Prolonged Exposure Therapy for Combat- and Terror-Related Posttraumatic Stress Disorder: A Randomized Control Comparison With Treatment as Usual

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ABSTRACT

Objective: Empirically based studies have demonstrated that prolonged exposure therapy effectively reduces posttraumatic stress disorder (PTSD) symptoms in a vast range of traumas, yet reports of the efficacy of such therapies in combat- and terror-related PTSD are scarce. In this article, we examine the efficacy of prolonged exposure therapy in combat- and terror-related PTSD in comparison to treatment as usual (TAU).

Method: Between July 2002 and October 2005, 30 patients of a trauma unit within a psychiatric outpatient clinic were recruited and randomized into prolonged exposure versus TAU therapies. Patients were diagnosed with chronic PTSD (Mini-International Neuropsychiatric Interview criteria) related to combat- (n = 19) or terror-related (n = 11) trauma. Main outcome measures included symptoms of PTSD and depression, as measured by the PTSD Symptom Scale–Interview Version and the Beck Depression Inventory.

Results: Posttraumatic stress disorder symptom severity was significantly lower in patients who received prolonged exposure therapy in comparison to patients who received TAU ($F_{1,24} = 35.3$, $P < .001$). Similar results have emerged in measures of depression and state and trait anxiety. In addition, a significant change from pretreatment to follow-up was found for the prolonged exposure group ($F_{1,14} = 80.5$, $P < .0001$), but not for the TAU group ($F_{1,10.3} = 0.6$, $P = .44$).

Conclusions: Findings indicate that, similar to PTSD related to other types of trauma, prolonged exposure therapy is beneficial in the amelioration of combat- and terror-related PTSD symptoms. In addition, prolonged exposure was superior to TAU in the short- and long-term reduction of PTSD and depression symptoms.

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The rise in worldwide combat and terror violence during the last decade has led to an increasing awareness regarding the mental consequences of combat- and terror-related traumas. For example, the wars in Afghanistan and Iraq have led to an increasing number of people suffering from posttraumatic stress disorder (PTSD) in countries involved in these wars. Indeed, the rates of PTSD among veterans of Iraq and Afghanistan are conservatively estimated to be 11% and 18%, respectively, and suspected to be underreported.[1] In many countries around the world (eg, England, Indonesia, Israel, Jordan, Lebanon, Pakistan, and Spain), thousands of civilians have been exposed, directly or indirectly, to terrorist attacks, but the number of people suffering from PTSD related to these attacks has not been determined. These concerning numbers call for the urgent need for efficacious and time-limited treatment for people who suffer from combat- and terror-related PTSD. One candidate treatment is a particular program of cognitive-behavioral therapy (CBT) called prolonged exposure.

Several short-term CBTs have been found to be effective for chronic PTSD in randomized studies.[2–4] The efficacy of variants of exposure therapy has been replicated across many studies with men and women who have experienced a wide range of traumatic events. Accordingly, a recent report by the Institute of Medicine[5] noted that there was sufficient evidence to conclude the efficacy of exposure therapies in the treatment of PTSD. Moreover, exposure therapy was the only treatment modality that achieved that level of empirical evidence.

Among all CBT programs for PTSD, prolonged exposure therapy, which was developed by Foa and colleagues,[6] has had the largest number of replications conducted in expert centers around the world[6–15] and the largest number of comparisons to other trauma-focused, evidence-based treatments (eg, stress inoculation training, eye movement desensitization and reprocessing, cognitive processing therapy). Prolonged exposure has been successfully disseminated to community clinical settings, producing treatment gains that are maintained through follow-up,[9,11,14,15] and it is tolerated well by patients[16] and is also preferred by patients over pharmacotherapy.[17] However, no comparison between prolonged exposure and treatment as usual (TAU) has been conducted to date. Such a comparison is essential for evaluating the relative efficacy of prolonged exposure,[18] since it has important implications for public health. The present article reports on the results of such a comparison.

The efficacy of prolonged exposure therapy has been assessed in various types of traumas, both as a single therapy and in combination with other treatments. In a study examining the efficacy of prolonged exposure on female assault victims suffering from chronic PTSD versus waitlist participants,[9] prolonged exposure was found to reduce PTSD severity, depression, and anxiety, as well as to be more beneficial than other types of therapy. Marks et al[15] examined the effect of prolonged exposure on various types of traumas and found both prolonged exposure and cognitive restructuring to be effective in reducing symptoms of PTSD and superior to relaxation training. Efficacy of prolonged exposure was also

examined in rape victims suffering from chronic PTSD, and it was compared to stress inoculation training therapy, supportive counseling, and waitlist.[6] Prolonged exposure was the most beneficial treatment in reducing PTSD symptoms at follow-up in comparison to the other treatments. Prolonged exposure was also effective among refugees suffering from PTSD both immediately after treatment and at follow-up.[14] Schnurr et al[13] compared prolonged exposure to present-centered therapy in female veterans and found that both treatments reduced PTSD, but prolonged exposure showed superiority on several indices. Notably, the PTSD of most of the women in this study was related to sexual assault and not to combat.

The efficacy of several exposure therapy programs was examined with male combat veterans with mixed results. However, most of these studies were conducted before rigorous methods for treatment research, such as those proposed by Foa and Meadows,[19] were commonly employed, and programs varied considerably in procedures across studies.[20,21] In a large study by Schnurr et al,[22] 360 Vietnam male veterans were randomly assigned to receive trauma-focused group psychotherapy or a present-centered group therapy that avoided trauma focus. Trauma-focused group psychotherapy included 2 sessions devoted to exposure and homework involving listening to audiotape of the exposure session for 8 additional times. No differences between the 2 therapy groups were found, with very modest improvement in the trauma-focused group psychotherapy group in avoidance and numbing. The authors suggested that insufficient exposure time (2 group sessions) may explain the failure to find significant improvement. To date, no randomized controlled study has been conducted on the efficacy of prolonged exposure in male veterans. Given the consistent success of prolonged exposure across different traumatized populations, this treatment was selected for use with the patients in the present study, who had combat- and terror-related PTSD.

In this article, findings are presented from a study that compared the efficacy of prolonged exposure and TAU (which includes psychodynamic treatment and/or medication and counseling) with patients suffering from chronic PTSD following combat- or terror-related trauma. Ninety-three percent of the participants were men; two-thirds of them had PTSD related to combat, and one-third had been exposed to terrorism. The data were collected in a psychiatric clinic composed of dynamically oriented staff. Staff received either a 3- or 5-day workshop in conducting prolonged exposure therapy by the first and second authors (N.N., E.B.F.) and were supervised by the first author (N.N.). The first author was trained to be a prolonged exposure supervisor for 5 weeks at the Center for the Treatment and Study of Anxiety at the University of Pennsylvania, Philadelphia, where prolonged exposure was developed. Thus, this study contributes to the field in 3 ways: (1) it examined prolonged exposure in combat and terror victims, (2) it investigated the dissemination of prolonged exposure to a Veteran's clinic that was not CBT-oriented, and (3) it examined the short- and long-term efficacy of prolonged exposure compared to TAU.

METHOD

An institutional review board on site approved the study protocol. Participants gave written informed consent prior to enrollment.

Participants

To be eligible for the study, patients had to be diagnosed with PTSD related to combat or terror, and the traumatic event must have occurred at least 3 months before this diagnosis. In addition, patients had to have a score of 25 or more on the PTSD Symptoms Scale–Interview Version (PSS-I)[23] in order to ensure that the patients' symptoms merited intervention. If treated with medication, patients had to be on a stable regimen for at least 3 months prior to their pretreatment evaluation. Exclusion criteria included current active substance dependence, current psychotic symptoms, bipolar disorder, or severe dissociative disorder. Patients deemed at high risk for suicidal behavior (ie, with intent, plan, or both) were also excluded.

Between July 2002 and October 2005, 84 patients from the Veteran Administration were under the psychiatric care of the first author (N.N.), a psychiatrist in the outpatient clinic of the psychiatric trauma unit at Chaim Sheba Medical Center (Tel Hashomer, Israel). Among these 84 patients, 51 met criteria for PTSD, 6 of whom had prior exposure therapy and were therefore excluded from the study. Forty-five patients were assessed for study eligibility; 15 patients did not meet inclusion criteria (Figure 1 provides a detailed description). The remaining 30 were randomized to either prolonged exposure or TAU by 1 of the authors (L.F.) through the use of a computerized program. See Table 1 for descriptive information on the study sample. After the study had been completely described to the subjects, written informed consent was obtained. The study was registered with ClinicalTrials.gov (NCT00229372).

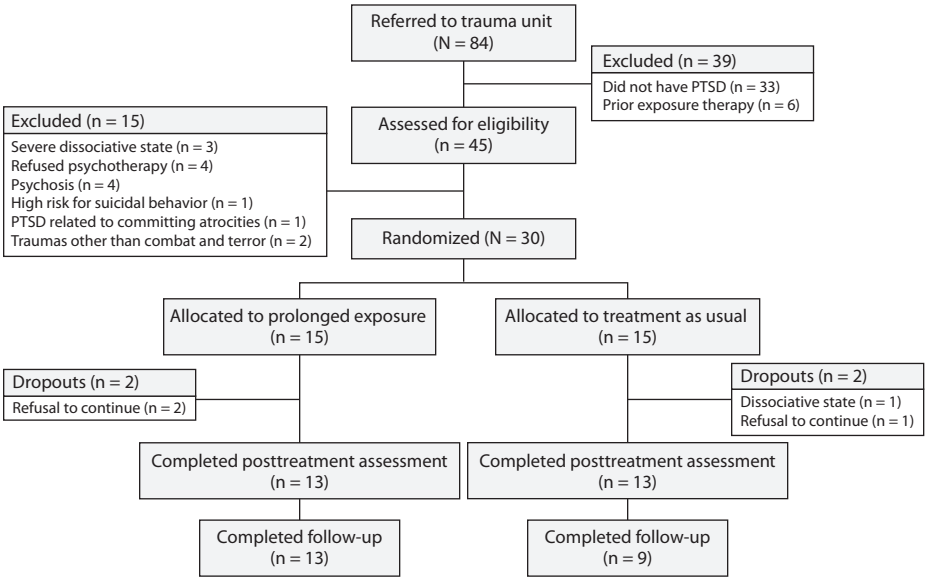
Measures

Assessments of current PTSD symptoms were conducted by a trained master's degree psychologist who was blind to treatment assignment. Assessments were conducted before and after treatment and at least a 12-month follow-up. Outcome assessment included the interview and self-report measures described below.

Interview measures. The Mini-International Neuropsychiatric Interview. The Mini-International Neuropsychiatric Interview is a short, structured diagnostic interview designed for the screening of the occurrence of Axis I disorders.[24] The interview instrument is designed to cover 17 major Axis I disorders and has good correlation with the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (*DSM-IV*) Axis I Disorders.[25]

PTSD Symptom Scale–Interview Version. The PSS-I[23] is a semistructured interview that consists of 17 items corresponding to the *DSM-IV* PTSD symptoms. Items are rated on 0–3 scales for combined frequency and severity in the past 2 weeks. Interrater reliability for PTSD diagnosis ($\kappa = 0.91$)

Figure 1. Flow of Participants Through the Trial



Abbreviation: PTSD = posttraumatic stress disorder.

and overall severity ($r = 0.97$) are excellent.[23] Five percent of the audiotaped PSS-I interviews in the present study were randomly selected for rating by a second evaluator. The interrater reliability was 0.94.

Self-report measures. Beck Depression Inventory. The Beck Depression Inventory (BDI)[26] is a 21-item self-report inventory designed to measure symptoms of depression, and it addresses the intensity of cognitive, affective, somatic, and performance-related symptoms with regard to depression. The BDI is rated on a 4-point scale, with the total score ranging from 0 to 63. It is a widely used measure of depression severity, and its reliability and validity are well documented.[27,28]

State-Trait Anxiety Inventory. The State-Trait Anxiety Inventory (STAI)[29] is a 40-item self-report measure containing 20 items for state anxiety (STAI-S) and 20 items for trait anxiety (STAI-T). The STAI is a well-established tool and has been demonstrated to have strong validity and reliability.

Posttraumatic Cognitions Inventory. The Posttraumatic Cognitions Inventory (PTCI)[30] is a 36-item measure of trauma-related thoughts and beliefs that includes 3 factors: negative cognitions about the self, negative cognitions about the world, and self-blame. The 3 factors show excellent internal consistency, test-retest reliability, and strong convergent validity.

Procedure

Participants were patients of the trauma unit in the Chaim Sheba Medical Center in Israel. Patients were initially referred to treatment either by psychiatrists of the trauma unit or by therapists from other mental health clinics. After an initial screening assessment conducted by a senior psychiatrist (N.N.), eligible patients completed all assessments described above. As part of the natural course of clinical management in a public psychiatric clinic, 23 of the 30 randomized patients received TAU once per week for 3 to 66 months prior to entrance into the study. There was no difference in symptom severity or demographics between those who had received therapy prior to randomization and those who had not. There was a difference in the percentage of patients who had experienced terror- versus combat-related trauma, with 6 (55%) of those who experienced terror randomized immediately after their arrival to the clinic compared to only 1 (5%) of those who had experienced combat (Fisher exact = 0.004). After signing informed consent, patients were randomized to TAU versus prolonged exposure by a senior psychiatrist blind to patients' statuses and study objectives (J.Z.). Table 1 presents data about the duration of treatment prior to study start and other relevant information.

Treatment

Prolonged exposure therapy. Prolonged exposure therapy was delivered by 5 therapists who were trained and supervised in the treatment protocol. Therapists included 2 psychiatrists, 2 master's degree psychologists, and 1 master's degree social worker. Treatment was delivered in individual sessions lasting 90 to 120 minutes and scheduled once weekly. Number of sessions ranged from 9 to 15 (mean = 11, SD = 2.90). Session 1 included presentation of treatment rationale and description, information gathering about trauma history and the index trauma (the most disturbing trauma), and breathing retaining. Session 2 included education about trauma-related symptoms, rationale and construction of in vivo exposure hierarchy, and in vivo homework assignments. In these assignments, patients were asked over the course of treatment to confront low-risk situations previously avoided because of trauma-related distress and to proceed through the hierarchy from the lowest to the most distress-evoking situations. Session 3 included rationale and initiation of imaginal exposure (revisiting of the traumatic memory). In this procedure, patients were asked to close their eyes and recount the traumatic memory aloud for 45–60 minutes. The trauma narratives were audiotaped, and patients were asked to listen to these tapes daily. Sessions 4–9 were conducted in a similar fashion: homework review, imaginal exposure for 30–45 minutes followed by a discussion of the imaginal exposure (processing), and assignment of in vivo exposure homework.[4]

Treatment as usual. Treatment as usual was delivered by the same therapists who delivered prolonged exposure. The

Table 1. Baseline Demographic and Clinical Characteristics of Trial Groups[a]

Characteristic	Treatment as Usual (n = 15)	Prolonged Exposure (n = 15)
Age, mean (SD), y	33.7 (11.9)	34.8 (11.4)
Education, mean (SD), y	12.0 (1.0)	11.8 (1.93)
Unemployed, n (%)	8 (53.3)	11 (73.3)
Married or cohabiting, n (%)	7 (46.7)	9 (60.0)
Type of trauma, n		
Combat	9	10
Terror	6	5
Time elapsed from traumatic event, mean (SD), y	10.1 (10.8)	9.2 (10.9)
Time in psychiatric unit prior to prolonged exposure, mo	14.4	10.8
Taking psychotropic medication, n (%)	12 (80.0)	10 (66.7)
Current comorbid psychiatric disorder, n (%)		
Mood disorders	10 (66.7)	10 (66.7)
Anxiety disorders	7 (46.7)	6 (40.0)
Other	0 (0.0)	0 (0.0)

[a]All analyses used an intention-to-treat sample.

Table 2. Pretreatment and Posttreatment Raw Scores on Clinical Measurements of PTSD, Anxiety, and Depression[a]

Psychological Assessment Tool Score	Treatment as Usual, Mean (SD)	Prolonged Exposure, Mean (SD)	Cohen *d*	*P* Value
Pretreatment				
PTSD Symptoms Scale–Interview Version	36.8 (6.2)	37.1 (3.8)	0.06	.89
Posttraumatic Cognitions Inventory	145.1 (32.6)	128.1 (35.7)	0.50	.22
State-Trait Anxiety Inventory				
State anxiety	60.9 (13.3)	59.5 (11.6)	0.11	.77
Trait anxiety	61.0 (10.9)	59.5 (8.3)	0.15	.69
Beck Depression Inventory	31.4 (8.8)	26.0 (7.9)	0.65	.12
Posttreatment				
PTSD Symptoms Scale–Interview Version	35.0 (8.9)	18.9 (9.1)	1.80	.01
Posttraumatic Cognitions Inventory	145.2 (38.8)	96.3 (42.6)	1.20	.01
State-Trait Anxiety Inventory				
State anxiety	62.0 (12.3)	44.3 (11.0)	1.52	.01
Trait anxiety	61.7 (12.5)	47.7 (12.6)	1.11	.05
Beck Depression Inventory	26.8 (10.7)	13.2 (7.6)	1.46	.05
Follow-up				
PTSD Symptoms Scale–Interview Version	35.4 (7.6)	16.3 (10.4)	2.10	.01

[a]All analyses used an intention-to-treat sample.
Abbreviation: PTSD = posttraumatic stress disorder.

treatment was a nondirective, psychodynamically oriented therapy that focused on daily occurrences of distress and relationship issues, childhood experiences, object relations themes (eg, ability to trust others), and daily crises experienced by the patients. The therapy was not focused on the traumatic event, which was discussed only when it was brought up by the patient (which occurred rarely). Therapy was once weekly, delivered in individual sessions, and lasted about 1 hour. For patients who received treatment as usual prior to randomization, the session format remained the same as before entering the study. The 4 participants who were randomized to the TAU group with no previous treatment in the clinic received supportive and psychodynamic-oriented therapy immediately after study enrollment. Treatment as usual was continued throughout the follow-up period for the majority of participants.

Supervision

Study therapists from the trauma unit participated in either a 3-day or 5-day workshop for prolonged exposure therapy led by E.B.F. and the trained supervisor (N.N.). As noted earlier, none of the therapists (except the supervisor, N.N.) had prior CBT experience and were psychodynamically oriented. After the workshop, a supervision group was established. Therapists who delivered TAU were supervised by the first author (N.N.) and were instructed to conduct supportive therapy and refrain from introducing exposure instructions.

Data Analysis

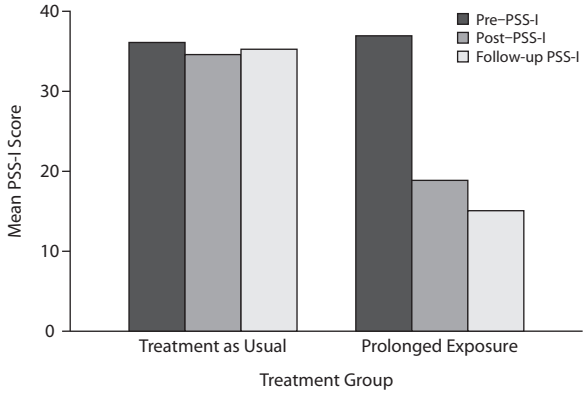
The study adopted a simple 2 (group)–by–2 (pre–post) design. All analyses utilized 2-tailed tests. First, we conducted 2×2 analyses via mixed-effects models using SPSS (SPSS Inc, Chicago, Illinois) mixed with an unstructured covariance structure (which showed the best model fit). Group and subjects were considered a random effect, and time, a fixed effect. Significant interactions were then examined to detect possible between-group differences at endpoint while controlling for pretreatment severity, as well as within-group differences for each group. Between-group effect sizes were calculated by using the following formula for Cohen *d* ([post prolonged exposure – post TAU]/pooled SD). This method was used for all continuous outcome variables, including the primary outcome (PSS-I) and secondary outcomes (BDI, PTCI, STAI). In addition, exploratory analyses were conducted to determine whether trauma type (combat vs terrorism), injury during trauma, time since trauma, amount of TAU prior to randomization, and presence of major depressive disorder, panic disorder, or obsessive-compulsive disorder predicted outcome on the PSS-I in prolonged exposure. All analyses were conducted using an intention-to-treat sample.

RESULTS

Prolonged exposure and TAU groups did not differ on any pretreatment characteristics, including age, sex, type of trauma, time since trauma, injury during trauma, dose of TAU received prior to randomization, or medication status (all *P* values > .20), nor did the groups differ in any symptom scores prior to treatment (*P* values > .10; Tables 1 and 2).

On the PSS-I, the treatment-by-time interaction was significant ($F_{1,25} = 36.8$, $P < .001$). The treatment-by-time interactions were also significant for the STAI-T ($F_{1,23} = 6.7$, $P = .016$) and the STAI-S ($F_{1,27} = 8.4$, $P = .007$). Interactions on the PTCI ($F_{1,18.7} = 3.8$, $P = .066$) and BDI ($F_{1,22.7} = 4.1$, $P = .054$) failed to reach significance. However, because the interactions met liberal criteria for significance of interaction,[31] we continued to evaluate all interactions.

Figure 2. Plot of Pretreatment and Posttreatment PSS-I Scores in Prolonged Exposure Group Versus Treatment as Usual Group



Abbreviation: PSS-I = Posttraumatic Stress Disorder Symptoms Scale–Interview Version.

Analyses to break down the interactions suggested that prolonged exposure had significantly lower posttreatment PSS-I scores than TAU (estimated means 18.6 vs 35.3; $F_{1,24} = 35.3$, $P < .001$, $d = 1.80$). Similarly, there were significant between-group differences in posttreatment STAI-S (estimated means 44.5 vs 60.9; $F_{1,23} = 13.4$, $P = .001$, $d = 1.52$), STAI-T (estimated means 48.6 vs 59.8; $F_{1,21} = 6.7$, $P = .017$, $d = 1.11$), BDI (estimated means 14.2 vs 25.7; $F_{1,21} = 9.1$, $P = .007$, $d = 1.46$), and PTCI (estimated means 18.6 vs 35.3; $F_{1,24} = 35.3$, $P < .001$, $d = 1.20$) scores.

In addition, there was a significant effect of time for prolonged exposure ($F_{1,13} = 67.0$, $P < .0001$) but not for TAU ($F_{1,12.2} = .009$, $P = .926$). Similarly, significant effects of time were found in prolonged exposure on the STAI-S ($F_{1,14.5} = 12.1$, $P = .004$), STAI-T ($F_{1,10.9} = 8.6$, $P = .014$), BDI ($F_{1,12.2} = 17.1$, $P = .001$), and PTCI ($F_{1,9.3} = 5.6$, $P = .041$), but not for TAU (BDI $F_{1,11} = 3.6$, $P = .086$; all other P values > .45).

Finally, PSS-I scores for the 12-month follow-up period were examined. When using pretreatment as the initial timepoint and follow-up as the endpoint, there was a significant group-by-time interaction ($F_{1,24} = 39.6$, $P < .001$). Breakdown of the interaction suggested that the groups differed significantly at follow-up by 19.1 points (estimated means 16.3 vs 35.4, $F_{1,23} = 37.9$, $P < .0001$, $d = 2.10$). In addition, there was significant change from pretreatment to follow-up for prolonged exposure ($F_{1,14} = 80.5$, $P < .0001$), but not for TAU ($F_{1,10.3} = 0.6$, $P = .44$). The examination of posttreatment to follow-up did not reveal a significant group-by-time interaction, which suggests that neither group changed significantly from posttreatment to follow-up on the PSS-I. Figure 2 depicts a plot of PSS-I scores from pretreatment to follow-up in the prolonged exposure versus TAU groups.

No pretreatment characteristics (eg, injury; trauma type; time since trauma; medication status; or comorbidity, such as major depressive disorder, obsessive-compulsive disorder, or panic disorder) interacted significantly with group-by-time interactions, suggesting that they did not predict outcomes (all P values > .20).

DISCUSSION

As noted earlier, this is the first randomized controlled study to examine the efficacy and effectiveness of prolonged exposure therapy for combat- and terror-related chronic PTSD. Our results indicate the benefit of prolonged exposure with this population compared to TAU. Symptom severity of PTSD, state and trait anxiety, posttraumatic cognitions, and depression improved significantly in the prolonged exposure group from pretreatment to posttreatment, while these symptoms remained unchanged in the TAU group.

The short-term and long-term beneficial effects of prolonged exposure on PTSD symptoms found in this study are consistent with other studies of prolonged exposure that included patients with a variety of different characteristics, including trauma types, sex, and culture or ethnicity.[3] Also consistent with other studies was the finding that prolonged exposure reduced severity of depression and anxiety symptoms. These results are particularly encouraging because many of the patients in this study suffered from PTSD for many years and did not respond to the variety of treatments they received. Notably, as is the case with all CBT studies of PTSD, patients with comorbid substance dependence, but not substance abuse, were excluded. This is because the customary care of patients with comorbid PTSD and substance dependence includes treatment for both disorders. The study of the efficacy of prolonged exposure in such a combined program is currently being investigated.

One important aspect of this study design is that the same therapists administered both prolonged exposure and TAU, thereby controlling for therapist effects. At the same time, using the same therapists makes the study more vulnerable to problems associated with unblinded research and therapist-driven Hawthorne effects. Nevertheless, we believe the design to be ecologically valid; many therapists in military and Veterans Affairs settings are beginning to use prolonged exposure and, in fact, do have caseloads with a mix of TAU and prolonged exposure patients. Furthermore, consistent with previous studies, our study shows beneficial results even when prolonged exposure was administered by therapists with no prior CBT training.[14]

Importantly, most of the prolonged exposure patients had received TAU for some time from the same therapists who later administered their prolonged exposure, but they still had substantial levels of PTSD symptoms until treated with prolonged exposure. It is possible that the superior outcome of prolonged exposure was influenced by patients' expectations to improve with the introduction of a new treatment. However, comparison of the 4 patients who began TAU at the start of the study and the 3 prolonged exposure patients who did not receive TAU at all showed the same treatment effects as those who received TAU prior to the start of the study. This negates the interpretation of prolonged exposure's superiority as due to different patient expectations.

In addition, the use of TAU with the same therapists as the comparison condition underscores the specificity of the effects of prolonged exposure. Not only did individuals

in the TAU condition receive a similar number of sessions during acute treatment, but many of them also continued to receive this treatment throughout the follow-up period. In contrast, patients in the prolonged exposure condition only continued medication management during follow-up but did not receive further psychotherapy. Thus, by the end of the more than 1 year follow-up, patients in the TAU condition received substantially more psychotherapy than those in the prolonged exposure condition.

Finally, the therapists in the study were not trained in CBT. Rather, their background was in psychodynamic psychotherapy, which was part of TAU. They were clearly more familiar delivering this type of therapy than prolonged exposure. This suggests that the superiority of prolonged exposure was not due to therapists' bias against TAU. Moreover, the fact that the study was conducted in an outpatient psychiatric clinic that serves veterans further supports the notion that prolonged exposure can be successfully disseminated beyond academic centers and into community clinics.[14,32]

A number of unique characteristics should be noted when addressing the prognosis of terror- and combat-related PTSD in comparison to other types of trauma, such as assault. First, approximately 90% of the patients who received prolonged exposure in our study reported the loss of a friend or a relative during the trauma in addition to personal physical and emotional losses. Second, the traumatic events of soldiers included both exposure to being harmed by others and inflicting harm to others. Finally, some of the patients suffered from multiple traumas and were exposed to many horrifying scenes (sometimes many years before treatment). These characteristics are commonly considered to be obstacles to successful treatment outcome. Yet, the results of our study suggest that these characteristics did not impede the benefit from prolonged exposure, which was found to be similar to that found with other types of traumas.

Some limitations should be noted when considering the study results. The sample size is small in comparison to other randomized controlled studies, and larger samples may have found differences in effects of trauma type or other moderators. In addition, the vast majority of the participants were men. More research is needed to examine the effect of prolonged exposure on female victims of terrorist attacks and combat.

Although several practice guidelines recommend CBT and specifically exposure therapy for the treatment of PTSD, these treatments are still not widely used. Psychodynamic-oriented, supportive therapy is still the most common treatment for PTSD in mental health clinics despite evidence showing this treatment to be inferior to CBT.

Patient Perspective

"Ruben," a 54-year-old married white man, is a veteran of the 1973 Yom Kippur War in Israel. During the war, he experienced severe, continuous bombardments and being surrounded by scores of injured and dead people. During one of these battles, he was evacuated from the front because of acute stress reaction, including complete loss of orientation and severe dissociative symptoms. Shortly after his acute stress reaction, he received a series of abreaction treatments (in which he was asked to relive the battles while recreating all emotional reactions and behaviors as much as possible, capturing the sense of loss of control he had experienced during combat) combined with Pentothal injections. According to Ruben, "The treatment significantly exacerbated my symptoms. After the treatment, I was in a much worse condition than I was when I began. I developed a strong fear of doctors and especially psychiatrists, and for many years I avoided treatment of any kind."

Since 1973, Ruben suffered from severe chronic PTSD, which included frequent flashbacks about his various combat experiences, nightmares from which he would wake up drenched with cold sweat, tachycardia, and shortness of breath. Other symptoms were avoidance of a wide array of situations, such as crowded places, malls, and shopping centers; frequent outbursts of anger; emotional numbing; and difficulty expressing love and care to his wife and children. After several failed attempts to stay employed, he mostly stayed at home, suffering from severe depression and PTSD.

Until 2001, Ruben refused treatment. A conversation with another veteran who told him that psychiatric treatments had changed since 1973 convinced him to seek help. He received psychodynamic therapy for 2 years, which did not ameliorate his PTSD and depressive symptoms. In 2003, he was offered prolonged exposure therapy in the context of the study that compared this therapy with treatment as usual.

At the beginning of the treatment, the therapist discussed with Ruben the fact that he continued to have significant symptoms of PTSD despite his 2 years of treatment. She told Ruben that prolonged exposure is an alternative treatment that is evidence-based and has excellent results for many people who have PTSD. She provided psychoeducation about PTSD and the rationale for why prolonged exposure works. Ruben agreed that prolonged exposure, while sounding difficult, could be helpful for him.

During his treatment, he began to systematically confront places he had avoided, such as malls, restaurants, and movie houses. Beginning in session 3, he began to revisit the traumatic memory that included seeing dead bodies, having acute stress reaction, and being evacuated from the battle. In the first imaginal exposure session, he burst into tears after his description of the dead bodies, and in the processing that followed, he talked about the deep sadness he felt each time the image of these dead soldiers entered his mind, explaining that these feelings prevented him from discussing this memory. With each additional repetition of imaginal exposure, the narrative became more organized. The memory took a positive meaning when Ruben suddenly remembered that he saved a soldier by carrying him on his back to the field station where medical aid was provided. He explained to the therapist that the recollection of saving the soldier gave him a sense of self-worth, whereas focusing on his acute stress reaction and being evacuated for the battle made him feel incompetent.

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At the end of treatment, Ruben began to go with his wife and children to malls, restaurants, movies, and many other places that he had avoided since 1973. He reported that he really enjoyed being in these places. For the first time in his life, he left Israel for vacation. Ruben also described a dramatic change in his emotions toward his children. He told his therapists that "as a result of the treatment, for the first time in my life I began to be interested in talking to my children, hugging and kissing them. My feeling[s] towards them opened up, and I have [an] excellent relationship with them.…For 30 years, I did not talk about my experiences during the war. Whenever the images of these experiences came to my mind, it felt as if it happens [sic] to me again. After the treatment, I was sent to the United States by the Department of Defense as part of a delegation of disabled veterans. In one of the meetings, I went on stage and told the audience about my war experiences. It felt good to be able to share these memories with others."

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