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## Implosive Therapy for the Treatment of Combat-Related PTSD

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*Implosive therapy for the treatment of post-traumatic stress disorder is based on the principle of exposing the patient to trauma-related cues until there is a reduction in the anxiety associated with the cues. It is a relatively specialized procedure regarding which few clinicians receive extensive supervised training, despite the numerous case studies that demonstrate its effectiveness. The present paper addresses a number of procedural issues and offers guidelines for conducting implosive therapy with traumatized combat veterans. Elements of controversy regarding the application of implosive therapy are discussed.*

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**KEY WORDS:** post-traumatic stress disorder; traumatic stress.

*Conditionnement classique*  
**INTRODUCTION**

Virtually everyone who survives a catastrophic or life-threatening event experiences some psychological aftereffects. For some, the sequelae are relatively mild or short-lived. For others, more disabling adjustment problems occur, and may take the form of post-traumatic stress disorder (PTSD). The hallmark feature of PTSD is intrusive reexperiencing of the traumatic event through memories, nightmares, and/or flashbacks. Such reexperiencing is generally accompanied by severe anxiety. **There are several clinical techniques available for deconditioning anxiety responses, including *in vivo* and imaginal**

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systematic desensitization, *in vivo* and imaginal flooding, and implosive therapy. Systematic desensitization is based on the conditioning of competing responses. The patient is taught a formal relaxation technique and later employs this technique while a graduated series of increasingly anxiety-provoking cues is presented by the therapist. By remaining relaxed as successive cues are presented, the patient learns to associate the cues with feelings of relaxation rather than with anxiety. Flooding (*in vivo* or imaginal) and implosive therapy (an extension of imaginal flooding which incorporates hypothesized cues) operate on a different model. Flooding and implosive therapy are based on an extinction model, according to which anxiety-provoking cues are presented continuously. The cues used are inherently safe but evoke anxiety through their association with a past event. Thus, by presenting the cues in the absence of actual threat, the anxiety associated with the cues is eventually reduced.

Not all deconditioning strategies are amenable for use with combat-related PTSD. *In vivo* flooding is generally impractical with this population because the traumatic conditioning took place under truly life-threatening circumstances. Although some cues can be presented *in vivo* (e.g., presence of Vietnamese individuals, Oriental cooking, gunfire), it is neither possible nor desirable to recreate fully a war-zone complete with the threat of death and the presence of dying buddies. Additionally, a true recreation would strengthen conditioning rather than extinguish it, because the fears would be valid fears, not unnecessary anxieties. Imaginal flooding and implosive therapy are more practical than *in vivo* flooding for this population since many of the critical cues can be presented via imagery.

Systematic desensitization and implosive therapy have been widely used with combat veterans and both have been demonstrated to be effective (e.g., Bowen and Lambert, 1986; Keane *et al.*, 1988; Keane and Kaloupek, 1982; Kipper, 1977; Schindler, 1980). Research currently in progress is striving to identify the relevant variables for matching trauma patients with either of these two forms of therapy (Lyons, 1988). One common reason for selecting an implosive approach over desensitization is that, in certain cases, desensitization may not be feasible. Memories of combat may be so potent that they override both the therapist's attempts to present very gradual exposure and the patient's capacity to remain relaxed. For such cases, implosive therapy may be the treatment of choice.

A modification of Stampfl and Levis' (1967) original implosive therapy procedure was first introduced for use in the treatment of combat-related PTSD in 1982 (Fairbank and Keane, 1982; Keane and Kaloupek, 1982). Case studies have reported the effectiveness of the technique in treating both adults (Black and Keane, 1982; Fairbank *et al.*, 1983; Fairbank and Keane, 1982; Keane and Kaloupek, 1982) and children who have experienced combat trauma

(Saigh, 1978, 1987, 1988). A recent study by Keane *et al.* (1988) systematically compared 11 subjects who received implosive therapy versus 13 subjects in a wait-list control group. All subjects were treatment-seeking combat veterans with PTSD. Post-treatment and follow-up data revealed significant differences between the implosive therapy group and the control group on both psychometric measures and therapist ratings. Most notable improvements were in measures of intrusive reexperiencing of the trauma and measures of anxiety and depression. Numbing and social avoidance were unaffected by implosive therapy.

Implosive therapy has been criticized as being an unduly harsh technique that risks retraumatizing the patient. Levis and Hare (1977), however, argue that it is both ethical and appropriate to present any conditioned stimulus cue, no matter how distressing, because the cues themselves have no inherent power to harm the patient. It can also be argued that the therapy does not expose the patient to anything that he is not already exposed to at some level through intrusive reexperiencing. The primary difference is that, in therapy, the cues are presented in a systematic fashion such that extinction can occur.

In an effort to evaluate potential risks associated with flooding or implosive therapy, Shipley and Boudewyns (1980) polled clinicians who had used either of the techniques. Seventy clinicians reported on their use of the procedures to treat a total of 3493 clients with a range of diagnoses. "Serious negative side effects" (psychotic reaction or acute panic during a session, or increased anxiety between sessions) were reported in only nine patients (0.26% of the clients treated). Eighty-seven percent of the clinicians surveyed considered flooding and implosive therapy to have no greater potential for negative side effects than other forms of psychotherapy. It should be noted, however, that many of the cases surveyed may have involved events or fears that were less distressing or less reality-based than the horrific events many PTSD patients have actually endured.

There has continued to be concern that implosive therapy might be too stressful for certain patients, even if it is not so for the majority. Several studies have looked at the utilization of implosion with patients who were thought to be particularly "fragile." Mueser and Butler's (1987) report on PTSD patients who evidenced auditory hallucinations ( $n = 4$ ) suggests such clients may not benefit as much from implosive therapy as PTSD patients with no hallucinations ( $n = 9$ ), and warn that implosive therapy may have an iatrogenic effect in isolated cases (one patient's symptomatology increased during treatment; one patient continued to make suicide attempts). Concerns regarding patients' abilities to tolerate implosive therapy are modulated by a study by Boudewyns and Levis (1975) which showed that even though individuals with low ego strength may benefit less from implosive therapy than patients with higher ego strength, there is no iatrogenic effect of using implosion with

patients with low ego strength. Similarly, case studies by Wald and AuBuchon (1987) have documented the effectiveness of implosive therapy in patients with dual diagnoses of PTSD and schizophrenia. Research by Marshall (1988) indicates that the efficacy of flooding/implosion depends on adequate exposure to the relevant stimuli (i.e., continued cue presentation until anxiety decreases), with sensitization occurring if the duration of exposure is insufficient.

Many of the concerns expressed regarding the use of implosive therapy with PTSD patients derive from a misperception that implosive therapy would be the only therapeutic technique used with a given patient. In actuality, implosive therapy must be embedded in a strong and supportive therapeutic relationship. It appears most effective when used in conjunction with skill-building techniques aimed at developing coping skills and prosocial behavior patterns.

## OVERVIEW OF THE TREATMENT PROGRAM

The present paper outlines the specific details of the way in which implosive therapy is conducted at the Traumatic Stress Disorder Center (TSDC) at the Boston VA Medical Center. Patients are selected for the TSDC program on the basis of a detailed multidimensional assessment which includes structured interviews, psychometric testing, and psychophysiological evaluation (Lyons *et al.*, 1988). Most patients receive multiple diagnoses. Concurrent diagnoses often noted with PTSD include major depressive disorder, substance abuse, and personality disorders. Substance-dependent individuals are referred for substance abuse treatment prior to entering the TSDC program. Psychotic and severely brain-damaged patients are referred elsewhere for treatment.

Treatment at the Center is comprehensive. Emphasis is placed on establishing a relationship with the client. Most patients are extremely fearful of facing their traumatic memories and need the support such a relationship provides. Additionally, many clients have withdrawn from other relationships and receive little social support. The relationship with the therapist can provide a model for reestablishing positive relationships with other significant individuals. In addition to the implosive therapy component of the program, patients also participate in a series of behavioral skills groups (relaxation, problem solving, assertiveness/anger management) aimed at symptom management and the development of appropriate social behavior.

During the initial rapport-building sessions, the therapist obtains a psychosocial history from the patient and briefly discusses the events upon which treatment will focus. The patient is asked to list the traumatic events which

are frequently reexperienced and to rank the traumatic events according to the amount of anxiety associated with each event. This ordering is used to determine which, and in what order, events will be addressed during therapy. The patient is also asked to rate each event on a 0-10 scale to indicate how anxiety-provoking that particular memory is for him (0 = not at all anxiety-provoking, 10 = maximally anxiety-provoking). This Subjective Units of Distress Scale (SUDS) provides a baseline to which later ratings can be compared.

## RELAXATION TRAINING COMPONENT OF TREATMENT

Progressive muscle relaxation (based on the procedure developed by Bernstein and Borkovec, 1973) and guided imagery (based on Lang (1977)) are taught and practiced prior to beginning implosive therapy. The primary goals of relaxation and guided imagery training are (1) to increase rapport between patient and therapist, (2) to test the patient's imaging abilities so that the therapist will know in how much detail traumatic events will have to be described for the patient to reexperience these events sufficiently, and (3) to give the patient practice in imaging scenes. The therapist also suggests that the patient use relaxation as a technique to facilitate sleep, cope with intrusive memories, and deal with anxiety-provoking situations.

Prior to progressive-muscle relaxation, the patient is asked to describe a scene he finds peaceful and relaxing. A quiet beach or mountain top are often felt to be calming and may be suggested if the patient has difficulty generating an idea. It is important to ensure that the image used is not aversive or trauma-related. A beach scene is likely to be inappropriate for someone who cannot swim and is afraid of water, for example. Once a fairly detailed description of the soothing scene has been elicited from the patient, the therapist proceeds with the progressive muscle relaxation induction. During this and subsequent sessions, the room should be quiet, lights dimmed, and window shades pulled. The patient is seated in a recliner. Restrictive clothing (such as ties, belts, or collars) is loosened, and shoes can be removed if the patient so desires.

The therapist guides the patient through the relaxation protocol, sequentially relaxing each arm, facial muscles, neck and shoulders, back, stomach and chest, and each leg. Prior to alerting the subject at the end of the relaxation procedure, the therapist instructs the patient to visualize the pleasant scene previously selected. The therapist repeats segments of the patient's description (e.g., "The water is a deep blue") and elaborates further on that description (e.g., "See the sunlight sparkling off the deep blue of the sea"). Periodically, the clinician asks the patient to elaborate on the

description himself to ensure that all senses are engaged in the imagery. Internal response cues ("What are you feeling?") are used, as well as external stimulus cues (e.g., "What do you smell?"). The therapist builds on the description the patient provides to create an increasingly complex image ("As you listen to those birds, try to pick out how many different songs or calls you hear. Is it one type of bird or are there many?"). If the patient omits a sensory modality in his report, the clinician builds that modality into the scene.

Several training sessions may be needed before the patient sufficiently develops his relaxation/imagery skills. During the final training session, the therapist instructs the patient to imagine doing a specific activity that he could never have actually done before. Flying as if he had wings is generally a very effective image to use unless the patient is afraid of flying. The patient is guided in a tour of his pleasant-imagery scene from the perspective of flying over it. Throughout the scene, the therapist frequently elicits elaboration from the patient and ensures that all senses are engaged. This allows the therapist to assess the patient's ability to experiment with new perspectives via imagery.

Beginning therapists often are reluctant to embellish the scene and to tell the patient what to feel or think during imaging. It is important to remember that the purpose of this exercise is to teach the patient to image in vivid detail and to involve all his senses fully in the experience. Generally, patients find this fairly easy to do once they move past their initial inhibitions. Patients also tend to report that the exercise is a very refreshing and enjoyable one. If a patient has difficulty visualizing the scene clearly or is unable to engage his other senses in the exercise, then additional training is needed before therapy can proceed. In future implosive therapy sessions, the patient will need to be able to reconstruct images of events he has actually experienced and look at them from new perspectives.

When the imagery sequence has been completed, the therapist obtains a rating of how tense the patient feels, then gradually fades the scene and realerts the patient to the present. After relaxation and guided imagery are completed and the patient has a chance to open his eyes, sit up, stretch, etc., the therapist allows time to discuss what the patient has just experienced. Therapists typically spend a few minutes in fairly light conversation to reorient the patient gradually to the hospital setting before ending the session.

### IMPLOSIVE THERAPY COMPONENT OF TREATMENT

Implosive therapy sessions can average 2 to 2½ hr each. This provides massed practice and permits presentation of the lengthy scenes frequently reported by combat veterans. Because patients may become sensitized to

memories that they have been trying to suppress, initial implosion sessions may cause a temporary increase in symptomatology. It is important for the patient to progress rapidly past this to a point where significant symptom relief is attained. Thus, it is recommended that sessions be conducted at least once or twice per week.

### Rationale

The first implosion session begins with a review of the rationale for implosive therapy [i.e., presentation of the conditioned stimulus in the absence of reinforcement of the anxiety response leads to extinction of the anxiety response; Levis and Hare (1977) provide an excellent discussion of the rationale]. The patient is reassured that he will be starting with (one of) his least distressing scene(s) and that the therapist will be extremely careful to present the cues gradually, at a pace with which he will be able to cope. It is emphasized that it is necessary to face the intrusive memories in order to learn to cope with them more effectively. If the client appears resistant, the therapist points out that the client has been trying to avoid the memories for many years and they have not gone away. It is made clear to the patient that the memories will not be erased; rather, the goal of implosive therapy is to reduce the intrusive and distressing quality of the memories. It is generally appropriate for the patient to feel saddened or somewhat upset by memories of the trauma, and implosive therapy will not remove such feelings. The patient will not forget his traumatic experiences as a result of implosive therapy, but successful therapy will enable the patient to recall the events without the memories disrupting his life as severely.

It is often necessary to emphasize the difference between reexperiencing the trauma under the guidance of the therapist and reexperiencing as it has usually occurred for the patient through intrusive recall, nightmares, and/or flashbacks. On his own, it is likely that the patient has only reexperienced portions of the traumatic memory. In the past, the patient has probably either tried to forget all or part of the trauma, or else competing emotions (e.g., anger) have interfered with reexperiencing the anxiety response. Often significant segments of the memory are inaccessible except during states of high anxiety. Because the anxiety response to the entire constellation of traumatic cues is never extinguished, the anxiety response has been continually reconditioned in the past [conservation of anxiety (Solomon *et al.*, 1953; Solomon and Wynne, 1954)]. Under the therapist's guidance during implosion, however, the goal is to continuously present each aspect of the trauma until it no longer elicits intense anxiety.

In explaining implosive therapy to the patient, an analogy can be drawn between intrusive reexperiencing and a record on an automatic turntable.

Once an album is placed on the turntable and begins to play, lifting the stylus off the album does not turn the power off. The album can resume play as soon as the needle is again on the record, and it can be started over repeatedly. The power only shuts off when the tone arm reaches the end of the record. Thus, if the patient allows the album (traumatic memory) to play through to the end rather than lifting the tone arm (trying to avoid the memory), the music (intrusive reexperiencing) is able to come to an end. Most patients seem to recognize that such cognitive processing is necessary, even though they initially may be very reluctant to embark on such a course.

### Information Gathering

The patient will have already described and rank-ordered his traumatic events during previous sessions. That ordering is verified with the patient at this point, and therapist and client select a scene the patient describes as causing minimal distress. Usually this will be the least distressing scene the patient has listed. The patient must describe the scene in sufficient detail so that it can be presented vividly during implosion. The patient is asked to re-rate the degree of anxiety associated with this memory (0-10 SUDS rating). This subjective rating will be used as the within-session baseline.

### Relaxation and Preparatory Suggestions

Using the relaxation procedure described above, the therapist induces deep muscle relaxation. Once the patient is fully relaxed, he is asked to rate his current tension on the 0-10 scale discussed earlier. Therapy proceeds directly from the relaxation protocol to implosive therapy without realerting the patient. Thus the patient is still reclining, with eyes closed, throughout the implosive procedure.

The therapist introduces implosion by providing the patient with a number of hypnotic-like suggestions. These suggestions provide the patient with a set of expectancies which help him to comply with the treatment procedure. In a calming voice, the clinician presents the following statements:

You are now going on a journey back in time, back to Vietnam. You will be able to see, hear, smell, taste, and feel everything as if you are really there, but always in the back of your mind you'll know it's all happening in your imagination where it can't hurt you now. You will be able to go through each scene to the very end, and it will be easy for you to do this. You will be able to reexperience the entire event without leaving the chair, without opening your eyes. You will always be able to hear my voice and experience everything I tell you to. Other sounds from the hallway, etc. will not bother you.

The therapist repeats each suggestion, varying the order and phrasing, so that each suggestion is given at least twice.

### Setting the Scene

The therapist describes the situation in which the trauma occurred, based on the patient's earlier report. It is important to present cues which engage all sensory modalities. The clinician continually elicits feedback and elaboration from the patient (e.g., "You're ready to go up in the chopper. Look around you. Who else is there? What are they doing?"). Both stimulus cues (visual, auditory, olfactory, and tactile) and response cues (cognitive, emotional, somatic, kinesthetic) are necessary to ensure that the patient is reexperiencing the scene fully. Generally, it is most effective to focus initially on very concrete stimulus cues, such as sights and sounds. As the client becomes increasingly involved in the scene, the shift to response cues can be made ("You can feel the anticipation start to build", "What are you thinking?").

### Presenting Traumatic Cues

Once the scene is set and it is evident that the patient is able to experience the scene clearly, the therapist begins to move the action ahead to the actual trauma. Throughout the procedure, the clinician must be supportive, proceeding slowly and reassuring the patient when necessary. SUDS ratings are obtained periodically and are used to gauge the intensity of cue presentation. The goal is to present trauma-related cues to elicit the patient's anxiety, maintain the patient's focus on that particular set of cues until anxiety diminishes, then repeat the procedure with increasingly anxiety-provoking cues until even the most provocative cues no longer elicit significant anxiety.

Following the model outlined by Levis and Hare (1977), the therapist presents "symptom-contingent traumatic cues" first. Symptom-contingent cues are those environmental cues that lead up to, are associated with, or depict the traumatic event, and that elicit heightened arousal when presented. As the scene is developed and the anxiety associated with the symptom-contingent cues diminishes, the clinician focuses increasingly on "reportable, internally elicited cues." These are the affect, cognitions, and somatic sensations associated with the trauma. If symptom relief is obtained through presentation of these first two categories of cues, it is not necessary to proceed with other cues. However, if memories of the event continue to evoke anxiety, "hypothesized sequential cues" can be presented (later in the session or in subsequent sessions). Such cues represent speculations on the therapist's part regarding components of the event which the patient has not reported. Hypothesized cues often address issues such as guilt, shame, and fear of reprisal. Hypothesized psychodynamic cues which link psychopathology to early attachments and childhood conflicts, while seen as potentially useful

in the treatment of other disorders, have not to date been documented in treating combat-related PTSD.

With all cues, the critical test is not whether they are accurate in recreating the situation as it objectively occurred. The critical element is whether the cue elicits trauma-related anxiety. If a cue elicits such anxiety, then the cue is important to focus on in therapy. If it does not elicit anxiety, it is regarded as less important.

Questions such as "What happened then?" are useful in moving a scene forward during implosion. As soon as the patient becomes active in the scene, the therapist shifts to the present verb tense ("What is happening now?") to reinforce the immediacy of the experience. Cues such as "Move the scene ahead now. Feel the chopper lifting off" or "Slow it down now. Focus on . . . can be used to set the pace. The clinician uses forceful voice inflection and commands when necessary ("You will feel the chopper lifting off. . . NOW You NOW are taking off. You feel it deep in your stomach.") The therapist must not be afraid to tell the patient what to experience, using the present tense. It is important, however, to elicit feedback to ensure that the patient is able to follow these commands (e.g., "Tell me how that feels"). Clarifications of the situation or response are also effective cues ("You never know what'll happen up there", "It's not safe anywhere"). Use other people's responses in the scene to build emotional responses ("Look at his face. He heard it too. You see it in his eyes. . . you see his fear. How does that make you feel?").

The therapist watches for twitches, grimaces, or any other signs of sudden anxiety and determines the relevant cues (e.g., "What just happened?"). Throughout the presentation, the clinician asks the patient to rate his anxiety. Intonation is used to set the mood. The therapist speaks louder and faster as the climax of the scene approaches. The pace should be quick, with a staccato tone. Anything that would slow the climax of the scene (such as excessive repetition of cues) is to be avoided. The therapist then uses a calmer voice to maintain the patient at critical points in the memory. It is crucial that the therapist does not back away from these segments of the scene ("Stay with it. Don't let yourself avoid it. He's dying and there's nothing more you can do"). As slight decreases in anxiety are noted, the patient is reinforced for his efforts to confront the situation and he is encouraged to continue through all elements of the memory. Focus is maintained on each critical point of the memory until the patient's anxiety diminishes (as reflected by SUDS ratings and observation of the patient). Throughout the procedure, the therapist presents a variety of stimulus and response-based cues and continues to elicit the patient's active input and feedback.

Clinically, two mistakes are critical to avoid. First, the therapist generally should not ask the patient to be aware of something that requires him to take a third-person view of the scene, e.g., the therapist would not typi-

cally ask the patient to see his own facial expression. Second, the clinician must not allow the patient to reduce his anxiety by changing the scene or moving it quickly ahead in time to skim over the most traumatic point. The goal of implosive therapy is to obtain anxiety reduction (e.g., as indicated by SUDS ratings) by focusing on each element of the trauma until that element no longer elicits as much anxiety. To obtain anxiety reduction by shifting away from the most traumatic cues is no more effective in attaining extinction of the anxiety than past episodes of intrusive recall of the trauma have been. Furthermore, such avoidance of the trauma under the guidance of the therapist could possibly be counter-therapeutic since it might strengthen the patient's belief that the trauma is too horrible to manage (Levis and Boyd, 1985).

If the patient becomes anxious during cue presentation and tries to avoid the scene, the clinician works to persuade him to continue ("You're doing fine. You're doing what you need to do to get better"). The therapist can then proceed with the relevant cues which were being presented prior to the resistance.

Overcoming resistance of this type is critical so that the patient does not avoid the images presented. However, if a patient remains insistent that he does not want to continue, the therapist is ethically obligated to allow him to stop. In many cases, the client's willingness to complete the procedure will depend on his trust in the therapist. Thus, the importance of a strong therapeutic relationship should not be underestimated.

The first time through the scene, the therapist lets the patient direct the scene as much as possible ("What's happening now? What are you doing? What do you want to do?"). The present tense is used in recreating the scene. ("Do you tell Sarge you think you saw someone in the treeline?" If the patient simply answers "Yes," prompt "Go ahead, tell him.")

Once the patient's anxiety has decreased after continuous presentation of the traumatic cues, the therapist obtains another SUDS rating before proceeding. If time and the patient's emotional state allow, the scene is repeated. "Back it up now. You're back at the beginning, only this time it's even clearer." The second time through, the therapist structures the scene more to focus the patient on the critical elements. "You feel the fear. Where do you feel it? Stay with those feelings. . . You can feel it in your stomach. . . Your heart is pounding. . . You feel your breathing start to choke as your chest tightens. . . Feel the pressure." Emphasis is placed on cognitions as well as on emotions and somatic responses. "You wonder if you'll be able to stop the bleeding in time. Stay with it. What thoughts run through your mind?"

During subsequent presentations of the traumatic cues (within the session or later sessions), hypothetical cues are developed and variations of the actual event can be constructed. For example, if it seems likely that fear of

rejection and denunciation underlie the patient's anxiety, the therapist might present a scene in which the client's fears actually occur, i.e., his buddies accuse him of cowardice, negligence, etc.

Once anxiety reduction is achieved, the therapist lets the scene run through to its natural conclusion (e.g., the firefight ends and the work of collecting gear and tallying losses is completed). As the scene winds down, SUDS ratings are obtained frequently. It is not unusual to find that the most distressing part of the traumatic experience is actually something that occurred after the point that the patient originally reported was most upsetting to him. Often this latter component is one the patient has denied or been unable to recall previously. A common example involves feelings of shame/guilt, e.g., the patient survived the actual life-threatening event with moderate anxiety, but then experienced extreme anxiety shortly thereafter when he realized some action of his may have precipitated the disaster. The clinician must be alert for such anxiety increases after the "traumatic event," and never conclude the session when anxiety is high or increasing. Continued focus on the cues must be maintained until the anxiety subsides.

In scheduling sessions, it is critical to allow at least 30 min more time per session than is projected to be necessary so that unexpected cues that the patient reveals/becomes aware of during the session can be processed adequately. More than one session per traumatic memory is frequently needed to deal with all anxiety-evoking cues.

### Relaxation and Debriefing

The relaxation protocol is repeated, this time including the alerting procedure to bring the patient's attention back to the present. After the implosion and relaxation procedures, the therapist spends some additional time with the patient. It is appropriate to point out to the patient that his anxiety ratings in response to the last presentation of cues were less than his response the first time the scene was presented, even though the last presentation was more detailed and intense. A warning to the patient that he is likely to feel anxious following the session and may dream about the trauma is often advised. The patient can be encouraged to use such reexperiencing to practice dealing with the memories on his own. An inquiry regarding how the patient would respond if he experienced increased distress following the session can lead to a discussion of coping strategies (including progressive muscle relaxation and guided imagery) and ways in which the patient can attain situational control of some anticipated stressors.

Some patients like the therapist to sit quietly with them for a few minutes before they leave the treatment room. This gives them some time to consoli-

date the experience and reorient themselves before returning home or to ward activities. It also helps extinguish their usual response of running away from other people as soon as possible when they are struggling to deal with a memory that has been evoked.

Ward staff/significant others should be advised that the patient may be more symptomatic following initial sessions, and that agitation at this point does not signify that the treatment is iatrogenic. Anxiolytic medication may be helpful on an occasional basis, particularly following the first few implosive sessions when traumatic cues have been focused on but significant extinction of the anxiety response has yet to occur.

### Subsequent Sessions

Implosive therapy is generally continued for at least several sessions, following the procedure described above. Each session includes relaxation, implosion, then relaxation. This format deviates from that suggested by Stampfl and Levis (1967) in its inclusion of the relaxation phases. This modification was made to make the technique more suitable for use with severely traumatized clients.

The preparatory suggestions ("You are going back in time . . .", etc.) are repeated during each session. Additional information gathering is necessary whenever beginning work on a new traumatic event. The patient's ratings of his traumatic events are used in selecting the order in which to address the events, since it is usually preferable to present the least distressing events first (although the patient is given some control in this decision).

### DISCUSSION

Implosive therapy is based on the principle of exposing the patient to trauma-related cues until the anxiety associated with the cues is extinguished. The theorized mechanism of operation and the actual format of the therapy session distinguish implosive therapy from other therapeutic interventions. However, the issues addressed in a typical implosive session are similar in many respects to those that would be addressed under other treatment models. For example, the practice in implosive therapy of presenting the traumatic event from multiple angles (to ensure exposure to all necessary cues) can be viewed as submitting maladaptive, trauma-related schemata to examination and challenging inflexible, incomplete views and unrealistic expectations the client may have, similar to Kovacs and Beck's (1984) cognitive therapy model for treating depression. Alternatively, the changes in traumatic imagery that evolve during treatment, as the focus shifts from direct reexperiencing to more

symbolic representations of the trauma, parallel the changes in imagery Wilmer (1986) has described in the course of Jungian analysis with Vietnam veteran patients. Traumatic imagery has also been used within a general psychodynamic framework in the treatment of PTSD (Grigsby, 1987), with the emphasis of abreaction and working through rather than on extinction.

As noted earlier, research has shown implosive therapy to be an effective modality for the treatment of PTSD. Continued investigation to identify predictors of treatment efficacy in individual cases is called for. Indices of hypnotizability or of the patient's ability to image vividly might be useful. Possibly implosive therapy is most effective with clients who are in a phase of the disorder marked by frequent intrusive reexperiencing of the trauma, rather than for patients whose symptoms tend to emphasize guilt, avoidance, and denial. The length of time that has elapsed since traumatization might also prove to be a variable worthy of exploration. It is possible that chronic patients might have developed a network of collateral interpersonal problems that would be more resistant to change.

In sum, implosive therapy is a clinical technique with demonstrated effectiveness in treating PTSD. It is an intensive technique, and demands a great deal of energy from both the patient and the therapist. When marked decreases in longstanding psychopathology result, however, both patient and clinician are likely to be convinced that the effort was well worth while.

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### REFERENCES

- Bernstein, D. A., and Borkovec, T. D. (1973). *Progressive Muscle Relaxation Training*, Research Press, Champaign, Ill.
- Black, J. L., and Keane, T. M. (1982). Implosive therapy in the treatment of combat related fears in a World War II veteran. *Behav. Ther. Exp. Psychiat.* 13: 163-165.
- Boudewyns, P. A., and Levis, D. J. (1975). Autonomic reactivity of high and low ego-strength subjects to repeated anxiety eliciting scenes. *J. Abnorm. Psychol.* 84: 682-692.
- Bowen, G. R., and Lambert, J. A. (1986). Systematic desensitization therapy with post-traumatic stress disorder cases. In Figley, C. R. (ed.), *Trauma and Its Wake. Vol. II*, Brunner/Mazel, New York, pp. 264-279.
- Fairbank, J. A., Gross, R. T., and Keane, T. M. (1983). Treatment of post-traumatic stress disorder: Evaluating outcome with a behavioral code. *Behav. Mod.* 7: 557-568.
- Fairbank, J. A., and Keane, T. M. (1982). Flooding for combat-related stress disorders: Assessment of anxiety reduction across traumatic memories. *Behav. Ther.* 13: 499-510.
- Grigsby, J. P. (1987). The use of imagery in the treatment of post-traumatic stress disorder. *J. Nerv. Ment. Dis.* 175: 55-59.
- Keane, T. M., Fairbank, J. A., Caddell, J. M., and Zimering, R. T. (1988). Implosive (flooding) therapy reduces symptoms of PTSD in Vietnam combat veterans. Manuscript submitted for publication.
- Keane, T. M., and Kaloupek, D. G. (1982). Imaginal flooding in the treatment of post-traumatic stress disorder. *J. Consult. Clin. Psychol.* 50: 138-140.
- Keane, T. M., Zimering, R. T., and Caddell, J. M. (1985). A behavioral formulation of post-traumatic stress disorder in Vietnam veterans. *The Behavior Therapist.* 8: 9-12.
- Kipper, D. A. (1977). Behavior therapy for fears brought on by war experiences. *J. Consult. Clin. Psychol.* 45: 216-221.
- Kovacs, M., and Beck, A. T. (1978). Maladaptive cognitive structure in depression. *Am. J. Psychiat.* 135: 525-533.
- Lang, P. J. (1977). The psychophysiology of anxiety. In Akiskal, H. (ed.), *Psychiatric Diagnosis: Exploration of Biological Criteria*, Spectrum, New York.
- Levis, D. J., and Boyd, T. L. (1985). The CS exposure approach of implosive (flooding) therapy. In Turner, R. M., and Ascher, L. M. (eds.), *Evaluating Behavior Therapy Outcome*, Springer, New York.
- Levis, D. J., and Hare, N. A. (1977). A review of the theoretical rationale and empirical support for the extinction approach of implosive (flooding) therapy. In Hersen, M., Eisler, R. M., and Miller, P. M. (eds.), *Progress in Behavior Modification. Vol. 4*, Academic Press, New York.
- Lyons, J. A. (August 1988). Treatment matching for PTSD patients: Systematic desensitization vs. implosive therapy. Paper presented in Penk, W., and Robinowitz, R. (Chairs), *Programmatic Treatment of Vietnam Combat-Related PTSD*, Symposium presented at the American Psychological Association annual convention, Atlanta, Ga.
- Lyons, J. A., Gerardi, R. J., Wolfe, J., and Keane, T. M. (1988). Multidimensional assessment of combat-related PTSD: Phenomenological, psychometric, and psychophysiological considerations. *J. Traum. Stress* 1: 373-394.
- Marshall, W. (1988). Behavioral indices of habituation and sensitization during exposure to phobic stimuli. *Behav. Res. Ther.* 26: 67-77.
- Mowrer, O. H. (1974). On the dual nature of learning: A reinterpretation of "conditioning" and "problem-solving." *Harvard Ed. Rev.* 17: 102-148.
- Mowrer, O. H. (1960). *Learning Theory and Behavior*, Wiley, New York.
- Mueser, K. T., and Butler, R. W. (1987). Auditory hallucinations in combat-related chronic post-traumatic stress disorder. *Am. J. Psychiat.* 144: 299-302.
- Saigh, P. A. (1978). In vitro flooding of childhood post-traumatic stress disorders: A systematic replication. *Prof. School Psychol.* 2: 135-146.
- Saigh, P. A. (1987). In vitro flooding of an adolescent post-traumatic stress disorder. *J. Clin. Child Psychol.* 16: 147-150.
- Saigh, P. A. (1988). In vitro flooding of a childhood post-traumatic stress disorder. *Social Psychol. Rev.* In press.
- Schindler, F. E. (1980). Treatment by systematic desensitization of a recurring nightmare of a real life trauma. *J. Behav. Ther. Exp. Psychiat.* 11: 53-54.
- Shipley, R. H., and Boudewyns, P. A. (1980). Flooding and implosive therapy: Are they harmful? *Behav. Ther.* 11: 503-508.
- Solomon, R. L., Kamin, L. F. and Wynne, L. C. (1953). Traumatic avoidance learning: The outcomes of several extinction procedures with dogs. *J. Abnorm. Social Psychol.* 48: 219-302.
- Solomon, R. L., and Wynne, L. C. (1954). Traumatic avoidance learning: The principles of anxiety conservation and partial irreversibility. *Psychol. Rev.* 61: 353-385.
- Stampfl, T. G., and Levis, D. J. (1967). Essentials of implosive therapy: A learning-theory-based psychodynamic behavioral therapy. *J. Abnorm. Psychol.* 72: 157-163.



- Wald, L. R., and AuBuchon, P. G. (1987). Can flooding treatment be successfully administered with psychotic individuals? Unpublished manuscript, VA Medical Center, Charleston, SC.
- Wilmer, H. A. (1986). The healing nightmare: A study of the war dreams of Vietnam combat veterans. *Quadrant* 19: 47-62.

## Being Held Hostage in The Netherlands: A Study of Long-term Aftereffects

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*In the 1970s, The Netherlands were confronted with eight large-scale hijackings, in which a total of nearly 500 persons were held hostage. In 1985, the long-term aftereffects (up to 9 years) of these hostage takings were studied. Approximately one-third of the ex-hostages studied were found to suffer from negative effects resulting from the hostage-taking and mentioned symptoms related to DSM-III categories "post-traumatic stress disorder" and "generalized anxiety disorder," and a variety of medical symptoms. Twelve percent of the ex-hostages were found to be still in need of aftercare and help, even though nearly all of them had had several contacts with professional health care workers in the period following the hijacking. A number of variables are described which are related to lower degrees of well-being and more negative aftereffects in ex-hostages, thereby suggesting the predictability of greater vulnerability in some hostages.*

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**KEY WORDS:** hostage-taking; aftereffects (long-term); human stress; life-events; terrorism; kidnapping.

### INTRODUCTION

In the 1970s, citizens of The Netherlands were confronted with an alarming number of terrorist acts. Eight large-scale hijackings took place, in which a total of nearly 500 persons were held hostage. Some of the hostages were killed, some physically injured, but most regained their freedom, physically unharmed, after a period of time ranging from a few hours to several weeks.

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