that Keisha died alone and suffered greatly (Step 1). However, Zahra has learned later that day that Keisha did not die alone and a nurse had been with her and had held her hand. Keisha had also been on morphine which had reduced her suffering (Step 2). The therapist asked Zahra to call to mind a new image, which represented the updating information. Zahra chose to picture Keisha with her eyes closed,

as if sleeping peacefully, and the nurse holding her hand. The therapist then guided Zahra to link the hot spot with the updating information and the new image (Step 3). First, Zahra brought to mind the phone call and the image of her sister alone and in distress. The therapist then prompted her to bring in the new information and run the image onto the updated image. Zahra reminded herself of what she knew now, that Keisha had been on morphine which eased her pain and a nurse had held her hand when she died. She did not die alone. Zahra transformed the distressing image of Keisha alone in the hospital bed to the updated image, the nurse holding her hand in her last moments, Keisha's eyes closed as if sleeping peacefully.

9.2.4.3 Changing Appraisals of Trauma Sequelae

For some patients, a main source of current threat comes from threatening appraisals of the aftermath of the traumatic event. For example, some patients believe that intrusive memories are a sign they are going crazy. Their failed attempts to control the intrusions are seen as further confirmation of their appraisals. Others interpret some people's responses after the event as signs that no one cares for them or understands them or that other people see them as inferior (e.g., Dunmore et al. 2001). Such appraisals are modified by the provision of information, socratic questioning, and behavioral experiments.

9.2.5 Memory Work to Reduce Reexperiencing

9.2.5.1 Imaginal Reliving and Narrative Writing

The *updating trauma memories* procedure described above helps elaborate the trauma memory. Retrieving the memory and talking about it helps making it appear less vivid and intrusive. Patients may describe that some of the sensory impressions from the trauma fade away (e.g., colors or taste fading). When the hot spots have been successfully updated, patients usually experience a large reduction in reexperiencing symptoms and improvement in sleep.

9.2.5.2 Identification and Discrimination of Triggers of Reexperiencing Symptoms

Patients with PTSD often report that intrusive memories and other reexperiencing symptoms occur "out of the blue" in a wide range of situations. Careful "detective" work usually identifies sensory triggers that patients have not been aware of (e.g., particular colors, sounds, smells, tastes, touch). To identify these subtle triggers, patient and therapist carefully analyze where and when reexperiencing symptoms occur. Systematic observation in the session (by the patient and the therapist) and as homework is usually necessary to identify all triggers. Once a trigger has been identified, the next aim is to break the link between the trigger and the trauma memory.

This involves several steps. First, the patient learns to distinguish between "Then" versus "Now." The therapist guides the patient to consider similarities and differences between the trigger and its current context and the original stimulus during the trauma. Often this is summarized in a table format with column headings

"Then" and "Now" and row headings "Similarities" and "Differences." This leads the patient to realize that there are more differences than similarities and that they are responding to a memory, not to current reality. The patient learns to focus their attention on how triggers and their context ("Now") are different from the trauma ("Then").

Second, intrusions are intentionally triggered in therapy so that the patient can learn to apply the "Then" versus "Now" discrimination. For example, traffic accident survivors may listen to sounds that remind them of the crash such as brakes screeching, collisions, glass breaking, or sirens. People who were attacked with a knife may look at a range of metal objects. People who were shot may listen to the sounds of gunfire generated on a computer. Survivors of bombings or fires may look at smoke produced by a smoke machine. People who saw a lot of blood during the trauma may look at red fluids. The discrimination can be facilitated by carrying out actions that were not possible during the trauma (e.g., movements that were not possible in the trauma, touching objects or looking at photos that remind them of their present life).

Third, patients apply these strategies in their natural environment. When reexperiencing symptoms occur, they remind themselves that they are responding to a memory and spot the trigger. They then focus their attention on how the trigger and present situation is different from the trauma and may carry out actions that were not possible during the trauma to remind themselves of how different the situation is.

9.2.5.3 Site Visit

A visit to the site of the trauma completes the memory work. Visiting the site can help correct remaining problematic appraisals as the site provides many retrieval cues and helps access further information to update the appraisals. The site visit also helps complete the stimulus discrimination work. The therapist guides the patient to look for differences between the site and their own state at the time of the trauma ("Then") and "Now" (e.g., cold weather, door has different color, no noise, not injured, no taste of blood, can move about), focusing on differences in a range of senses. Patients realize that "Now" is very different from "Then," which helps place the trauma in the past.

If it is not possible to visit the site in person or to prepare the patient for the visit if needed, virtual site visits can be conducted on Google Street View. The virtual visit gives therapist and patient the opportunity to walk the route of the patient on the day of the trauma virtually and look at a recent view of site, and spot differences between "Then" and "Now." For parts of the world where Google Street View is unavailable, Google Earth can be used to allow the therapist and patient to view the site from above and then to zoom in. For traumas that happened inside, such as in hospitals or other buildings, the therapist may be able to source images of the outside of the buildings, and sometimes the interior, or virtual tours of similar buildings. It is also helpful that Google Street View frequently shows images taken at different dates, and changes over time reinforce the message that the trauma is in the past.

Taking photos helps to consolidate learning from the site visit. Patients can take a "selfie" if they visited the site in person or, for virtual site visits, screenshots of important images.

9.2.5.4 Imagery Work

Section 9.2.4.2 mentioned imagery as a helpful way to generate updating information (e.g., visualizing the scene from a bird's eye perspective, exploring actions not taken) and to update meanings linked to hot spots, i.e., bringing to mind an image that represents the updated meanings. The content of the images is generated collaboratively with the patient to address the patient's idiosyncratic meanings of the hot spots. For example, a patient who felt "dirty" after a rape visualized how her body had shed all the cells that had come in contact with the perpetrator and being in a steam room, which made her feel all fresh and clean. Imagery transformation is also particularly helpful with intrusions that represent images of things that did not actually happen during the trauma. For example, a patient who reexperienced an image he had during an accident where he saw his body broken in pieces, visualized reassembling his body and walking home.

Imagery work is also helpful to transform distressing images and meanings (including a felt sense) linked to the traumatic loss of a loved one as in the case example above. To update the sense that the loved one is still suffering, the therapist may guide the patient to run the image of suffering onto an image of them in a place of peace. The therapist will need to first discuss the patient's beliefs about the afterlife and where they would like to picture their loved one in peace. Imagery that represents how the patient may take the loved one and the meaning they brought to their lives with them in an abstract way (images connected to joy, warmth, love, kindness, nurturing) is also very helpful to update meanings related to loss (see case example below). Imagery can also be used to help the patient when they are struggling with things that have been left unsaid to their loved one who passed away. The therapist would encourage the patient to close their eyes and call to mind a place where they enjoyed time with their loved one. The therapist would then ask the patient questions, such as "Is there anything you would like to say to your loved one? Is there anything she would like to say to you? Is there anything she needs? Is there anything you need?" The process continues in imagery until it feels complete for the patient.

Imagery transformation is also helpful if reexperiencing symptoms persist after successful updating of the patient's hot spots and trigger discrimination. The patient transforms the remaining trauma image into a new image that signifies that the trauma is over. Transformed images can provide compelling evidence that the intrusions are a product of the patient's mind rather than perceptions of current reality.

9.2.6 Dropping Unhelpful Behaviors and Cognitive Strategies

Work on dropping unhelpful behaviors and cognitive strategies that maintain PTSD is integrated with the work on reclaiming/rebuilding life and on the appraisals that

motivate the behaviors (e.g., overestimation of current risk). The first step is usually to discuss the problematic consequences of the behaviors/strategies. Sometimes these can be demonstrated directly by a behavioral experiment (see also thought suppression experiment above). For example, the effects of selective attention to danger cues can be demonstrated by asking the patient to attend to possible signs of danger unrelated to the trauma, e.g., an assault survivor may be asked to stand by a busy road for a few minutes and attend to signs of potentially risky driving. Patients find that this exercise makes them more aware of possible dangers. They then reflect on what this means for their own efforts to scan for signs of danger and consider the possibility that the world may not be as dangerous as they assumed. The next step involves dropping or reversing the problematic strategy, usually in a behavioral experiment.

When addressing rumination, the overall goal is to help patients to disengage from rumination. The therapist will first make the distinction between rumination and intrusive memories. Whereas intrusive memories are about reexperiencing the trauma, rumination is unproductive thinking around the trauma. Patients learn to spot when they are ruminating, label it with a label that captures the circular style of ruminating, such as "my hamster wheel thinking" or "my spaghetti thinking," and then take steps to disengage from rumination, usually by an activity, which may include a reclaiming/rebuilding life activity.

9.2.7 Ending Therapy: Blueprint

Towards the end of therapy patient and therapist collaboratively develop a blueprint that summarizes what they have learned in treatment and how they would apply the learning points to any setbacks. The questions are: How did my problems develop? What kept my problems going? What did I learn during treatment that helped? What were my most unhelpful thoughts? What are the helpful alternatives/updated thoughts? How will I continue to build on what I have learned? How will I deal with any setbacks in the future? Prompts are provided for each question to prompt retrieval.

9.2.8 Flexible Order of Interventions

The order in which the core treatment procedures in CT-PTSD are delivered, depends on the individual formulation. The memory updating procedure usually has a fast and profound effect on reeexperiencing and hyperarousal symptoms, and is generally conducted in the first few sessions, if possible. For patients with severe dissociative symptoms, training in trigger discrimination is conducted first, and narrative writing is preferred over imaginal reliving. In addition, for certain cognitive patterns, the memory work is prepared through discussion of the client's appraisals and cognitive processing at the time of the trauma. For example, if patients blame themselves for a trauma, and their shame and/or guilt prevents them from being able to describe it fully to the therapist, therapy would start with addressing these

appraisals. If a patient experienced mental defeat (the perceived loss of all autonomy) during an interpersonal trauma, therapy would start with discussing the traumatic situation from a wider perspective to raise the patient's awareness that the perpetrators intended to control and manipulate their feelings and thoughts at the time, but that they no longer are exerting control now.

9.2.9 Considerations for Remote Delivery of CT-PTSD

With the COVID-19 pandemic, many services delivering psychological treatments moved to remote working with treatments being offered over video conferencing or telephone. Guidance on how to deliver CT-PTSD over video conferencing or the telephone is described in Wild et al. (2020). For video illustrations, see www.oxcadatresources.com.

9.2.10 Duration of Treatment

If clients reexperience a small number of traumas, cognitive therapy for PTSD (CT-PTSD) is typically delivered in up to 12 weekly face-to-face sessions lasting between 60 and 90 min with the option of up to three monthly booster sessions. If they reexperience multiple traumas, more sessions are often needed (usually around 18–24 sessions).

Note that sessions that include work on the trauma memory such as imaginal reliving, updating memories, or the site visit, the therapist needs to allow sufficient time for the memory to be processed. Before going home, the patient needs sufficient time to refocus on current reality and their further plans for the day. These sessions would usually last around 90 min. Variations of treatment delivery are also effective. A 7-day intensive version of the treatment (delivered over 7 consecutive working days, with 2–4 h of treatment per day, plus a few booster sessions; Ehlers et al. 2014) and a self-study assisted brief treatment are similarly effective (Ehlers et al. 2022b), as is a therapist-assisted, internet-delivered version of CT-PTSD (Ehlers et al. 2020).

Case Example

Paul was a 45-year-old paramedic of mixed ethnic background. He was referred for therapy by his family doctor as he felt very depressed and had problems sleeping. He felt also very worried that his family could be harmed in an accident or act of violence. He had quit work and spent most of the day at home.

The assessment showed that Paul suffered from PTSD and major depression. The symptoms had started about 2 years ago after a distressing incident at work that involved a teenager being killed in a gang-related stabbing. Symptoms included frequent unwanted images of the dying teenager and other distressing incidents he had encountered at work; nightmares about his son or wife being in danger, harmed, or dying; avoiding work colleagues and social activities; feeling uninterested in things he used to enjoy; feeling emotionally numb; being hypervigilant for danger;

and problems concentrating and sleeping. He sometimes thought about ending his life but would not do it because of his family. He used cannabis to cope with his distressing memories, but was not dependent. He agreed that he would not use cannabis on the days of his treatment sessions.

Paul's treatment goals were (a) to sleep better, without nightmares and at least 6 h per night, (b) to enjoy activities with his family again, and (c) to be able to work again.

Case Formulation

The cognitive assessment revealed the following factors that contributed to Paul's sense of current threat.

Appraisals

Paul blamed himself for not being able to save the teenager's life. He believed that he was a failure (belief rating: 100%) and that the teenager's family would permanently suffer and never again feel close to their son (100%). Paul also believed that his son and wife were in danger of being harmed either in an attack or an accident (90%). He believed he was never going to be able to work again (70%).

Trauma Memories

Paul's main reexperiencing symptoms included two images that he experienced daily. The first was an image of the dying teenager trying to say something to him. To Paul, this image meant that he was a failure, as he believed that if he had understood what the teenager was saying, he could have saved him. It also meant that he was responsible for the permanent suffering of the teenager's family as they would never again feel close to their son. The second intrusive image was of a body bag. When he had seen the body bag, Paul had immediately thought of his son and thought that he would not survive if his son died.

Paul also had intrusive memories of other distressing incidents he had encountered at work such as suicide and cot death, but he did not think he needed help with those memories.

When Paul described in the first session how he tried to help the dying teenager, he became distressed and tearful. He remembered most of what happened quite clearly but was unclear about some aspects that bothered him. He was unsure whether the teenager had actually spoken and why he could not understand him. He was also unsure whether he had followed the procedures correctly.

Paul had noticed that the intrusive images and physical symptoms were sometimes triggered when he saw teenagers or his own son. But he also experienced them "out of the blue," suggesting that there were other triggers that Paul had not spotted yet.

Maintaining Behaviors and Cognitive Strategies.

Several behaviors and cognitive strategies that contributed to the maintenance of Paul's PTSD were identified:

- Rumination and worry.
- Safety behaviors and hypervigilance.
- Withdrawal from social life and other activities.
- Cannabis use.

Paul ruminated, sometimes for hours at a time, about what he should have done differently to prevent the teenager's death. He also ruminated about what would happen to his family if he could never work again. He spent a lot of time worrying about bad things that could happen to his family, including vivid images of his son or wife being hurt.

Paul took many unnecessary precautions to keep his family safe (safety behaviors). For example, he did not allow his teenage son to go to school or other places unaccompanied. When his son was at school, he frequently called him to make sure he was OK. This had led to tensions with his son. At night, he often checked whether his son and wife were still breathing. At home, he was hypervigilant for sounds that could indicate possible intruders, and outside his home, he scrutinized teenagers he saw for signs that they may be carrying knives.

Paul had given up his job and had lost touch with his friends, many of whom were work colleagues. He believed that his former colleagues now looked down on him because they knew he was a failure. He had also given up other activities he used to enjoy such as running.

Paul regularly tried to calm himself down by using cannabis, which he believed helped him "stop worrying" and fall asleep.

Comorbid Conditions

The cognitive assessment further suggested that Paul's comorbid depression was closely linked with many of the above factors, namely, his appraisal that he was a failure, his rumination, his social withdrawal, his lack of exercise, his restricted lifestyle (staying at home most of the time), and his inability to work. It was also likely that his cannabis use was a maintaining factor. Paul felt hopeless about his symptoms ("I will never get better," "I will never be able to work again"), which contributed to his suicidal ideation.

Thus, the case formulation suggested that working on Paul's appraisals of the trauma, updating the worst moments of the trauma memory, identification and discrimination of triggers of reexperiencing symptoms, and reversing his maintaining behaviors would be helpful in reducing both PTSD and depression symptoms. The therapist checked during therapy whether Paul's depression and suicidal ideation changed in parallel with his PTSD symptoms so that additional interventions could be considered if necessary.

Treatment

Paul attended 11 therapy sessions lasting between 60 and 90 min.

Work on Appraisals

Some of Paul's appraisals concerned *interpretations of his symptoms* (e.g., "I will never get better," "I will never be able to work again"). These were addressed with the following interventions in Session 1: *Normalization of symptoms* (e.g., "Nightmares are a sign that the trauma memory is being triggered. Working together on the trauma memory will help to process it and put it in the past, which will help to reduce nightmares"), *information about the nature of trauma memories* (e.g., "Trauma memories often feel like they are happening now and give you the sense that there is immediate danger. For example, one of your trauma memories is seeing

the body bag. This makes you think of your son and gives you the sense that he is in danger. This feeling comes from the trauma memory"), and the introduction of *reclaiming your life assignments*. Examples of the assignments Paul completed over the course of therapy included: (a) building up exercise and by the end of treatment, running in a charity race; (b) watching football with his son; (c) inviting an old friend over to his house; (e) attending a computing course; (e) seeing an advisor about job options; and (f) volunteering in a charity shop. These activities helped reduce Paul's conviction in his appraisals of not recovering and raised his hope that he would be able to lead a less restricted life and eventually be able to work again.

"I am a failure." As Paul's belief that he was a failure stemmed from a moment during the trauma when he could not understand what the teenager was trying to say, the *updating trauma memories* procedure was used. In Session 2, Paul went through the event in imaginal reliving and identified two relevant hot spots that corresponded to his intrusive memories, namely, the moment when the teenager died and the moment he saw the body bag, which made him think of his son.

To identify updating information for the first hot spot, the therapist and Paul wrote a narrative and reviewed carefully what had happened (Session 3). The therapist used guided discovery to help Paul realize that not understanding what the teenager had said was probably due to the teenager's injuries and fading consciousness rather than his own incompetence. Paul wrote down what he knew about the teenager's injuries and what he had done to help him. Considering what he had written carefully, he realized that he had followed the protocol. However, some doubts remained. The therapist discussed with Paul how best to test his concern that he may not have followed the protocol. They decided to ask for an expert opinion. The therapist arranged for Paul to have a discussion with an experienced paramedic in Session 4. The expert agreed that Paul had done everything that was possible and that the injuries had been too severe to save the teenager's life.

Paul then updated the memory of this hot spot with a summary of his conclusions from the discussion with the therapist and the expert feedback (Session 4). The therapist guided Paul to visualize the moment when he could not understand the teenager and had felt incompetent. While holding this moment in mind, Paul reminded himself that the teenager was fading in and out of consciousness and was not speaking properly. He also reminded himself that the expert had confirmed that Paul had done everything possible. Paul also included the updating information in his trauma narrative so that he could refer back to the updating information when he found himself ruminating about the event.

"The teenager's family will permanently suffer and never again feel close to their son." To reduce the distress linked to Paul's appraisal of the family's suffering and loss, the therapist used imagery (Session 5). She first had Paul describe qualities he would associate with the teenager, having had a few brief, important moments with him. Paul said that the teenager represented strength and positivity despite his suffering after being stabbed. When asked what he thought could represent strength and positivity today, Paul thought of a ray of sunshine and how the sun generally makes people smile. He then imagined the teenager's family being touched with

rays of sunshine, connecting them to qualities they loved about their son. Paul brought this imagery to mind when the trauma memory and thoughts about the family's loss were triggered.

"Something terrible will happen to my son or my wife." Paul's belief that his family were at risk was contrasted with the alternative hypothesis that his strong memory of the trauma, especially the intrusive images of the body bag, was giving him the impression that his son was in danger. The updating trauma memories procedure was used to update this hot spot. Paul realized that when he had seen the body bag, it had felt as if his son was inside. Updating this moment in memory in Session 3 with the information that his son was alive felt "like a surprise and relief."

The therapist also guided Paul to consider that his safety behaviors contributed to his sense of threat. Paul conducted a series of behavioral experiments that involved dropping his safety behaviors and hypervigilance. For example, he experimented with letting his son go to school and come home on his own without telephoning him on one day of the week. He predicted that it was 90% likely that his son would have an accident or be attacked and not make it home. This never happened and Paul then experimented with increasing the number of days his son went to school on his own. With the help of his therapist and these experiments, he learned that the actual likelihood of his son having an accident was no more likely now than before the trauma and that the likelihood was extremely low. At home, he experimented with focusing on danger and checking that his wife and son were still breathing several times an evening and contrasting that to an evening when he focused his attention on assignments for his computer class. He discovered that when he focused on danger and checking for safety, he felt more frightened and worried than when he focused on his tasks for his class. He concluded that focusing on danger made him feel as though danger was imminent and that checking on his wife and son kept him focused on thoughts of accidents, illness, and death.

Memory Work to Reduce Reexperiencing

As described above, imaginal reliving and writing a narrative, together with detailed discussions with the therapist and an expert, helped Paul identify hot spots and helped him understand that he had done everything possible to help the teenager. Updating Paul's hot spots led to a significant reduction in his intrusive memories and nightmares.

In sessions 5 and 6, Paul explored with his therapist possible triggers of his intrusive memories. Through systematic observation and attention to sensory similarities between possible triggers and the trauma, he spotted a range of triggers that he had not noticed before. Examples included: objects the same color as the body bag, ambulance sirens, blood, and seeing his son asleep. He practiced discriminating these from the stimuli he encountered in the trauma by focusing on differences in both the stimuli and context, both during the session (e.g., listening to recordings of sirens, objects of the same color) and at home (e.g., looking at his son in bed).

After Paul had made good progress with the stimulus discrimination training, he went to the site where the stabbing had taken place with the therapist (Session 8). They focused on the differences between "Then" and "Now." When an ambulance drove by, Paul focused on that no one was hurt at present and the ambulance was

driving past. He felt very relieved, as he had felt apprehensive about the site visit and had felt as if he would again find a dying child there. Paul remembered an important detail about the event. He remembered holding the teenager's hand, and the teenager briefly squeezing his hand. This made him realize that the teenager had acknowledged his efforts to help him and was unlikely to have experienced his efforts as incompetent. He felt a sense of relief. After the site visit, Paul felt that he could now look back at the event, rather than reexperience it.

Work on Maintaining Behaviors and Cognitive Strategies

To address Paul's *rumination*, the therapist guided Paul to distinguish between having a memory of the event and ruminating about it. They discussed the advantages and disadvantages of ruminating. Paul concluded that it had not helped and had made him feel even worse. He decided that the best time to think about what he should have done during the assault was in the therapy sessions and to ruminate less at home. He discussed triggers of rumination and found that during the day, a common trigger was sitting at home alone doing nothing, and at night, lying in bed when he woke up. He agreed that when he found himself ruminating, he would remind himself that this style of thinking was unhelpful. During the day, he would do one of his reclaiming your life assignments instead.

As discussed above, Paul's *hypervigilance*, *safety behaviors*, *and avoidance* were addressed by considering the hypothesis that Paul's trauma memory made him feel his family was in danger and with a series of behavioral experiments, both in the session and as homework. Hypervigilance was replaced with stimulus discrimination, focusing his attention on differences between the current situation and the trauma.

Paul experimented with having cannabis-free days to see if this helped his sleep. He found it difficult to fall asleep in the short term, but after 2 weeks of cannabis-free days and further therapy sessions, his sleep had improved. Paul also discovered that he felt more energetic on days when he did not use cannabis and had fewer intrusive memories. He concluded that cannabis actually did not help him feel less worried.

Outcome

At the end of treatment, Paul no longer suffered from PTSD or depression. He no longer had suicidal thoughts. He occasionally still felt sad when he thought about the tragic death. His relationship with his son had improved. He slept 7 h per night. He had resumed contact with some former work colleagues and was applying for work. At follow-up 1 year later, he had maintained his treatment gains and was working as a paramedic again.

9.3 Special Challenges

9.3.1 Comorbidity

Many patients with PTSD have comorbid conditions that need to be taken into account and addressed in treatment.

Depression that is secondary to PTSD will usually reduce with treating PTSD. However, in some cases, depression may become so severe that it needs immediate attention (i.e., suicide risk) before PTSD treatment can commence. In some trauma survivors (especially after multiple trauma), depression may dominate the clinical picture to the extent that it makes a treatment focus on the trauma impossible and warrants treatment first. Depressive symptoms most likely to interfere with PTSD treatment are severe suicidal ideation, extreme lack of energy, social withdrawal, inactivity, and poor concentration. As in cognitive therapy for depression, the first goal in treatment will be to lift the patient's mood sufficiently so that cognitive therapy can commence, for example, with behavioral activation or antidepressant medication.

Anxiety disorders such as agoraphobia, obsessive-compulsive disorder, generalized anxiety disorder, or social anxiety disorder may be preexisting conditions or develop as a complication of PTSD. The therapist needs to determine whether the comorbid anxiety disorder needs treatment in its own right. If this is the case, the case formulation and treatment plan will need to integrate the treatment of both the PTSD and the other anxiety disorders. It is not always easy to determine in the initial assessment whether patterns of avoidance are part of the patient's PTSD or part of another anxiety disorder. An important question is "What is the worst thing that could happen if you … (encounter the feared situation, do not take special precautions)?" In PTSD, the patient's concern would usually be another trauma ("I will be attacked again," "I will die in another accident"). Other concerns suggest other anxiety disorders, for example, panic disorder ("I will have a heart attack," "I will faint") or social anxiety disorder ("I will make a fool of myself," "People will think I am weird"). It is also often difficult to determine initially whether or not a panic attack or strong anxiety response in a certain situation constitutes a reexperiencing symptom (as patients are usually not aware of the subtle sensory triggers of reexperiencing). In these cases, an ongoing assessment of the need for separate work on the other anxiety disorder is needed as treatment progresses.

In most cases with comorbid anxiety disorders, treatment starts with the CT-PTSD program. An important exception are patients with panic disorder who believe that a catastrophe will happen if they become very anxious or put their body under stress, for example, believing that they will have a heart attack, they will faint, or they will go crazy. These misinterpretations will often need to be addressed *before* working on the trauma memories as these patients are unlikely to engage in treatment or may drop out if their concerns are not addressed.

Many patients with PTSD use alcohol, cannabis, or other substances to numb their feelings or distract themselves from trauma memories. This may include heavy smoking or even consumption of caffeinated beverages in large quantities. Substance misuse is not a contraindication for treatment. Treatment of the PTSD will help patients to reduce their substance use. The therapist will need to incorporate the substance use as a maintaining behavior in the case formulation and address it together with the other maintaining factors in the overall treatment plan. However, if physical substance dependence has developed (i.e., the patient has withdrawal symptoms, tolerance, and acquiring and consuming the substances takes up much of

the patient's life), withdrawal is usually necessary before the patient can benefit from the treatment described here. A useful strategy is to explain to patients with very high substance use that the treatment will only work if they are not intoxicated and do not have a hangover in the session, so that they can process fully what is being discussed and benefit from the treatment. The therapist will need to educate patients about the negative effects of the substance on their symptoms (e.g., alcohol may help the patient get to sleep but will lead to more awakenings at night and feeling irritable and emotional the next day; cannabis may make the patient feel more unreal or more paranoid; smoking leads to brief relief and then increased anxiety; caffeine can lead to irritability, poor sleep, and concentration). The therapist should then ask whether patients would be willing to try to reduce their substance consumption before treatment commences. Many patients will agree to give it a try if they have the prospect of receiving help for their PTSD. These patients often find that the reduction in substance use in itself has a positive effect on their PTSD symptoms. If the patient does not feel able to reduce the substance consumption, treatment will need to target the dependence first.

9.3.2 Dissociation

Patients with PTSD differ in the extent to which they dissociate when trauma memories are triggered. Some feel unreal, feel numb, or have "out-of-body" experiences but remain aware of their current environment. Therapeutic interventions for this milder form of dissociation include normalization of the experience as a common response to trauma (the therapist may want to link dissociation to freezing in animals who face predators) and work on interpretations of the experience such as "I am going crazy," "I live in a different reality to other people," or "The real me died and I am an alien/ghost now." It can also be helpful to guide patients who had "out-of-body" experiences during imaginal reliving to return to their body and perceive the event from the perspective of their own eyes.

Other patients may lose awareness of current reality completely and feel and behave as if the trauma were happening again. This severe form of dissociation can involve significant risk to self and others and needs to be assessed carefully. Adaptations of the treatment procedures include a strong emphasis on trigger discrimination from the outset of therapy and the use of reminders of the *here and now*, i.e., (grounding) objects or strategies that help them stay aware of the present (e.g., touching a small toy or pebble from a beach, using room perfume, consuming a sour sweet or a strong mint, or listening to music when memories are triggered). The therapist explains that strong emotional reactions linked to the trauma can occur without any images of the event itself (e.g., strong urge to leave a situation, strong anger) and guides the patient to become increasingly aware that these are signs that trauma memories are being triggered. The work on trauma memory elaboration is done in a graded way that allows the patient to remain aware of the present safe environment. For example, the therapist and patient may write a narrative in small steps in combination with stimulus control strategies, taking many breaks to remind

the patient of their present safe situation. Precautions that minimize risk to self and others are agreed if indicated, for example, talking to family members about how to spot dissociation and how to bring the patient's attention back to the present. For some patients, for example, survivors of prolonged childhood sexual abuse, training in emotion regulation strategies before the trauma memory work commences can be helpful (Cloitre et al. 2010).

9.3.3 Multiple Trauma

Many patients with PTSD have experienced more than one trauma but not all traumas are necessarily linked to their current PTSD. In order to determine which traumas need to be addressed in therapy, the therapist and patient discuss which traumas are represented in reexperiencing symptoms or are linked to personal meanings that trouble the patient at present. The discussion also involves a first assessment of problematic meanings that link several traumas. For example, Laura who was raped and physically assaulted on several occasions concluded "People can spot that I am an easy target." Patient and therapist discuss which trauma to start with. This would usually be either a trauma that the patient currently finds the most distressing or a trauma when an important problematic meaning originated. A narrative with a time line of the different events or drawing a time line of traumatic and positive life events can be helpful in this discussion. Exploration of which traumas are currently reexperienced guides which ones are addressed with the updating memories procedure. The therapist also notes whether elements from other traumas come up when the patient relives the identified trauma, as these may have influenced its personal meanings. Once the hot spots from the identified trauma have been updated, the therapist checks whether this decreases the reexperiencing of other traumas that carry related meanings. The remaining traumas that are still distressing or relevant for problematic appraisals are then addressed in turn. Dissociation may be pronounced and will need to be addressed with the methods described above.

Work on reclaiming/rebuilding the patient's life is especially important after multiple trauma since these patients may lead very restricted lives and may need much support from the therapist with problem solving about how to best build up a social network, reengage in the job market, etc. Patients may show extreme forms of unhelpful behaviors that need to be addressed, for example, chronic hypervigilance and complete social withdrawal. For patients with long-standing multiple traumas, additional work on self-esteem may be helpful (e.g., keeping a log of things they did well or positive feedback from others).

9.3.4 Physical Problems

The injuries contracted in the traumatic event may lead to ongoing health problems that significantly affect the patient's life. Chronic pain is common (see Chap. 19). Sometimes the traumatic event leads to a permanent loss of function, for example,

difficulty walking, inability to have children, or blindness. Patients often need help in adjusting to these physical problems and the impact they have on their lives. This may require additional treatment strategies such as pain management or using coping strategies similar to those for coping with chronic illness.

For other patients, the physical injuries may have compromised their appearance, which may have negative effects on their job or social life. They may need support in learning to adapt to these changes. It is also not uncommon for patients to perceive a loss of attractiveness or a disfigurement that is greater than the objective change. For these patients, video feedback is helpful as it helps patients update the image of how they believe they appear to others (which is influenced by the trauma memory) with a more accurate image. Patients watch themselves in a short video recording, with the instruction to watch themselves objectively as if they were another person they do not know. For example, a patient who believed that his facial scars were repulsive saw bright red scars when he visualized how he would appear to others. His face was filmed with different red objects in the background. Comparing his face with the objects made him realize that the scars did not look red any longer and were much less visible than he had imagined. Surveys are helpful in testing patients' beliefs about what other people think about their appearance. For example, the patient agreed with the therapist for some other people to watch the video recording and answer a series of questions about his appearance, starting with neutral questions and ending with direct questions about the patient's concern: "Did you notice anything about this person's appearance?" "Did you notice anything about this person's face?" "Did you notice that he had scars?" "What did you think about the scars?" "Did you think he looked repulsive?" The therapist fed back the responses in the following week, and the patient was relieved to find that no one thought he looked repulsive and most people had not even noticed the scars.

Physical injury can lead patients to develop appraisals linked to vulnerability, which can result in hypervigilance and excessive precautions. These are addressed with behavioral experiments where patient drops safety behaviors, such as scanning for danger, to discover the effects on their anxiety. Since the patient may have experienced a loss of ability that does objectively increase their vulnerability, the therapist will ask the patient to consider how much checking would be necessary if they believed they were safe. That is, how much checking is the just right amount? This will likely be much less than the patient has been doing since the trauma, yet more than what they engaged in before the trauma. The therapist will also address memory triggers with trigger discrimination and may encourage the client to use imagery of being safe now.

Other health problems that existed before the traumatic event may influence the course of treatment. For example, patients with some medical conditions, such as poorly controlled diabetes, may find it hard to concentrate for long periods of time and require shorter sessions or sessions with frequent breaks. Patients with chronic heart conditions may require a graded approach in recalling the trauma and visiting the site.

9.4 Evaluations of Cognitive Therapy for PTSD

The efficacy of CT-PTSD has been evaluated in several randomized trials in adults (Ehlers et al. 2003, 2005, 2014, 2022b) and children (Smith et al. 2007; Meiser-Stedman et al. 2016). Table 9.1 gives an overview of key results. A series of randomized controlled trials found that CT-PTSD is highly acceptable to patients

Table 9.1 Evaluations of cognitive therapy for PTSD

	Patient sample	% Dropouts	Intent-to-treat pre- to posttreatment effect size for PTSD symptoms (PDS)[a]	Intent-to-treat % patients in full remission[b]	% Patients with symptom deterioration (PDS)
Randomized controlled trials					
Ehlers et al. (2003)	Adults, acute PTSD following road traffic accidents	0	2.46	78.6	0
Ehlers et al. (2005)	Adults, chronic PTSD, wide range of traumas	0	2.82	71.4	0
Ehlers et al. (2014)	Adults, chronic PTSD, wide range of traumas	3.2	2.53	77.4	0
Smith et al. (2007)	Children, wide range of traumas	0	3.43	92.0	0
Meiser-Stedman et al. (2016)	Children, wide range of traumas	7.1	2.65	71.0	0
Open trials, consecutive samples					
Ehlers et al. (2005)	Adults, chronic PTSD, wide range of traumas	5.0	2.81	85.0	0
Gillespie et al. (2002)	Adults, PTSD following Omagh bombing		2.47		0
Brewin et al. (2010) (subsample treated with CT-PTSD)	Adults, PTSD following London bombings	0	2.29	82.1	0

Table 9.1 (continued)

	Patient sample	% Dropouts	Intent-to-treat pre- to posttreatment effect size for PTSD symptoms (PDS)[a]	Intent-to-treat % patients in full remission[b]	% Patients with symptom deterioration (PDS)
Effectiveness studies					
Duffy et al. (2007)	Adults, chronic PTSD, wide range of traumas, multiple traumas common	20.0	1.25	63.0	1.8
Ehlers et al. (2013)	Adults, chronic PTSD, wide range of traumas, multiple traumas common	13.9	1.39	57.3	1.2

N/A not assessed, *PDS* Posttraumatic Diagnostic Scale, *BDI* Beck Depression Inventory
[a]Cohen's *d*, pooled standard deviation
[b]Patient recovered from PTSD according to diagnostic assessment or clinically significant change on PDS (within two standard deviations of nonclinical population)

(as indicated by very low dropout rates and high patient satisfaction scores). It led to very large improvements in PTSD symptoms (intent-to-treat effect sizes of around 2.5), disability, depression, anxiety, and quality of life. Over 70% of patients fully recovered from PTSD. Outreach trials treating consecutive samples of survivors of the Omagh and London bombings replicated these results (Brewin et al. 2010; Gillespie et al. 2002). It was noteworthy that the percentage of patients whose symptoms deteriorated with treatment was close to zero and smaller than in patients waiting for treatment (Ehlers et al. 2014). This suggests that CT-PTSD is a safe and efficacious treatment.

Ehlers et al. (2013, 2022a) assessed CT-PTSD in consecutive patients in routine care. The samples treated in these studies included a very wide range of patients including those with complicating factors such as serious social problems, living currently in danger, very severe depression, borderline personality disorder, or multiple traumatic events and losses. Therapists included trainees as well as experienced therapists. Outcomes remained very good, with large intent-to-treat effect sizes of 1.25 and higher for PTSD symptoms. Around 60% of the patients who started therapy remitted from PTSD. Dropout rates were somewhat higher than in the trials of CT-PTSD (14–15%), but still below the average for trials of trauma-focused cognitive behavior therapy of 23% (Bisson et al. 2013). Hardly any patients experienced symptom deterioration.

Does CT-PTSD work by changing problematic meanings of the trauma? Kleim et al. (2013) analyzed the time course of changes in symptoms and appraisals. As predicted from the treatment model, changes in appraisals predicted subsequent symptom change, but not vice versa.

Ehlers et al. (2013) investigated whether patient characteristics influence treatment response. Encouragingly, very few did. Only social problems and having reexperiencing symptoms from multiple traumas were associated with a somewhat less favorable response. This was because treatment was less trauma focused, that is, patients and therapists spent more time discussing other problems, such as housing and financial problems, and spent less time working on the patient's trauma memories and their meanings. It remains to be tested whether an extension of the treatment duration (the mean was ten sessions) would have led to better outcomes in these cases. Higher dropout rates were associated with patients' social problems and inexperienced therapists. This suggests that attention to skills that help engage patients in trauma-focused work is needed in therapist training.

Overall, the evaluations showed encouraging results and support CT-PTSD as an evidenced-based treatment.

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