

Effective Psychotherapies for Posttraumatic Stress Disorder: A Review and Critique

By Marylene Cloitre, PhD

ABSTRACT

This report reviews and critiques the psychotherapy literature for the treatment of posttraumatic stress disorder (PTSD) and systematically presents data on sample size, rates of completion and effect sizes. Substantial progress has been made in the use of cognitive behavioral therapies and eye movement desensitization and reprocessing for the resolution of PTSD. Innovations in PTSD treatments are identified. Further advances are needed in the treatment of populations with complex and chronic forms of PTSD such as those found in childhood abuse populations, refugee populations, and those experiencing chronic mental illness. The need to address comorbid emotional, social, and physical health consequences of trauma, to implement treatments in community-based settings, and to incorporate larger systems of care into study designs is noted.

CNS Spectr. 2009;14:1(Suppl 1):32-43.

OVERVIEW

This review organizes the empirical literature on psychotherapy outcome trials for posttraumatic stress disorder according to type of intervention. Each section provides the principles of the treatment and a summary conclusion about its effectiveness based on the quantitative review presented

Needs Assessment

There are over 40 randomized controlled trials reporting on the efficacy of cognitive-behavioral therapies for posttraumatic stress disorder. There is need to systematically review these studies and identify common good outcomes. It is also important to identify populations that remain understudied and undertreated, including refugee populations and adults with complex trauma symptom profiles; to assess the transportability of current evidence-based treatments into the community; and to identify novel treatment approaches that are alternatives to cognitive-behavioral approaches.

Learning Objective

At the end of this activity, the participant should be able to:

- Identify (or name) several types of psychotherapies with established efficacy for PTSD

Target Audience: Psychiatrists

in an associated table. The review also summarizes the current status of interventions for populations experiencing chronic and repeated traumatization, which represents a substantial if not majority proportion of those with PTSD.¹ The articles reviewed here were identified via literature searches on PsycInfo, MEDLINE, Published International Literature On Traumatic Stress, as well as the reference lists in relevant publications available as of June 2008. The relatively large number of studies conducted to date on the efficacy of cognitive-behavioral therapy (CBT) allowed the selection of studies that met a certain minimum criteria for inclusion in the review. The criteria were that: (1) the study was published in a peer-reviewed journal; (2) all participants were diagnosed with PTSD; (3) assessment was conducted with a standardized measure of PTSD; (4) the study implemented randomized assignment into treatment conditions; and (5) there were ≥ 10 completers in each condition of the trial. Given the relatively limited number of studies on refugees and civilians exposed to war and, by definition, of the studies using innovative approaches, the above requirements were eliminated except for the

Dr. Cloitre is professor of Child and Adolescent Psychiatry at the Child Study Center at New York University School of Medicine and research scientist at the Nathan Kline Psychiatric Institute in Orangeburg, NY.

Disclosure: Dr. Cloitre reports no affiliation with or financial interest in any commercial organization that might pose a conflict of interest.

Submitted for publication: September 26, 2008; Accepted for publication: December 6, 2008.

Please direct all correspondence to: Marylene Cloitre, PhD, Institute for Trauma and Resilience, NYU Child Study Center, 215 Lexington Avenue, New York, New York, 10016. Telephone: 212-263-2471. Fax: 212-263-2476. E-mail: marylene.cloitre@nyumc.org.

presence and standardized assessment of PTSD, allowing an additional 5 of a total of 16 studies reviewed. Tables 1 through 6 provide information concerning the type of treatment and comparison conditions, number of subjects enrolled into each condition, percent of completers in each condition, type of standardized measures used, and whether the main outcome analyses used completers or the intent-to-treat sample. A rank ordering scheme of the relative strength of the effect size associated with treatment outcomes was developed using the guidelines proposed by Cohen,² and is presented in Table 1. Effect sizes (Hedges *g*) were obtained from previous publications, or when not available, were calculated for this review. These rankings are presented in Tables 2 through 7 for each study and were used to create a summary of the overall effectiveness of each type of treatment (Table 8).

BEHAVIORAL APPROACHES

Behavioral therapies were among the first interventions used to treat PTSD and to demonstrate efficacy. To date, they remain an integral component of most PTSD treatments. In the context of learning theory, PTSD is defined as a fear-based disorder in which exposure to a highly threatening event (eg, sexual assault) or series of events (eg, combat) leads to a conditioned fear response. PTSD arousal symptoms are viewed as conditioned fear responses resulting from traumatic exposure, and avoidance symptoms are understood as related

strategies reflecting efforts to escape feared stimuli and the associated painful emotional response. Behavioral interventions rely on the principle that exposure to the conditioned stimuli in the absence of negative consequences extinguishes the conditioned emotional response.³

PTSD exposure interventions initially focused on environmental stimuli such as specific sounds, objects or places that were reminiscent of the trauma. However, experimental studies of combat veterans with PTSD revealed that simply imagining the trauma was sufficient to elicit classic fear reactions as measured by affective response, blood pressure, and increased blood flow of epinephrine.⁴ These studies suggested that a potent fear-eliciting stimulus belonged to the individual's internal world and that the feared "object" so to speak, was the individual's memory of the trauma. Accordingly, exposure interventions were extended to include not only external stimuli (in vivo exposure) but the individual's memory of the event (imaginal exposure). The recognition of the concept of internal representations of experience as a significant part of understanding and treating psychopathology was part of a significant shift in psychological theory known as the "cognitive revolution."

COGNITIVE-BEHAVIORAL APPROACHES

A comprehensive cognitive model of PTSD developed by Foa and Kozak⁵ proposed that PTSD results from a "fear network" in memory in which traumatic events are represented in a mental structure comprised of event stimuli, event responses, and event meaning (attributions). Any of these elements may be activated by information associated with the trauma, which in turn leads to activation of other elements of the fear structure. The model has substantial explanatory value, providing a coherent explanation for the presence of sensory and visual re-experiencing symptoms (stimuli elements), which are often experienced as memory fragments. It also described the association and functional consequences of the often observed relationships among event stimuli, the subjective experience of fear and trauma-related behavioral routines. Emotional processing theory, which emerged from this model, proposed that successful therapy is comprised of two components. First, the fear structure or, more generally speaking, the traumatic memory, is activated (for example, through exposure strategies). Second, new information is provided that is incompatible with the pathological elements of the fear

TABLE 1.
Legend for Effect Size Ranking

<i>Effect Size</i>	<i>Ordinal Rank</i>	<i>Description</i>
0.00–0.10	1	Low small
0.11–0.20	2	Small
0.21–0.35	3	High small
0.36–0.49	4	Low medium
0.50–0.65	5	Medium
0.66–0.79	6	High medium
0.80–1.00	7	Low large
1.01–1.50	8	Large
1.51–2.00	9	High large
2.01+	10	Extremely large

Cloitre M. *CNS Spectr*. Vol 14, No 1 (Suppl 1). 2009.

structure. The theory proposes that when the fear structure is activated, the new information, which has both cognitive and affective elements, modifies the pathological elements of the trauma memory. The emotional processing of the trauma memory refers to the elicitation of the fear memory, its revision via the presence of new attributions and emotions, and the ensuing resolution of fear.

Cognitive models of trauma often focus on the role of trauma in adversely impacting a person's beliefs, often by disorganizing or even "shattering" an individual's system of beliefs.⁶ The therapies typically involve the identification of "lost" or changed beliefs (eg, "I used to think I had control over the important things that happened in my life but, I do not anymore") and a potential revision of the beliefs that takes into account the individual's trauma experience balanced by other life experiences (eg, "I have control over some but not all things in my life"). At least one therapy, Cognitive Processing Therapy,⁷ has proposed that the mechanisms involved in trauma recovery are guided by the general cognitive processes of assimilation and accommodation.⁸ In Cognitive Processing Therapy, trauma recovery is proposed to require both the assimilation of the reality of the trauma as well as the effective reworking and accommodation of the belief system to the event. Recovery from trauma fails and PTSD results when either the event is not assimilated or when there is rigid or over-accommodation of the belief system to the event. In this model, the goal of therapy is to facilitate success in the assimilation and accommodation processes.

While there are a variety of cognitive therapy approaches to PTSD, they share in common the view that the meaning given to a traumatic event is more influential in developing and maintaining PTSD than are the objective characteristics of the event (eg, duration) and that revision of maladaptive or negative appraisals associated with the experience are effective in resolving PTSD. Most cognitive therapies implement cognitive restructuring, a procedure that involves the identification, exploration, and revision of beliefs that are extreme, nonspecific, and global.⁹ Appraisals of self as weak and incompetent, the world as dangerous, and other people as untrustworthy are often the focus of attention in treatment.^{10,11}

Exposure and cognitive therapy are complementary approaches to treatment with differing procedures and differing emphases with regard to the affective states that are the primary target of intervention. Exposure therapy focuses on the emotion

of fear, which is a rapid, automatic, and evolutionarily ancient response to traumatic (threatening) events and which, in PTSD, endures even when the danger has passed. In contrast, cognitive therapies focus on a range of feelings that are understood to be derived from processes related to the post-event appraisal or meaning imputed to the event and its consequences. These include feelings such as shame, guilt, and anger, which are viewed as interpretations of the trauma driven by higher order cognitive processes and influenced by factors such as cultural context, personal values, and idiosyncratic self-appraisal processes. Procedurally, exposure and cognitive therapy differ in that cognitive therapy does not require the direct or systematic review of the trauma, while this is the central intervention in exposure therapy.

Both exposure and cognitive therapy have substantial demonstrated efficacy (Table 2).¹²⁻²⁵ There are a larger number of studies supporting the efficacy of exposure as compared to waitlist or supportive counseling^{12,13,18,19,20,24} than there are such trials for cognitive therapy.^{15,17,22} There is only one study that directly compared exposure and cognitive therapy in their pure forms, which revealed a very small advantage for cognitive therapy.²⁵ Often, exposure and cognitive restructuring interventions are integrated into a single treatment and such treatments, when compared to waitlist or supportive counseling, have been shown to provide substantial and superior reduction in PTSD symptoms in a variety of trauma populations, including childhood abuse survivors,¹⁴ combat veterans,²³ and rape victims.²⁴ Studies directly comparing the combination of exposure plus cognitive therapy to exposure alone consistently show a small advantage of the combination over exposure alone.^{13,19,21,24}

ANXIETY MANAGEMENT AND PROBLEM SOLVING APPROACHES

PTSD treatment studies have often included education and practice of anxiety-management strategies (Table 3).²⁶⁻³² One anxiety-management package, Stress Inoculation Treatment (SIT),³³ was adapted for use with rape victims³⁴ and now has been used in treatment studies of a variety of PTSD samples. The package includes muscle relaxation, breathing retraining, guided self-dialogue, and thought stopping to reduce anxiety as well as role playing, covert modeling, and graduated in vivo exposure to address avoidance often related to anxiety and PTSD symptoms. SIT was shown to be superior to

TABLE 2.
Exposure and Cognitive Treatment for PTSD Compared to Wait List or Supportive Counseling and Compared to Each Other

<i>Author, Year</i>	<i>Population</i>	<i>Treatment Condition (N)</i>	<i>Completion Rate (%)</i>	<i>PTSD Outcome Measure</i>	<i>ES Rank Pre Post</i>	<i>ES Rank Tx vs. Control/ Active at Post</i>
Basoglu et al, ¹² 2005	Female, natural disaster	Total (59) 1 session in vivo Ex (31) WL (28)	100 100	CAPS	ITT 9 4	ITT 8 —
Bryant et al, ¹³ 2003	Mixed sex, MVA	Total (59) Ex (20) Ex+CR (20) SC (18)	75 75 83	CAPS	ITT 8 9 4	ITT 5 7 Ex+CR vs. Ex=3
Chard, ¹⁴ 2005	Female, childhood sexual abuse	Total (71) Ex+CR (Individual and Group) (36) WL (35)	83 80	CAPS	CPL 10 2	CPL 10 —
Duffy et al, ¹⁵ 2007	Mixed sex, terrorism and civil conflict	Total (58) CT (29) WL(29)	100 100	PDS	ITT 8 3	ITT 7 —
Ehlers et al, ¹⁶ 2003	Mixed sex, MVA	Total (85) CT (28) Self-Help Booklet (28) WL (29)	100 89 93	CAPS	ITT 10 7 5	ITT 8 3 —
Ehlers et al, ¹⁷ 2005	Mixed sex MVA, other	Total (28) CT (14) WL (14)	100 100	CAPS	ITT 10 -3	ITT 8 —
Fecteau and Nicki, ¹⁸ 1999	Female, MVA	Total (23) Ex (12) WL (11)	83 91	CAPS	CPL 8 2	CPL 8 —
Foa et al., ¹⁹ 2005	Female, adult sexual and physical assault	Total (179) Ex (79) Ex+CR (74) WL (26)	59 66 96	PSS-I	ITT 8 8 6	ITT 6 6 Ex+CR vs. Ex=1
Keane et al, ²⁰ 1989	Male, combat	Total (24) Ex (11) WL (13)	100 100	MMPI-PTSD	CPL 5 4	CPL 3 —
Marks et al, ²¹ 1998	Mixed sex, mixed trauma	Total (87) Ex (23) CR (19) Ex+CR (24) Rlx (21)	57 63 54 67	CAPS	CPL 7 9 8 7	CPL Ex vs. Rlx=1 CT vs. Rlx =1 Ex+CT vs. Rlx=3 Ex+CT vs. Ex=3
Mueser et al, ²² 2008	Mixed sex, range of traumas, PTSD with comorbid severe mental illness	Total (108) TAU+CR (54) TAU (54)	82% (>5 sessions) NR	CAPS	ITT 7 4	ITT 4
Monson et al, ²³ 2006	Male, combat	Total (60) Ex+CR (30) WL (30)	80 87	CAPS	ITT 8 2	ITT 8 —
Resick et al, ²⁴ 2002	Female, adult sexual assault	Total (121) Ex+CR (41) Ex (40) WL (40)	73 73 85	CAPS	ITT 8 8 1	ITT 8 7 Ex+CR vs. Ex=2
Tarrier et al, ²⁵ 1999	Mixed sex, crime, accident, other	Total (72) CT (37) Ex (35)	94 78	CAPS	CPL 7 8	CPL CR vs. Ex=1

ES=effect size; Tx=treatment; CAPS=Clinician-Administered PTSD Scale; ITT=intent-to-treat; Ex=exposure therapy; WL=wait list; MVA=motor vehicle accident; CR=cognitive restructuring; SC=supportive counseling; CPL=completers; PDS=Posttraumatic Stress Diagnostic Scale; CT=cognitive therapy; PSS-I=PTSD Symptom Scale Interview; MMPI=Minnesota Multiphasic Personality Inventory; Rlx=relaxation training; TAU=treatment as usual; NR=not reported.

Cloitre M. *CNS Spectr.* Vol 14, No 1 (Suppl 1). 2009.

waitlist and supportive counseling in two studies,^{28,29} and superior to exposure in one study,²⁹ although the sample size in each condition was small (n=10).

Typically, the use of a single or limited number of anxiety-reduction techniques or problem-centered therapies have been introduced into clinical trials as active control conditions to test the

efficacy of cognitive and exposure therapies since such approaches do not include either exposure or cognitive therapy procedures. Relaxation has been associated with significant pre-to-post treatment improvement^{21,27} as has problem-focused interventions.^{31,32,59} However, such therapies have been found inferior to exposure therapy,^{21,31,32} cognitive therapy,²¹ and their combination.^{21,27}

TABLE 3.
Anxiety Management and Problem-Solving Approaches

<i>Author, Year</i>	<i>Population</i>	<i>Tx (N)</i>	<i>Completion Rate (%)</i>	<i>PTSD Outcome Measure</i>	<i>ES Rank Pre-Post</i>	<i>ES Rank Tx vs. Control/Active at Post</i>
Blanchard et al, ²⁶ 2003	Mixed sex, motor vehicle accident	Total (98)			ITT	ITT
		Ex+CR+Rlx+BA (36)	75		9	8
		SC (37)	73		7	5
		WL (25)	96		4	Ex+CR+Rlx+BA vs. SC=5
Echeburua et al, ²⁷ 1997	Female, adult sexual assault, childhood sexual abuse	Total (20)		PTSD- I	ITT	ITT
		Ex+ CR (10)	100		10	8
		Rlx (10)	100		9	
Foa et al, ²⁸ 1999	Female, adult sexual or physical assault	Total (96)		PSS-I	CPL	CPL
		Ex (25)	92		10	9
		SIT (26)	73		9	9
		Ex+SIT (30)	73		9	8
		WL (15)	100		7	Ex vs. SIT=1 Ex vs. Ex+SIT=3 SIT vs. Ex+SIT=1
Foa et al, ²⁹ 1991	Female, sexual assault	Total (55)		PTSD severity rating	CPL	CPL
		Ex (14)	71		8	4
		SIT (17)	82		10	8
		SC (14)	79		7	2
		WL (10)	100		6	SIT vs. Ex=-5 SIT vs. SC=8 Ex vs. SC=3
Glynn et al, ³⁰ 1999	Male, combat	Total (42)		CAPS, MPSS-positive symptoms (eg, experiencing, hypervigilance), and negative symptoms (eg, avoidance and numbing).	CPL	CPL
		Ex+CT (13)	100		3	7
		Ex/BFT (12)	65		6	5
		WL (17)	100		1	-
Marks et al, ²¹ 1998	Mixed sex, mixed trauma	Total (87)		CAPS	CPL	CPL
		Ex (23)	57		7	Ex vs. Rlx=1
		CR (19)	63		9	CT vs. Rlx=1
		Ex+CR (24)	54		8	Ex+CT vs. Rlx=3
		Rlx (21)	67		7	Ex+CT vs. Ex=3
Schnurr et al, ³¹ 2003	Male, combat	Total (360)		CAPS	ITT	CPL
		Ex+CR (180)	66		4	8
		PCT (180)	75		4	-
Schnurr et al, ³² 2007	Female combat	Total (284)		CAPS	ITT	Ex vs. PCT=3
		Ex (141)	62		7	
		PCT (143)	79		5	

Tx=treatment; ES=effect size; ITT=intent-to-treat; Ex=exposure therapy; CR=cognitive restructuring; Rlx=relaxation training; BA=behavioral activation; SC=supportive counseling; WL=wait list; PTSD-I=PTSD Interview; CPL=completers; SIT=stress inoculation therapy; BFT=behavioral family therapy; CAPS=Clinician-Administered PTSD Scale; MPSS=Minnesota Multiphasic Personality Inventory; PCT=problem-centered therapy.

Cloitre M. *CNS Spectr.* Vol 14, No 1 (Suppl 1). 2009.

EYE MOVEMENT DESENSITIZATION AND REPROCESSING

Eye movement desensitization and reprocessing (EMDR) is a multiprocedural, multimodal therapy which involves a sequentially ordered

set of interventions among which the key components are: (1) Identification of a target trauma, disturbed affect, and associated negative cognition, and development of positive cognition to replace the negative cognition; (2) the patient

TABLE 4.
Eye Movement Desensitization and Reprocessing Compared to All Other Treatments

<i>Author, Year</i>	<i>Population</i>	<i>Treatment (N)</i>	<i>Completion Rate (%)</i>	<i>PTSD Outcome Measure</i>	<i>ES Rank Pre to Post</i>	<i>ES Rank Tx vs. Other</i>
Carlson et al, ³⁵ 1998	Male, combat	Total (35) EMDR (10) Biofeedback assisted Rlx (13) TAU (12)	100 92 100	IES	NA	NA
Devilley and Spence, ³⁶ 1999	Mixed sex, mixed trauma	Total (23) EMDR (12) Ex+CR+SIT (11)	65 80	PTSD Interview	CPL 10 10	CPL EMDR vs. Ex+CR+SIT=-6
Hogberg et al, ³⁷ 2007	Male, Occupational PTSD (person-under-train)	Total (24) EMDR (13) WL (11)	92(> 5 sessions) 82	SCID-PTSD	CPL NA	CPL NA
Jensen, ³⁸ 1994	Male, combat	Total (25) EMDR (13) WL (12)	100 100	SI-PTSD	ITT -4 -7	7 -
Lee et al, ³⁹ 2002	Mixed sex, NR	Total (24) EMDR (12) Ex+SIT (12)	92 92	SI-PTSD	CPL 9 8	CPL EMDR vs. Ex+CR=-5
Marcus et al, ⁴⁰ 1997	Female, Assault, abuse	Total(67) EMDR(33) TAU(34)	NR	PSS-SR	ITT 9 8	ITT 6 -
Power et al, ⁴¹ 2002	Mixed sex, motor vehicle accident, other	Total (105) EMDR (39) Ex+CR (37) WL (29)	70 59 83	IES	10 8	9 8 EMDR vs. Ex+CR=-5
Rothbaum et al, ⁴² 2005	Female, sexual assault	Total (72) EMDR (25) Ex (23) WL (24)	80 87 83	CAPS	CPL 10 9 5	CPL 8 9 EMDR vs. Ex=-4
Scheck et al, ⁴³ 1998	Female	Total (60) EMDR (30) SC (30)	93 97	IES	CPL 9 5	CPL 6 -
Taylor et al, ⁴⁴ 2003	Female, mixed	Total (60) EMDR (19) Ex (22) Rlx (19)	79 68 79	CAPS	CPL 10 10 8	CPL 2 6 EMDR vs. Ex=-6
van der Kolk et al, ⁴⁵ 2007	Female, interpersonal violence, injury	Total (88) EMDR (29) SSRI (19) Placebo (29)	83 87 90	CAPS	ITT 10 10 10	ITT 5 1 EMDR vs. SSRI=5
Vaughan et al, ⁴⁶ 1994	Female, (Male), mixed	Total (36) EMDR (12) Ex (13) Rlx (11)	100 100 100	SI-PTSD	ITT 9 5 5	ITT 5 1 EMDR vs. Ex=-6

ES=effect size; Tx=treatment; IES=Impact of Events Scale; NA=information required to compute ES not available; EMDR=eye movement desensitization and reprocessing; Rlx=relaxation training; TAU=treatment as usual; CPL=completers; Ex=exposure therapy; CR=cognitive restructuring; SIT=stress inoculation therapy; SCID-PTSD=Structured Clinical Interview for PTSD; WL=wait list; SI-PTSD=Structured Interview for PTSD; NR=not reported; ITT=intent-to-treat; PSS-SR=PTSD Symptom Scale Self Report; CAPS=Clinician-Administered PTSD Scale; SC=supportive counseling; SSRI=selective serotonin reuptake inhibitor.

Cloitre M. *CNS Spectr.* Vol 14, No 1 (Suppl 1). 2009.

holding in mind the traumatic image while simultaneously tracking the therapist's finger as it moves back and forth across the patient's visual field; (3) installation of the positive cognition; (4) and body scan to identify any residual disturbing body sensations or affect.

There is substantial evidence indicating the efficacy of EMDR (Table 4).³⁵⁻⁴⁶ Five studies have

found EMDR superior either to wait list^{37,41,42} or pill placebo,⁴⁵ with one study³⁸ of inpatient Vietnam veterans finding that both EMDR and wait list participants got worse, but that worsening was significantly less among those in the EMDR condition. Four studies have found EMDR superior to supportive counseling, relaxation, or treatment as usual.^{35,40,43,46} There are six stud-

TABLE 5.
Cognitive-Behavioral, Emotion-Focused and Skills Based Interventions for Chronic Interpersonal Violence

<i>Author, Year</i>	<i>Population</i>	<i>Tx (N)</i>	<i>Completion Rate (%)</i>	<i>PTSD Outcome Measure</i>	<i>ES Rank Pre vs. Post</i>	<i>ES Rank Tx vs. Other</i>
Chard, ¹⁴ 2005	Female, childhood sexual abuse	Total (71) Ex+CR (Individual and Group) (36) WL (35)	83 80	CAPS	<i>CPL</i> 10 2	<i>CPL</i> 10 -
Classen et al, ⁵⁴ 2001	Female, child sexual abuse	Total (55) EFT Group (14) PCT Group (7) WL (34)	NR unclear	TSC-40	Means NR	Means NR
Cloitre et al, ⁵⁵ 2002	Female, childhood physical and/or sexual abuse	Total (58) STAIR+Ex (31) WL (27)	71 89	CAPS	<i>CPL</i> 9 4	<i>CPL</i> 8 -
Hien et al, ⁵⁶ 2004	Female, interpersonal violence	Total (107) SS (41) RP (34) TAU (32)	61 71 100	CAPS	<i>ITT</i> 6 7 3	<i>ITT</i> 4 -5 SS vs. RP=-3
Kubany et al, ⁵⁷ 2003	Female, domestic violence	Total (37) Ex+CR (19) WL (18)	95 78	CAPS	<i>ITT</i> 10 4	<i>ITT</i> 10 -
Kubany et al, ⁵⁸ 2004	Female, domestic violence	Total (125) Ex+CR (63) WL (62)	73 57	CAPS	<i>ITT</i> 9 2	<i>ITT</i> 8 -
McDonagh et al, ⁵⁹ 2005	Female, childhood sexual abuse	Total (74) Ex+CR (29) PCT (22) WL (23)	59 91 87	CAPS	<i>ITT</i> 6 8 3	<i>ITT</i> 4 7 Ex+CR vs. PCT=-3
Resick et al, ⁶⁰ 2008	Female, interpersonal violence	Total (150) Ex+CR (53) CR (50) WA (47)	48 57 54	CAPS	<i>ITT</i> 9 9 8	<i>ITT</i> Ex+CR vs. CR=-1 Ex+CR vs. WA:4 CR vs. WA:4
van der Kolk et al, ⁴⁵ 2007	Female, interpersonal violence	Total (88) EMDR (29) SSRI (30) Placebo (29)	83 87 90	CAPS	<i>ITT</i> 10 10 10	<i>ITT</i> 5 1 EMDR vs. SSRI=5
Zlotnick, ⁶¹ 1997	Female, childhood sexual abuse	Total (48) EFT (17) WL (16)	71 75	DTS	<i>CPL</i> 6 1	<i>CPL</i> 7 -

Tx=treatment; ES= effect size; CAPS=Clinician-Administered PTSD Scale; CPL=completers; Ex=exposure therapy; CR=cognitive restructuring; WL=wait list; NR=not reported; TSC-40=Trauma Symptom Checklist-40; EFT=emotional focus therapy; PCT=problem-centered therapy; STAIR=skills training in affective and interpersonal regulation; ITT=intent-to-treat; SS=seeking safety; RP=relapse prevention; TAU=treatment as usual; WA=writing assignment; EMDR=eye movement desensitization and reprocessing; SSRI=selective serotonin reuptake inhibitor; DTS=Davidson Trauma Scale.

Cloitre M. *CNS Spectr*. Vol 14, No 1 (Suppl 1). 2009.

ies directly comparing EMDR to other forms of CBT. Three have found an advantage for EMDR as compared to exposure alone⁴⁶ and to exposure plus cognitive therapy.^{39,41} Three have found exposure^{42,44} or its combination with cognitive restructuring and SIT³⁶ superior to EMDR.

APPROACHES TO REPEATED AND CHRONIC TRAUMATIZATION

Complex PTSD typically refers to a set of inter-related and frequently co-occurring symptoms that derive from prolonged and repeated traumatic exposures such as childhood abuse and neglect, being a prisoner of war or refugee, or experiencing domestic violence. The symptom profile refers to the presence of PTSD with additional disturbances in the domains of affect regulation, interpersonal relatedness, and self-identify, all of which have been articulated under the associated features of PTSD in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition.⁴⁷ Problems in emotion regulation and interpersonal relatedness among those with a history of childhood abuse have been understood within developmental psychopathology literature and research as childhood

abuse and other forms of repeated trauma during childhood adversely affecting cognitive, emotional, and social development.^{48,49} There are retrospective⁵⁰⁻⁵² and longitudinal studies⁵³ suggesting that these difficulties may persist into adulthood or re-emerge during times of stress or upon exposure to additional traumas. Vulnerability to complex PTSD resulting from prolonged trauma in adulthood may be related to a previous history of trauma, particularly childhood abuse or adversity. Alternatively, the severity, intensity, and prolonged nature of some types of traumas (concentration camp, kidnapping, and torture) may be sufficient to result in the deterioration of well-established self-regulatory capacities.

Childhood Abuse and Chronic Interpersonal Violence

Several studies have been completed assessing various forms of treatment for victims of repeated interpersonal violence (Table 5).⁵⁴⁻⁶¹ A few have focused on increasing emotion management^{54,55,61} and interpersonal skills^{55,56} and have reported benefit in doing so as reflected in improvement in these domains and overall

TABLE 6.
Refugee and Civilian Populations Exposed to War

<i>Author, Year</i>	<i>Population</i>	<i>Tx (N)</i>	<i>Completion Rate (%)</i>	<i>PTSD Outcome Measure</i>	<i>ES Rank Pre to Post</i>	<i>ES Rank Active vs. Control or Active</i>
Bichescu et al, ⁶³ 2007	Mixed sex, adult Romanian political detainees	Total (18) Ex (9) EDU (9)		CIDI-PTSD	ITT 10 8	ITT 8 -
Hinton et al, ⁶⁴ 2005	Mixed sex, Cambodian genocide witnesses	Total (40) Ex+CR (20) WL, then Ex+CR (20)	100	CAPS	ITT 9 3	ITT 10 -
Neuner et al, ⁶⁵ 2004	Mixed sex, adult Sudanese refugees in Ugandan refugee settlement diagnosed with PTSD	Total (43) Ex (17) EDU (12) SC (14)	94 100 86	PDS	ITT 5 -1 2	ITT Ex=1 EDU=-1 Ex vs. EDU= 1
Otto et al, ⁶⁶ 2003	Female, Cambodian refugees	Total (10) SSRI+CBT (5) SSRI (5)		CAPS	ITT Rx/Avoid/ Arousal 3/6/1 -4/1/-1	ITT 3/4/6 -
Paunovic and Ost, ⁶⁷ 2001	Mixed sex, refugees	Total (16) Ex (8) Ex+CR (8)	80	CAPS	CPL 10 9	CPL Ex vs. Ex+CT=1

Tx=treatment; ES=effect size; CIDI-PTSD=Composite International Diagnostic Interview-PTSD Module; ITT=intent-to-treat; Ex=exposure therapy; EDU=psychoeducation; CR=cognitive restructuring; PDS=Posttraumatic Stress Diagnostic Scale; SC=supportive counseling; CAPS=Clinician-Administered PTSD Scale; SSRI=selective serotonin reuptake inhibitor; CBT=cognitive behavioral therapy; Rx=prescription; CPL=completers; CT=cognitive therapy.

Cloitre M. *CNS Spectr*. Vol 14, No 1 (Suppl 1). 2009.

social adjustment and functional status. A range of treatments including cognitive and cognitive-behavioral interventions with and without

exposure elements^{14,55,58,60} as well as EMDR⁴⁵ have been successful in producing substantial reductions in PTSD.

TABLE 7.
Innovative Treatments

<i>Author, Year</i>	<i>Population</i>	<i>Tx (N)</i>	<i>Completion Rate (%)</i>	<i>PTSD Outcome Measure</i>	<i>ES Rank Pre-Post</i>	<i>ES Rank Tx vs. Control at Post-Tx</i>
Basoglu et al, ⁶⁸ 2007	Female, natural disaster	Total (31) 1 session Ex (16) (Earthquake Simulator) WL (15)	100 100	CAPS	ITT 9 4	ITT 7 –
Brom et al, ⁶⁹ 1989	Mixed sex, mixed trauma	Total (112) Ex (31) HPN (29) PDN (29) WL (23)	91 90 90 87	IES total	NR 8 7 7 3	NR 8 5 7 Ex vs. HPN=-3 Ex vs. PDN=-3 HPN vs. PDN=1
Difede et al, ⁷⁰ 2007	Male, 9/11-World Trade Center disaster workers	Total (21) VR (13) WL (8)	77 100	CAPS	CPL 7 -3	CPL 9 –
Frueh et al, ⁷¹ 2007	Male, combat	Total (38) Telepsychiatry CBT (17) Same-Room CBT(21)	53 57	PCL	-2 4	8 –
Gersons et al, ⁷² 2000	Mixed sex, police	Total (42) BEP (22) WL (20)	100% 95%	SI-PTSD	NR NA	NR NA
Hollifield et al, ⁷³ 2007	Mixed sex, mixed trauma	Total (84) CBT (28) ACU (29) WL (27)	66 75 78	PSS-SR	CPL 8 8 3	CPL 7 5 MC-CBT vs. ACU=3
Krakov et al, ⁷⁴ 2001	Female, with significant nightmares, adult sexual assault, child sexual abuse	Total (168) IR+CR+Ex- 3 sessions (88) WL (80)	68 75	CAPS (PSQI)	CPL 9(6) 4(1)	CPL 6(8) –
Lange et al, ⁷⁵ 2003	Mixed sex, loss of a loved one, other	Total (184) Internet CBT (122) WL (62)	64% NR	IES-I(A)	CPL 8(8) -3(-1)	CPL 8(9) –
Lindauer et al, ⁷⁶ 2005	Mixed sex, mixed trauma	Total (24) BEP (12) WL (12)	58% 92%	SI-PTSD	ITT NA NA	ITT NA NA
Litz et al, ⁷⁷ 2007	Mixed sex, 9/11 Pentagon service staff, combat in Iraq/Afghanistan	Total (45) Internet CBT (24) Internet-based SC (21)	58% 76%	PSS-I	CPL 8 7	CPL 4 –
van der Kolk, ⁷⁸ 2006	Female, primarily interpersonal trauma	Total (8) Yoga (4) DBT (4)	100% 100%	DTS	CPL NA	CPL NA

Tx=treatment; ES=effect size; CAPS=Clinician-Administered PTSD Scale; ITT=intent-to-treat; Ex=exposure therapy; WL=wait list; IES=Impact of Events Scale; NR=not reported; HPN=hypnotherapy; PDN=psychodynamic therapy; CPL=completers; VR=virtual reality; PCL=PTSD-checklist; CBT=cognitive behavioral therapy; SI-PTSD=Structured Interview for PTSD; BEP=Brief eclectic psychotherapy; NA=information required to compute ES not available; PSS-SR=PTSD Symptom Scale Self Report; ACU=individual acupuncture; IR=imagery rehearsal; CR=cognitive restructuring; PSQI=Pittsburgh Sleep Quality Index; PSS-I=PTSD Symptom Scale Interview; DTS=Davidson Trauma Scale; DBT=dialectical behavioral therapy.

Cloitre M. *CNS Spectr.* Vol 14, No 1 (Suppl 1). 2009.

Refugee and Civilian Populations Exposed to War

The Office of the United Nations High Commissioner of Refugees estimated the world refugee population to be 9.7 million.⁶² Despite the evident need for psychosocial services among the many and varied refugee populations around the world, there are few investigations reporting the development and systematic study of psychotherapeutic interventions. This is in part because psychological equilibrium depends first on the satisfaction of basic needs. Safety against life threat, a secure residence, employment, and cultural adjustment and such tasks take precedence over, and are sometimes incompatible with, traditional psychotherapeutic intervention. In addition, reports of implementation of psychotherapies in refugee communities have been limited because of differences in values and attitudes between refugee populations and the predominantly North American and European cultures in which most PTSD psychotherapies have been developed. Cultural differences introduce various processes that precede treatment implementation and include the creation of cultural bridges, the introduction of new forms of needs assessments, and the identification of common goals.⁶² A small number of studies have explored the potential value of culturally adapted versions of cognitive and exposure-based interventions. The studies have reported a degree of success sufficient to suggest that further studies are warranted utilizing such strategies as part of a recovery model (Table 6).⁶³⁻⁶⁷

INNOVATIVE TREATMENTS

Table 7⁷⁰⁻⁸⁰ summarizes innovative treatments. Use of virtual reality has been found effective,⁷⁰ as has a naturalistic version of virtual reality (a one-session earthquake simulator using a shake table).⁶⁸ Alternative medicine, body-oriented therapies utilizing acupuncture⁷³ and yoga⁷⁸ are showing promise. Imaginal rehearsal therapy focused on nightmares, an often overlooked but extremely debilitating symptom of PTSD, has been successful.⁷⁴ Interventions utilizing the Internet^{75,77} have shown substantial efficacy, and the use of real-time video/audio interactions for treatment of combat-related PTSD has been reported as efficacious as same-room therapy.⁷¹ Included in Table 7 are therapies, which, by virtue of their departure from CBT orientation, can be considered innovative. These include psychodynamic therapy,⁶⁹ psychodynamic-CBT blends,⁷² and hypnotherapy.⁶⁹ These studies

support the efficacy of such approaches, but they are few in number and need replication.

CONCLUSION

There is strong evidence that psychosocial interventions provide substantial relief of PTSD symptoms (Table 8). Cognitive-behavioral treatments have been shown to be superior to waitlist, supportive counseling, nonspecific therapies and treatment as usual. Exposure therapy has been studied in the largest number of trials and has consistently shown beneficial effects. Cognitive therapy is associated with the largest effect size, however the limited number of trials using pure cognitive therapy as compared to control conditions and as compared to exposure suggest that it is premature to draw conclusions about the relative benefits of cognitive therapy compared to exposure. Combination treatments of exposure and cognitive therapy show small but consistent advantages over either of the interventions alone. EMDR, like exposure and cognitive therapy, has established efficacy. There have been a fairly large number of studies comparing EMDR to exposure and/or cognitive therapy, and the evidence to date does not allow a determination of any particular advantage of one versus the other in terms of PTSD outcome. Cognitive-behavioral approaches to the treatment of chronically traumatized populations have been successful. Several innovative approaches under development utilize

TABLE 8.
Effect Size Rank Information for PTSD Symptom Changes by Type of Treatment

<i>Type of Treatment</i>	<i>Number of Studies</i>	<i>Mean (SD)</i>	<i>Mode</i>	<i>Range</i>
Ex	18	7.94 (1.66)	8.0	5–10
Ex+CT	14	8.04 (2.09)	8.0	3–10
CT/CR	6	8.83 (1.17)	9.0	7–10
EMDR	9	5.89	9.0	4–10
PCT	3	5.67 (2.08)	4.0	4–8
Supportive counseling	5	5.00 (2.12)	7.0	2–7
TAU	3	5.00 (2.64)	3.0	3–8

Ex=exposure therapy; CT=cognitive therapy; CR=cognitive restructuring; EMDR=eye movement desensitization and reprocessing therapy; PCT=problem-centered therapy; TAU=treatment as usual.

Cloitre M. *CNS Spectr.* Vol 14, No 1 (Suppl 1). 2009.

advances in technology (eg, Internet) that may be appealing as they provide greater privacy/confidentiality and more flexibility for the traumatized individual regarding when, where, and how often they are used.

The treatment of PTSD populations would benefit from several methodological and practical advances. A decrease in the number of exclusion criteria for entrance into study would improve the generalizability of results. The use of larger samples sizes is necessary in order to be able to conduct meaningful head-to-head comparisons of active treatments. A sample size of 25–30 per group has been identified as appropriate for the detection of clinically significant differences between two active treatments.⁷⁹ Many studies completed to date are insufficiently powered to detect differences between active treatments. The dropout rates in PTSD treatment studies are high and hover around 30%. This may be related to the nature of the disorder, which has a strong avoidance component.

Changes in therapeutic approaches, such as the inclusion of motivational interventions and the use of phase-based or sequential approaches with severely traumatized populations, may help reduce the risk. Methodological changes, including use of mixed effect models, and analysis of intent-to-treat populations will provide a more accurate assessment of the benefits of the treatments and their generalizability to “real world” settings. PTSD, particularly among those who have experienced chronic traumatization, is associated with complex outcomes and multiple comorbid emotional, social, and physical health difficulties. Treatments need to be developed that explicitly address these difficulties, and study designs should include the measurement and evaluation of these problems in addition to the standard measures of PTSD. The treatment of populations, such as those with chronic mental illness or those who are refugees, requires the recognition of the necessity of treatment in the context of a larger system of care. Advances in treatment require the development of integrated and well-related systems of care and study designs that assess the mental health benefits of such service systems and their individual components. **CNS**

REFERENCES

- Kessler R. Posttraumatic Stress Disorder: The Burden to the Individual and to Society. *J Clin Psychiatry*. 2000;61(suppl5):4-12.
- Cohen J. A power primer. *Psychol Bull*. 1992;112:155-159.
- Foa EB, Keane TM, Friedman MJ, eds. *Effective Treatments for PTSD: Practice Guidelines from the International Society for Traumatic Stress Studies*. New York, NY, US: Guilford Press; 2000.
- Pitman RK, Orr SP, Forgue DF, et al. Psychophysiological assessment of posttraumatic stress disorder imagery in vietnam combat veterans. *Arch Gen Psychiatry*. 1987;44:970-975.
- Foa EB, Kozak MJ. Emotional processing of fear: Exposure to corrective information. *Psychol Bull*. 1986;99:20-35.

- Janoff-Bulman R. *Shattered Assumptions: Towards a New Psychology of Trauma*. New York, NY, US: Free Press; 1992.
- Resick PA, Schnicke MK. *Cognitive Processing Therapy for Rape Victims: A Treatment Manual*. Vol 4. Thousand Oaks, CA, US: Sage Publications, Inc; 1993.
- Piaget J. *The psychology of intelligence*. New York: Harcourt, Brace & World; 1950.
- Beck AT. *Cognitive Therapy and the Emotional Disorders*. Oxford, England: International Universities Press; 1976.
- Ehlers A, Clark DM. A cognitive model of posttraumatic stress disorder. *Behav Res Ther*. 2000;38:319-345.
- McCann IL, Pearlman LA. *Psychological trauma and the adult survivor: Theory, therapy and transformation*. New York: Brunner/Mazel; 1990.
- Basoglu M, Salcioglu E, Livanou M, et al. Single-session behavioral treatment of earthquake-related post-traumatic stress disorder: A randomized waiting list controlled trial. *J Trauma Stress*. 2005;18:1-11.
- Bryant RA, Moulds ML, Guthrie RM, et al. Imaginal exposure alone and imaginal exposure with cognitive restructuring in treatment of posttraumatic stress disorder. *J Consult Clin Psychol*. 2003;71:706-712.
- Chard KM. An evaluation of cognitive processing therapy for the treatment of posttraumatic stress disorder related to childhood sexual abuse. *J Consult Clin Psychol*. 2005;73:965-971.
- Duffy M, Gillespie K, Clark DM. Post-traumatic stress disorder in the context of terrorism and other civil conflict in northern Ireland: Randomised controlled trial. *BMJ*. 2007;334:1147.
- Ehlers A, Clark DM, Hackmann A, et al. A randomized controlled trial of cognitive therapy, a self-help booklet, and repeated assessments as early interventions for posttraumatic stress disorder. *Arch Gen Psychiatry*. 2003;60:1024-1032.
- Ehlers A, Clark DM, Hackmann A, et al. Cognitive therapy for post-traumatic stress disorder: Development and evaluation. *Behav Res Ther*. 2005;43:413-431.
- Fecteau G, Nicki R. Cognitive behavioural treatment of post traumatic stress disorder after motor vehicle accident. *Cogn Behav Ther*. 1999;27:201-214.
- Foa EB, Hembree EA, Cahill SP, et al. Randomized trial of prolonged exposure for posttraumatic stress disorder with and without cognitive restructuring: Outcome at academic and community clinics. *J Consult Clin Psychol*. 2005;73:953-964.
- Keane TM, Fairbank JA, Caddell JM, et al. Implosive (flooding) therapy reduces symptoms of PTSD in vietnam combat veterans. *Behavior Therapy*. 1989;20:245-260.
- Marks I, Lovell K, Noshirvani H, et al. Treatment of posttraumatic stress disorder by exposure and/or cognitive restructuring: A controlled study. *Arch Gen Psychiatry*. 1986;55:317-325.
- Mueser KT, Rosenberg SD, Xie H, et al. A randomized controlled trial of cognitive-behavioral treatment for posttraumatic stress disorder in severe mental illness. *J Consult Clin Psychol*. 2008;76:259-271.
- Monson CM, Schnurr PP, Resick PA, et al. Cognitive processing therapy for veterans with military-related posttraumatic stress disorder. *J Consult Clin Psychol*. Special Issue: Benefit-Finding. 2006;74:898-907.
- Resick PA, Nishith P, Weaver TL, et al. A comparison of cognitive-processing therapy with prolonged exposure and a waiting condition for the treatment of chronic posttraumatic stress disorder in female rape victims. *J Consult Clin Psychol*. 2002;70:867-879.
- Tarrier N, Pilgrim H, Sommerfield C, et al. A randomized trial of cognitive therapy and imaginal exposure in the treatment of chronic posttraumatic stress disorder. *J Consult Clin Psychol*. 1999;67:13-18.
- Blanchard EB, Hickling EJ, Devineni T, et al. A controlled evaluation of cognitive behavioral therapy for posttraumatic stress in motor vehicle accident survivors. *Behav Res Ther*. 2003;41:79-96.
- Echeburúa E, de Corral P, Zubizarreta I, et al. Psychological treatment of chronic posttraumatic stress disorder in victims of sexual aggression. *Behav Modif*. 1997;21:433-456.
- Foa EB, Dancu CV, Hembree EA, et al. A comparison of exposure therapy, stress inoculation training, and their combination for reducing posttraumatic stress disorder in female assault victims. *J Consult Clin Psychol*. 1999;67:194-200.
- Foa EB, Rothbaum BO, Riggs DS, et al. Treatment of posttraumatic stress disorder in rape victims: A comparison between cognitive-behavioral procedures and counseling. *J Consult Clin Psychol*. 1991;59:715-723.
- Lynn SM, Eth S, Randolph ET, et al. A test of behavioral family therapy to augment exposure for combat-related posttraumatic stress disorder. *J Consult Clin Psychol*. 1999;67:243-251.
- Schnurr PP, Friedman MJ, Foy DW, et al. Randomized trial of trauma-focused group therapy for post-traumatic stress disorder: Results from a department of veterans affairs cooperative study. *Arch Gen Psychiatry*. 2003;60:481-489.
- Schnurr PP, Friedman MJ, Engel CC, et al. Cognitive behavioral therapy for posttraumatic stress disorder in women: A randomized controlled trial. *JAMA*. 2007;297:820-830.
- Meichenbaum D. Self-instructional methods. In: Kanfer FH, Goldstein AP, eds. *Helping People Change*. New York: Pergamon Press; 1974:357-391.
- Kilpatrick DG, Veronen LJ, Resick PA. Psychological sequelae to rape: Assessment and treatment strategies. In: *Dolays DM, Meredith RL, eds. Behavioral Medicine: Assessment and Treatment Strategies*. New York: Plenum Press; 1982:473-97.
- Carlson JG, Chemtob CM, Ruscak K, et al. Eye movement desensitization and reprocessing (EMDR) treatment for combat-related posttraumatic stress disorder. *J Trauma Stress*. 1998;11:3-24.
- Devilly GJ, Spence SH. The relative efficacy and treatment distress of EMDR and a cognitive-behavior trauma treatment protocol in the amelioration of posttraumatic stress disorder. *J Anxiety Disord*. 1999;13(1-2):131-157.
- Högberg G, Pagani M, Sundin Ö, et al. On treatment with eye movement desensitization and reprocessing of chronic post-traumatic stress disorder in public transportation workers—A randomized controlled trial. *Nord J Psychiatry*. 2007;61:54-61.
- Jensen JA. An investigation of eye movement desensitization and reprocessing (EMDR) as a treatment for posttraumatic stress disorder (PTSD) symptoms of vietnam combat veterans. *Behavior Therapy*. 1994;25:311-325.
- Lee C, Gavriel H, Drummond P, et al. Treatment of PTSD: Stress inoculation training with prolonged exposure compared to EMDR. *J Clin Psychol*. 2002;58:1071-1089.
- Marcus SV, Marquis P, Sakai C. Controlled study of treatment of PTSD using EMDR in an HMO setting. *Psychotherapy*. 1997;34(3):307-315.
- Power K, McGoldrick T, Brown K, et al. A controlled comparison of eye movement desensitization and reprocessing versus exposure plus cognitive restructuring versus waiting list in the treatment of post-traumatic stress disorder. *Clinical Psychology and Psychotherapy*. 2002;9:299-318.
- Rothbaum BO, Astin MC, Marsteller F. Prolonged exposure versus eye movement desensitization and reprocessing (EMDR) for PTSD rape victims. *J Trauma Stress*. 2005;18:607-616.
- Scheck MM, Schaeffer JA, Gillette C. Brief psychological intervention with traumatized young women: The efficacy of eye movement desensitization and reprocessing. *J Trauma Stress*. 1998;11:25-44.
- Taylor S, Thordarson DS, Maxfield L, et al. Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *J Consult Clin Psychol*. 2003;71:330-338.
- van der Kolk BA, Spinazzola J, Blaustein ME, et al. A randomized clinical trial of eye movement desensitization and reprocessing (EMDR), fluoxetine, and pill placebo in the treatment of posttraumatic stress disorder: Treatment effects and long-term maintenance. *J Clin Psychiatry*. 2007;68:37-46.
- Vaughan K, Armstrong MS, Gold R, et al. A trial of eye movement desensitization compared to image habituation training and applied muscle relaxation in post-traumatic stress disorder. *J Behav Ther Exp Psychiatry*. 1994;25:283-291.
- Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. Washington, DC: American Psychiatric Association Press; 1994.
- Cook A, Spinazzola J, Ford, J, et al. Complex Trauma in children and adolescents. *Psychiatric Annals*. 2005; 35:390-398.

49. Shields AM, Cicchetti D, Ryan RM. The development of emotional and behavioral self-regulation and social competence among maltreated school-age children. *Development and Psychopathology*. 1994;6:57-75.
50. Briere J, Kaltman S, Green BL. Accumulated childhood trauma and symptom complexity. *J Trauma Stress*. 2008; 21:223-226.
51. Edwards VJ, Holden GW, Felitti VJ, et al. Relationship between multiple forms of childhood maltreatment and adult mental health in community respondents: Results from the adverse childhood experiences study. *Am J Psychiatry*. 2003;160:1453-1460.
52. Kaltman S, Krupnick J, Stockton P, et al. Psychological impact of types of sexual trauma among college women. *J Trauma Stress*. 2005;1:547-555.
53. Widom CS, Kahn EE, Kaplow JB, et al. Child abuse and neglect: Potential derailment from normal developmental pathways. *NYS Psychologist*. 2007;19: 2-6.
54. Classen C, Koopman C, Nevill-Manning K, et al. A preliminary report comparing trauma-focused and present-focused group therapy against a wait-listed condition among childhood sexual abuse survivors with PTSD. *J Aggression Maltreat Trauma*. 2001;4:265-288.
55. Cloitre M, Koenen KC, Cohen LR, et al. Skills training in affective and interpersonal regulation followed by exposure: A phase-based treatment for PTSD related to childhood abuse. *J Consult Clin Psychol*. 2002;70:1067-1074.
56. Hien DA, Cohen LR, Miele GM, et al. Promising treatments for women with comorbid PTSD and substance use disorders. *Am J Psychiatry*. 2004;161:1426-1432.
57. Kubany ES, Hill EE, Owens JA. Cognitive trauma therapy for battered women with PTSD: Preliminary findings. *J Trauma Stress*. 2003;16:81-91.
58. Kubany ES, Hill EE, Owens JA, et al. Cognitive trauma therapy for battered women with PTSD (CTT-BW). *J Consult Clin Psychol*. 2004;72:3-18.
59. McDonagh A, Friedman M, McHugo G, et al. Randomized trial of cognitive-behavioral therapy for chronic posttraumatic stress disorder in adult female survivors of childhood sexual abuse. *J Consult Clin Psychol*. 2005;73:515-524.
60. Resick PA, Galovski TE, Uhlmansiek MO, et al. A randomized clinical trial to dismantle components of cognitive processing therapy for posttraumatic stress disorder in female victims of interpersonal violence. *J Consult Clin Psychol*. 2008;76:243-258.
61. Zlotnick C, Shea TM, Rosen K, et al. An affect-management group for women with posttraumatic stress disorder and histories of childhood sexual abuse. *J Trauma Stress*. 1997;10:425-436.
62. De Jong JTVM, Van Ommeren M. Mental health services in a multicultural society: Interculturalization and its quality surveillance. *Transcultural Psychiatry*. 2005;42:437-456.
63. Bichescu D, Neuner F, Schauer M, et al. Narrative exposure therapy for political imprisonment-related chronic posttraumatic stress disorder and depression. *Behav Res Ther*. 2007;45:2212-2220.
64. Hinton DE, Pollack MH, Pich V, et al. Orthostatically induced panic attacks among cambodian refugees: Flashbacks, catastrophic cognitions, and associated psychopathology. *Cogn Behav Pract*. 2005;12:301-311.
65. Neuner F, Schauer M, Klaschik C, et al. A comparison of narrative exposure therapy, supportive counseling, and psychoeducation for treating posttraumatic stress disorder in an african refugee settlement. *J Consult Clin Psychol*. 2004;72:579-587.
66. Otto MW, Hinton D, Korly NB, et al. Treatment of pharmacotherapy-refractory posttraumatic stress disorder among cambodian refugees: A pilot study of combination treatment with cognitive-behavior therapy vs sertraline alone. *Behav Res Ther*. 2003;41:1271-1276.
67. Paunovic N, Ost L. Cognitive-behavior therapy vs exposure therapy in the treatment of PTSD in refugees. *Behav Res Ther*. 2001;39:1183-1197.
68. Basoglu M, Salcioglu E, Livanou M. A randomized controlled study of single-session behavioural treatment of earthquake-related post-traumatic stress disorder using an earthquake simulator. *Psychol Med*. 2007;37:203-213.
69. Brom D, Kleber RJ, Defares PB. Brief psychotherapy for posttraumatic stress disorders. *J Consult Clin Psychol*. 1989;57:607-612.
70. Difede J, Cukor J, Jayasinghe N, et al. Virtual reality exposure therapy for the treatment of posttraumatic stress disorder following september 11, 2001. *J Clin Psychiatry*. 2007;68:1639-1647.
71. Frueth BC, Monnier J, Yim E, et al. A randomized trial of telepsychiatry for post-traumatic stress disorder. *J Telemed Telecare*. 2007;13:142-147.
72. Gersons BPR, Carlier IVE, Lamberts RD, et al. Randomized clinical trial of brief eclectic psychotherapy for police officers with posttraumatic stress disorder. *J Trauma Stress*. 2000;13:333-347.
73. Hollifield M, Sinclair-Lian N, Warner TD, et al. Acupuncture for posttraumatic stress disorder: A randomized controlled pilot trial. *J Nerv Ment Dis*. 2007;195:504-513.
74. Krakow B, Hollifield M, Johnston L, et al. Imagery rehearsal therapy for chronic nightmares in sexual assault survivors with posttraumatic stress disorder: A randomized controlled trial. *JAMA*. 2001;286:537-545.
75. Lange A, Rietdijk D, Hudcovicova M, van et al. Interapy: A controlled randomized trial of the standardized treatment of posttraumatic stress through the internet. *J Consult Clin Psychol*. 2003;71:901-909.
76. Lindauer RJ, Gersons BP, van Meijel EP, et al. Effects of brief eclectic psychotherapy in patients with posttraumatic stress disorder: Randomized clinical trial. *J Trauma Stress*. 2005;18:205-212.
77. Litz BT, Engel CC, Bryant RA, et al. A randomized, controlled proof-of-concept trial of an internet-based, therapist-assisted self-management treatment for posttraumatic stress disorder. *Am J Psychiatry*. 2007;164:1676-1683.
78. van der Kolk BA. Clinical implications of neuroscience research in PTSD. *Ann N Y Acad Sci*. 2006;1071:277-293.
79. Chambless D, Hollon S. Defining empirically supported therapies. *J Consult Clin Psychol*. 1998; 66:7-18.