An Affective Cognitive Neuroscience-Based Approach to PTSD Psychotherapy: The TARGET Model

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Adaptations or alternative versions of cognitive psychotherapy for posttraumatic stress disorder (PTSD) are needed because even the most efficacious cognitive or cognitive-behavioral psychotherapies for PTSD do not retain or achieve sustained clinically significant benefits for a majority of recipients. Cognitive affective neuroscience research is reviewed which suggests that it is not just memory (or memories) of traumatic events and related core beliefs about self, the world, and relationships that are altered in PTSD but also memory (and affective information) processing. A cognitive psychotherapy is described that was designed to systematically make explicit these otherwise implicit trauma-related alterations in cognitive emotion regulation and its application to the treatment of complex variants of PTSD—Trauma Affect Regulation: Guide for Education and Therapy (TARGET). TARGET provides therapists and clients with (a) a neurobiologically informed strengths-based meta-model of stress-related cognitive processing in the brain and how this is altered by PTSD and (b) a practical algorithm for restoring the executive functions that are necessary to make implicit trauma-related cognitions explicit (i.e., experiential awareness) and modifiable (i.e., planful refocusing). Results of randomized clinical trial studies and quasi-experimental effectiveness evaluations of TARGET with adolescents and adults are reviewed.

Keywords: posttraumatic stress disorder; complex trauma; psychotherapy; evidence-based practice; emotion regulation; translational science

Cognitive-behavioral approaches to psychotherapy have been the dominant paradigm for clinical practice and the most extensively empirically researched interventions for posttraumatic stress disorder (PTSD; James, James, Cowdrey, Soler, & Choke, 2013; Koucky, Dickstein, & Chard, 2013; Smith et al., 2013; Watts et al., 2013) since that syndrome was formally designated as a psychiatric diagnosis three decades ago in the Diagnostic and Statistical Manual of Mental Disorders (3rd ed.; American Psychiatric Association, 1980). However, even the most efficacious cognitive or cognitive-behavioral psychotherapies for PTSD do not achieve clinically significant benefits for a sizeable minority of recipients (Imel, Laska, Jakupcak, & Simpson, 2013; Watts et al., 2013). Therefore, adaptations of existing cognitive psychotherapies for PTSD are needed to retain and effectively benefit treatment nonresponders. This article will describe an approach to developing enhanced cognitive psychotherapies for PTSD based on a translation of the growing research literature on cognitive and affective neuroscience. To show how
this translational clinical neuroscience approach can be practically applied, a specific emotion regulation–focused intervention model for neuroscience-informed cognitive therapy of PTSD—Trauma Affect Regulation: Guide for Education and Therapy (TARGET)—will be described with a summary of the model’s research evidence base and dissemination infrastructure.

**Cognitive Psychotherapy for PTSD**

British cognitive restructuring therapy models, the German Narrative Exposure Therapy model, and three American cognitive behavioral therapy models (cognitive processing therapy, eye movement desensitization and reprocessing, and prolonged exposure) have been found to be efficacious and safe with sustained benefits in randomized clinical trial studies with adults seeking treatment for PTSD related to a range of accidental and interpersonal/violent traumatic stressors (Adenauer et al., 2011; Bryant et al., 2008; Foa et al., 2005; Jayawickreme et al., 2014; Jeffreys et al., 2013; Koucky et al., 2013; Marks, Lovell, Noshirvani, Livanou, & Thrasher, 1998; Resick, Williams, Suvak, Monson, & Gradus, 2012; Robjant & Fazel, 2010; Tarrier, Sommerfield, Pilgrim, & Humphreys, 1999). Similarly, positive outcomes have been reported with traumatized children and adolescents in randomized controlled trial studies of therapies that emphasize cognitive restructuring (e.g., cognitive-behavior therapy for PTSD, Cognitive Behavioral Intervention for Trauma in the Schools) as well as models that include cognitive restructuring within a primarily narrative exposure-based treatment (e.g., trauma focused-cognitive behavior therapy, the KIDNET adaptation of Narrative Exposure Therapy, ERASE-Stress; Berger, Gelkopf, & Heineberg, 2012; J. A. Cohen, Mannarino, & Iyengar, 2011; Mannarino, Cohen, Debling, Runyon, & Steer, 2012; Robjant & Fazel, 2010; Ruf et al., 2010; Smith et al., 2013; Smith et al., 2007; B. D. Stein et al., 2003). These cognitive and cognitive-behavioral psychotherapies have shown to reduce trauma-related maladaptive cognitions, and that the cognitive changes are related to—and potentially a mechanism that can account for—reductions in PTSD and associated internalizing disorder (e.g., anxiety, depression) symptoms (Adenauer et al., 2011; Diehle, Schmitt, Daams, Boer, & Lindauer, 2014; Gallagher & Resick, 2012; Kindt, Buck, Arntz, & Soeter, 2007; Smith et al., 2007; Sobel, Resick, & Rabalais, 2009).

Despite the plethora of comparably efficacious cognitive psychotherapies now available for PTSD, between 25% and 50% of recipients nevertheless prematurely drop out from treatment or are poor responders (i.e., limited or no symptom reductions or functional improvements; Gerger, Munder, & Barth, 2014; Imel et al., 2013; Schottenbauer, Glass, Arnkoff, Tendick, & Gray, 2008; Watts et al., 2013). Poor responders tend to have more complex psychiatric, behavioral, and relational problems; lower levels of education and intellectual functioning; and possibly biological impairments in the central and peripheral stress response systems (Berliner, 2005; J. A. Cohen, Berliner, & Mannarino, 2010; Gerger et al., 2014; Hembree, Cahill, & Foa, 2004; N. R. Stein, Dickstein, Schuster, Litz, & Resick, 2012; Tarrier, Sommerfield, & Pilgrim, 1999; Yehuda et al., 2009). Individuals with these vulnerabilities also may be excluded from and thus underrepresented in PTSD therapy research studies, potentially leading to an understatement of the scope of the attrition/nonresponder problem (Spinazzola, Blaustein, & van der Kolk, 2005).

However, dropouts and nonresponders from cognitive-behavioral therapies for PTSD are not more chronically traumatized (e.g., survivors of childhood abuse; polyvictimized or revictimized youth or adults), nor more severely symptomatic (including PTSD intrusive reexperiencing, avoidance, or emotional numbing symptoms; and anger, guilt, or shame; or dissociation) or anxiety-prone than PTSD therapy completers and positive responders (Cahill, Rauch, Hembree, & Foa, 2004; Cloitre, Petkova, Wang, & Lu Lassell, 2012; Gutner, Pillin, Suvak, Wiltsie-Stirman, & Resick, 2013; Karatzias et al., 2007; Resick, Suvak, Johnides, Mitchell, & Iverson, 2012;
Schottenbauer et al., 2008; van Minnen, Arntz, & Keijsers, 2002). Differential trauma exposure and trauma-related symptom severity (with the possible exception of hyperarousal) thus do not appear to lead to premature termination and treatment nonresponse in cognitive-behavioral therapies for PTSD. This raises the question of what outcomes have, and have not, been used to define positive responders to cognitive-behavioral therapies for PTSD.

Cognitive and cognitive-behavioral therapies for PTSD with adults and children have consistently shown evidence of achieving reductions in internalizing symptoms involving emotional distress (i.e., PTSD, depression, anxiety, dissociation, guilt, and suicidality) and trauma-related beliefs (Arntz, Tiesema, & Kindt, 2007; Cloitre et al., 2012; Diehle et al., 2014; Gerger et al., 2014; Gradus, Suvak, Wisco, Marx, & Resick, 2013; Gutner, Casement, Stavitsky Gilbert, & Resick, 2013; Harvey & Taylor, 2010; James et al., 2013; Jayawickreme et al., 2014; Mannarino et al., 2012; Powers, Halpern, Ferenschak, Gillihan, & Foa, 2010; Resick et al., 2008; Resick, Suvak, et al., 2012; Resick, Williams, et al., 2012; Rodenburg, Benjamin, de Roos, Meijer, & Stams, 2009; Silver, Rogers, & Russell, 2008; J. E. Taylor & Harvey, 2010; Wampold et al., 2010; Watts et al., 2013). Treatment response in PTSD psychotherapy most often has been defined in terms of reductions in the severity of PTSD, depression, and anxiety symptoms (Foa & Jaycox, 1999; Griffin, Resick, & Galovski, 2012; Jayawickreme et al., 2014; N. R. Stein et al., 2012). There is some evidence that change in problems with emotion dysregulation (e.g., anger, shame, and interpersonal distrust) may be achieved by cognitive-behavioral therapies for PTSD (Cahill et al., 2004; Deblinger, Mannarino, Cohen, & Steer, 2006; Mitchell, Wells, Mendes, & Resick, 2012; Neuner, Schauer, Klaschik, Karunakara, & Elbert, 2004; Resick et al., 2008); however, there also are findings suggesting that PTSD psychotherapy results in limited or no change in these symptoms (Arntz et al., 2007; Grunert, Weis, Smucker, & Christianson, 2007). Moreover, externalizing disruptive behavior problems related to emotion dysregulation (e.g., aggression, impulsivity, self-harm) consistently do not improve in cognitive-behavioral therapies for PTSD (J. A. Cohen et al., 2010; Forbes et al., 2008; Kuhn, Drescher, Ruzek, & Rosen, 2010; Taft, Creech, & Kachadourian, 2012; van Minnen, Harned, Zoellner, & Mills, 2012). Proponents of cognitive behavioral therapies for PTSD have called for adaptations in how these therapies are delivered to address emotion dysregulation and its behavioral and interpersonal manifestations (J. A. Cohen, Mannarino, Kliethermes, & Murray, 2012; Cook, Schnurr, & Foa, 2004; Resick, Bovin, et al., 2012). However, incorporation of intervention strategies explicitly designed to deal with emotion dysregulation also is warranted and may constitute a key advance for the field.

**Cognitive Emotion Regulation as a Focus for PTSD Psychotherapy**

A recent review (Brewin, 2011) concluded,

> In posttraumatic stress disorder (PTSD), there are numerous associated changes that involve memory capacity, the content of memories for trauma, and a variety of memory processes. . . . The following aspects of memory are likely to play a causal role in the development or maintenance of PTSD: verbal memory deficits, negative conceptual knowledge concerning the self, overgeneral memory, avoidance or suppression of memories, and negative interpretation of memory symptoms. Other aspects of memory likely to play a causal role that are in addition specific to PTSD are the integration of the trauma with identity, impairment in retrieval of voluntary trauma memories, and increased incidence of sensation-based memories or flashbacks. (p. 203)

Brewin’s (2011) list of the problems with memory that may contribute to PTSD makes it clear that it is not just memory (or memories) of traumatic events that are altered in PTSD but also fundamental aspects of the cognitive processing of the memories associated with autobiographical identity.
and social and affective information processing. Facilitating awareness of affect-laden verbally accessible (conscious) and situationally accessible (unconscious or somatically experienced) memories and appraisals in cognitive psychotherapy is consistent with metatheories of PTSD-related cognitions that postulate the operation of affectively charged associative schemas which include but are not limited to verbal/propositional representations (Dalgleish, 2004). Findings from the field of affective cognitive neuroscience indicate that implicit cognitive schemas can increase or reduce self-focused positive or negative emotions (Field, Lawson, & Banerjee, 2008; Tran, Siemer, & Joormann, 2011) and that implicit cognitive operations play an important role in emotion regulation that is generally unrecognized by individuals when they are experiencing emotions (Hopp, Troy, & Mauss, 2011; Koole & Rothermund, 2011). It also has been shown that intentional effortful appraisal of the personal significance of emotion-eliciting experiences and situations can implicitly reduce emotional arousal and intensity, whereas other types of effortful thinking which are associated with areas in the prefrontal cortex not implicated in emotional awareness (including explicit attempts to alter or reduce awareness of emotion states or intensity) do not influence emotional states (Iida, Nakao, & Ohira, 2011; MacDonald, 2008).

When experiencing emotions at moderate to high levels of intensity, especially emotions with a negative valence (e.g., the fear, anxiety, anger, sadness, or shame in PTSD), people often use cognition to attempt to change the valence or regulate the intensity level of their emotions (Linden et al., 2012; Thompson, 1990; Wilson, Sayette, & Fiez, 2013). Emotion regulation may be a crucial prerequisite to the successful use of other cognitive tactics for coping and resilience when people are under stress (Raio, Oredjer, Palazzolo, Shurick, & Phelps, 2013) precisely because the controlled information processing capacities necessary to think clearly about complex problems is likely to be reduced when emotional reactivity increases (Kanske, Heissler, Schonfelder, & Kanske, 2012; Wessa, Heissler, Schonfelder, & Kanske, 2013).

When emotionally dysregulated, people’s attempts to use cognition to regain emotion regulation often have limited or even adverse outcomes, particularly when they involve (or result in) the use of self-focused tactics such as worry, rumination, self-criticism, or the denial, hiding, or suppression of emotional awareness (Bornas, Tortella-Feliu, Balle, & Llabres, 2013). It may be a misnomer to describe these putatively maladaptive cognitive emotion regulation tactics as “self-focused” because they are fundamentally derived from (and likely to perpetuate a vicious cycle of) attributions of the self as unworthy, ineffective, or flawed/damaged. These tactics not only invalidate the self (Wagner, Rizvi, & Harned, 2007) but also serve as blinders in crucial social information processing and interpersonal functioning as well as in self-development:

Social information influences decision-making through an integration of information derived from individual experience with that derived from observing the actions of others. . . . [This] ability to optimally exploit social information depends on processes that overcome an egocentric bias [which is regulated by the] left inferior prefrontal cortex. (Toelch, Bach, & Dolan, 2014, p. 1746)

What then are the types of cognitive emotion regulation tactics that research suggests as potentially adaptive in relation to psychopathology, either preventively or therapeutically? Based on a meta-analysis and a study of adults’ self-reported use of cognitively based emotion regulation tactics classified as adaptive (i.e., acceptance, problem solving, reappraisal) and maladaptive (i.e., self-criticism, suppression, denial, worry/rumination), Aldao and Nolen-Hoeksema (2012, p. 498) concluded, “that (a) people consistently do or do not use maladaptive regulation strategies by implementing them to comparable extents across situations and (b) individuals who use maladaptive strategies more often have higher levels of psychopathology.”

Aldao and Nolen-Hoeksema (2012) identified key differences in the relationship of different types of adaptive tactics with psychopathology. Acceptance was the only adaptive tactic that was related to lower levels of psychopathology, and the greater the flexibility of its use the lower
the levels of self-reported psychopathology. This is consistent with mindfulness-based therapies which emphasize flexible deployment of one component of cognition—attention—as a means of gaining nonjudgmental self-awareness rather than to attempt to solve problems or formulate/corroboration fixed appraisals (Berkovich-Ohana, Glicksohn, & Goldstein, 2013; Chiesa, Serretti, & Jakobsen, 2013; Lutz et al., 2013; Paul, Stanton, Greeson, Smoski, & Wang, 2013; Tang & Posner, 2013). Mindfulness interventions have been shown to enhance self-awareness and to increase self-regulation of mood/emotion and both social and goal-directed behavior (Dickenson, Berkman, & Lieberman, 2013; Farb, Segal, & Anderson, 2013; Goldin, Ziv, Jazaieri, Hahn, & Gross, 2013; Goldin & Gross, 2010). However, mindfulness may not be one size fits all. A recent study with adults seeking treatment for mood and anxiety disorders found that mindfulness had different mechanisms of action depending on the type of psychopathology—when mindfulness was associated with reduced anxiety, reductions in worry appeared to be the mediator, but it was reappraisal that mediated mindfulness’s relationship to lower levels of depressive symptoms (Desrosiers, Vine, Klemanski, & Nolen-Hoeksema, 2013).

Problem solving, on the other hand, had an unexpected positive correlation with anxious, depressive, or other symptoms of psychopathology (Aldao & Nolen-Hoeksema, 2012). People experiencing emotional distress may actually face (or view themselves as having to deal with) more adversity than people who are less emotionally troubled and may therefore be more likely to deploy problem solving not only to resolve practical and interpersonal dilemmas but also to manage worry or rumination (which, the authors note, was reported as being used with a similar frequency to problem solving). Tellingly, Aldao and Nolen-Hoeksema (2012) suggest that distressed individuals may not be able to use problem solving as effectively as other people, thus not only failing to resolve the external problems but also not being able to recover from the negative emotion states. Moreover, problem solving may not be an effective emotion regulation tactic no matter how well it is used; neuroscience research suggests that problem solving engages and depends on different brain circuitry than that involved in emotion awareness and regulation (Kohn et al., 2014; Qiu et al., 2008; Ruh, Rahm, Unterrainer, Weiller, & Kaller, 2012).

Of particular relevance to cognitive psychotherapy, reappraisal was the least frequently used adaptive tactic, and neither its use nor the extent to which it was deployed flexibly across situations had any relationship to self-reported psychopathology (Aldao & Nolen-Hoeksema, 2012). The authors note that reappraisal is not a unitary phenomenon and that research is needed to define and test the potentially different effects of its component processes. For example, cognitive restructuring relies on finding and changing beliefs or meaning. Reappraisal also involves shifts in attention via systematic planful refocusing. A study with adults in psychiatric treatment found that reappraisal was inversely related to rumination and positively associated with resilience to stressors; however, the strongest correlate of resilience and lower levels of depression was when the individual refocused on planning (Min, Yu, Lee, & Chae, 2013). Prospective studies with burn victims (Van Loey et al., 2014) and patients with cancer (Wang et al., 2014) found that positive refocusing (and also acceptance and positive reappraisal in the latter investigation) was related to lower levels of depressive symptoms.

Consistent with the view that refocusing may be a fundamental cognitive tactic for reducing psychopathology and enhancing emotion regulation, Aldao and Nolen-Hoeksema (2012) suggest that a common meta-process in adaptive cognitive emotion regulation tactics could be the deployment “of attentional processes that might allow individuals to disengage from rigid patterns of regulation” (p. 498). They continue by recommending that “rather than seeking to replace maladaptive strategies for adaptive strategies, emotion regulation interventions should focus on helping individuals develop an awareness of the features of contexts that influence their use of strategies, and learn to implement strategies flexibly and appropriately for the context” (p. 498). Aldao and Nolen-Hoeksema (2012, p. 498) also note that “this approach is consistent with the
concept of developing a mindful awareness.” In addition, refocusing planfully may have a po-
tent, but largely implicit, beneficial effect on PTSD’s negative emotion states or their intensity by
accessing explicit positive self-related appraisals and goals (MacDonald, 2008).

ADDRESSING EMOTION PROCESSING IN
COGNITIVE PSYCHOTHERAPY FOR PTSD

Based on this review, it appears that the efficacy of cognitive psychotherapy for PTSD may be
enhanced by assisting recipients in identifying and deploying cognitive tactics that can implicitly
as well as explicitly facilitate emotion regulation by promoting focused awareness and appraisal
(rather than avoidance or rumination) of trauma-related negative emotion states and appraisals
of self and relationships. Indeed, emotion processing has been postulated as a core mechanism by
all PTSD therapies (Dalgleish, 2004), but precisely how cognitive interventions can be directly or
indirectly applied to achieve emotion processing in PTSD psychotherapy has only recently been
investigated. Two adaptations of cognitive-behavioral therapy for PTSD that systematically teach
emotion regulation skills prior to engaging recipients in cognitive-exposure processing of trauma
memories have been shown to result in greater reductions in PTSD and dissociative symptoms
and trauma-related cognitions and interpersonal problems than supportive therapy (Bryant et al.,
2013; Cloitre et al., 2012; Cloitre et al., 2010). In one case, there also was evidence of increases in
emotion regulation capacities (Cloitre et al., 2010). Additionally, a cognitive psychotherapy that
included not just cognitive restructuring but also rescripting of trauma memories was found to
enable half of the nonresponders to Prolonged Exposure to achieve a positive therapeutic out-
come (Arntz et al., 2007; Grunert et al., 2007).

The inclusion of cognitive psychotherapy techniques that systematically address emotion
dysregulation thus may be needed to complement or enhance cognitive restructuring when the
therapy involves the intentional mobilization of intense negative affect, as in the case Prolonged
Exposure therapy (Moser, Cahill, & Foa, 2010), or to address trauma-related dissociative symp-
toms (Cloitre et al., 2012). Consistent with this possibility, a cognitive psychotherapy for women
with complex trauma histories and comorbid PTSD and substance use disorders was effective
in reducing PTSD but not dissociative symptoms (L. R. Cohen & Hien, 2006). Similarly, a cog-
nitive psychotherapy with traumatized girls was found to reduce levels of clinically significant
PTSD symptoms only if the recipients initially reported low levels of peri-traumatic dissociation
(Qouta, Palosaari, Diab, & Punamaki, 2012). On the other hand, a group cognitive-behavioral
therapy designed to enable adults with chronic childhood abuse-related PTSD to stabilize their
emotions and relationships was found to be equally or more effective in helping individuals with
personality disorders to complete therapy and achieve gains in emotion regulation and interper-
sonal relationships as with individuals who had no personality disorders (Dorrepaal et al., 2013).
These findings suggest that emotion dysregulation–based cognitive behavioral psychotherapy
may benefit recipients who otherwise are at risk of dropping out or not achieving an optimal
therapeutic response. Several novel interventions have shown promise, but a systematic frame-
work for integrating emotion regulation into PTSD psychotherapy is needed.

TRAUMA AFFECT REGULATION: GUIDE FOR EDUCATION AND THERAPY

TARGET was designed to provide this framework. TARGET provides therapists and clients
with (a) a neurobiologically informed strengths-based meta-model of stress-related information
processing in the brain and how this is altered by PTSD and (b) a practical algorithm
for restoring executive functions that are needed to make implicit trauma-related cognitions
explicit (i.e., experiential awareness) and modifiable (i.e., planful refocusing). TARGET is operationalized in a manualized 10- to 12-session psychotherapy with separate individual and group versions for adults and adolescents, as well as versions for family systems therapy (Ford & Saltzman, 2009) and milieu intervention (e.g., therapeutic school, psychiatric or substance abuse treatment, or criminal justice residential or inpatient programs; Ford & Hawke, 2012; Frisman, Ford, Lin, Mallon, & Chang, 2008; Marrow, Knudsen, Olafson, & Bucher, 2012). After describing the core components of the TARGET therapeutic model, results of randomized clinical trial studies and quasi-experimental effectiveness evaluations with adolescents and adults will be summarized.

TARGET begins with psychoeducation that explains PTSD symptoms—particularly the trauma-related development or alteration of how perceptual, affective, interpersonal, and self-related information is processed—as the result of a shift in the brain's stress response system. The primary implication of TARGET's meta-model of trauma-related alteration of stress reactivity in the brain is that recovery from PTSD requires adjustments in cognitive processing that enable the brain's thinking center to be activated sufficiently to reset the brain's otherwise hyperactivated alarm. Based on the cognitive affective neuroscience evidence described earlier, several commonly used cognitive psychotherapy tactics may be inconsistent with this aim. Reappraisal may result in accessing of explicit knowledge that is contrary to posttraumatic cognitions (e.g., "I wasn't safe during the trauma but I am now"), but biologically and affectively supercharged implicit cognitions associated with persistent intrusive reexperiencing and extreme arousal states may override these verbally accessible cognitions—potentially leading to sustained avoidance and a perpetuation of reexperiencing and arousal dysregulation.

If PTSD is understood as a shift from a brain focused on learning to a brain (and body) focused on survival (Ford, 2009), survival-focused PTSD hypervigilance involves patterns of brain activation that facilitate rapid automatic adjustments to avert harm and stabilize arousal (e.g., brainstem, midbrain, amygdala; insula) instead of neural connections among areas of the brain that are involved in complex learning and cognition (e.g., anterior and posterior cingulate, insula, medial and dorsolateral prefrontal cortex, hippocampus; Vermetten & Lanius, 2012). A survival-focused brain appears to automatically defend against external threats but in so doing can overuse crucial bodily systems that are essential both to prevent exhaustion, injury, or illness—"allostasis" (Danese & McEwen, 2012)—and to develop and effectively deploy complex cognitive information processing capacities (Bluhm et al., 2012; Daniels et al., 2011).

To provide a nontechnical but scientifically based meta-model for therapists and clients, three interconnected brain areas and their functions are described in language and with graphics that are comprehensible at a fifth grade reading level: an "alarm center" in the brain (i.e., the amygdala, primarily the basolateral nucleus, and its afferent inputs and efferent outputs from other areas in the brain and the peripheral autonomic nervous system and hormonal stress system comprising the hypothalamus and pituitary and adrenal glands); an anatomically closely adjacent "filing center" in the brain's limbic system that serves as the librarian or search engine for the storage and retrieval of memories and related experiential information; and a "thinking center" that is located at a greater distance apart from the amygdala and hippocampus in the brain (and therefore less rapidly able to send or receive communication to or from them than they are with each other) and oversees the integration and translation of information about stressors and how to respond to them in conscious perceptions, emotions, thoughts, goals, and plans (i.e., the medial and ventrolateral prefrontal cortices and their interconnections with areas throughout the brain).

This biological model provides a transparent and destigmatizing explanation of how the brain adapts to enable a person to survive exposure to traumatic stressors: The brain's alarm gets hyperactivated to signal that a life-threatening emergency is occurring, and this burst of alarm signals floods the brain's filing center and creates an information overload that often exceeds
the filing center’s processing capacities. As a result, the filing center cannot convert much of the immediate input it also is receiving from the body and brain’s sensory/perceptual organs into memories that are organized, complete, useful, and informed by information files from previous experiences. The information stored as memories in the filing center and sent subsequently to the thinking center—with a delay of only milliseconds, which can seem like an eternity when attempting to survive a traumatic experience—therefore often takes the form of fragmentary flashes of disorganized perceptions and disconnected bodily and emotion feelings which are dominated by a sense of shock, confusion, terror, horror, aloneness, and powerlessness.

The meta-model explains PTSD as the understandable, albeit maladaptive, result of what appears to be an adaptive, automatic, and self-protective attempt by the brain’s alarm center to mobilize the body and brain to survive a traumatic threat. Under ordinary circumstances, the brain’s alarm reacts to stressors (both challenges and opportunities) by signaling the filing center to store and retrieve relevant information as memories that, when accessed and transmitted to the thinking center, enable the individual to respond based on organized, contextually adaptive, and goal-directed cognitions. Not only does the thinking center’s synthesis of information in the form of verbally mediated cognitions facilitate planful effective action but it additionally has a key adaptive benefit in terms of emotion regulation: Activation of the medial prefrontal cortex has been shown repeatedly to have the inhibitory effect of reducing amygdala activation (i.e., resetting the brain’s alarm). To the contrary, in PTSD, it appears that the brain’s alarm center is stuck in survival mode, and the body is correspondingly stuck in a state of physiological and emotional hyperarousal—or the dialectical opposite pole of hypoarousal, dissociation, and profound emotional numbing (Lanius, Brand, Vermetten, Frewen, & Spiegel, 2012). In PTSD, the brain’s filing center appears to have become primed by the ongoing emergency input from the alarm to access primarily survival/threat-related memories and information (i.e., intrusive reexperiencing). The brain’s thinking center thus may be unable to activate sufficiently to retrieve appropriate memories from the filing center and use them to think clearly and re-set the alarm.

TARGET therefore engages the therapist and client in learning a seven-step sequence for refocusing cognitively when experiencing alarm reactions that draws on, but systematizes and makes transparent (and thus, feasible for frequent replication and practice in vivo), cognitive skills taught in CBT, mindfulness and meditative therapies, and experiential and psychodynamic psychotherapies. The skill sequence is summarized in an easily learned acronym, “FREEDOM:”

- Focusing on one thought that you choose based on your core values and self
- Recognizing micromomentary triggers for posttraumatic “alarm” reactions
- Distinguishing alarm-driven (“reactive”) versus adaptive (“main”) Emotions
- Distinguishing alarm-driven (reactive) versus adaptive (main) Evaluations
- Defining adaptive (main) goals distinct from alarm-driven (“reactive”) goals
- Distinguishing alarm-driven (reactive) versus adaptive (main) Options
- Making a positive contribution by using these steps to reset the brain’s alarm

The seven-step sequence will be familiar to cognitive psychotherapists regardless of their specific theoretical orientation because it employs a transtheoretical set of cognitive tactics to facilitate self-monitoring (i.e., the first and last—focusing and making a contribution—steps), non-avoidant experiential awareness (i.e., the recognizing triggers and emotion identification steps), behavior analytic chain analyses (i.e., the sequential link between triggers, emotions, thoughts [evaluations], goals, actions [options], and outcomes [making a contribution]), reappraisal (i.e., the emotions, evaluations, and goals steps), and problem solving (i.e., focusing, defining goals, selecting options, and outcomes [making a contribution] steps). The FREEDOM sequence

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also draws attention to the dialectical interplay between emotions, thoughts, goals, and choices that are alarm-based reactive versus those based on the person’s core beliefs, values, relational commitments, and sense of self (Linehan, 1993).

TARGET draws on two transtheoretical psychotherapy models to provide a practical guide for the client (and therapist) in deploying the cognitive emotion regulation tactic of planful refocusing (Min et al., 2013) in PTSD psychotherapy. First, Gendlin’s (1982) focusing psychotherapy (an off-shoot of Rogerian client-centered therapy and one of the key precursors to experiential, emotion-focused and mindfulness-based psychotherapies) is used as an approach to enhancing clients’ capacities for purposeful mental focusing by deliberately marshaling executive function capacities to achieve experiential awareness (Gendlin, 1982). To facilitate a shift from being reactively disorganized mentally as a result of PTSD symptoms to proactively deploying goal-directed attention with mental acuity, mental focusing is operationalized in TARGET by dividing the FREEDOM skill of focusing into three substeps. A well-recognized mnemonic which connotes seeking help in the face of danger, SOS, is used to summarize the three substeps in a manner that was selected as likely to be learnable and memorable because it is pedagogically “sticky” (i.e., simple, efficient, active, and linked to a network of associative connections that have a connotation of trauma and recovery; Biggs & Tang, 2011; E. W. Taylor & Cranton, 2012):

- Slow down and Sweep your mind clear of all thoughts.
- Orient yourself by choosing one thought (using words, imagery, sound, or any of the other five senses) that represents what is most important to you right now based on what you value, believe in, and who you are as a person.
- Self-check by rating (on a scale from 1 to 10) your levels of (a) stress (from none at all to worst ever) and (b) personal control (from none to most ever)

The SOS mnemonic thus provides a generic protocol that can be individualized by and for each client based on their preferred modalities and approaches for mentally focusing (Gendlin, 1982), their core beliefs, values, aptitudes, interests, and personality characteristics.

Second, Fonagy’s mentalizing approach to psychodynamic psychotherapy (Allen, Fonagy, & Bateman, 2008) is used to enable the client to mentally visualize how and why PTSD symptoms occur as an automatic survival adaptation by the brain and how key areas within the brain can be harnessed to reduce or manage PTSD symptoms by freeing the brain from being trapped in survival mode. This begins with the metaphor of activating thinking and filing centers in the brain that can counterbalance and reset even a highly traumatized and hyperactive alarm center. The FREEDOM steps are a mental map to guide the client in identifying and unpacking both trauma-related (alarm-based, reactive) and self-congruent (thinking center-based, main) emotions, thoughts, goals, and choices. Mentalizing in TARGET thus provides the scaffolding for clients to planfully refocus attention by proactively observing and cognitively reorganizing their PTSD symptoms into constituent components instead of inadvertently exacerbating those symptoms by hypervigilantly scanning the external and internal environment for trauma reminders as an attempt to avoid any cues that might trigger PTSD’s intrusive reexperiencing. Thus, TARGET adds several crucial features to extant cognitive behavioral therapies. TARGET differs from other cognitive behavioral therapies for PTSD in translating affective cognitive neuroscience findings into a novel biobehavioral explanation of posttraumatic stress and a cognitive-behavioral skill sequence (rather than a collection of skills) to facilitate self-regulation when experiencing or anticipating posttraumatic stress reactions/symptoms. Although some of the specific elements in the skill sequence (e.g., identifying emotions, evaluating cognitions, selecting and implementing alternative behaviors) are found in other psychotherapies for PTSD, no other therapy model for PTSD provides an integrated skill sequence based on cognitive
affective neuroscience. Transparency is achieved in TARGET—to facilitate mentalizing, retention, and autonomous in vivo application in daily life as well as in therapy sessions—by providing a tangible way to visualize the operations of the brain's stress response system as well as with a sticky acronym (FREEDOM) and mnemonic (SOS) for deliberately resetting that system when it has become locked into survival mode in the aftermath of exposure to traumatic stressors. The FREEDOM and SOS sequences provide a toolkit and checklist for the therapist and client to organize and flexibly deploy the complex array of cognitive tactics that are needed for planful refocusing and cognitive emotion regulation. The foundational distinction, between reactive (alarm-driven) and main (based on higher order self-congruent cognitive processing) emotions, thoughts, goals, and behavioral choices, provides another sticky learning tool that guides the therapist and client in planful refocusing as a way to respond adaptively to prevent or manage and recover from PTSD symptoms.

The emphasis on paying attention purposefully and nonjudgmentally to both the reactive (symptomatic/conflicted/inauthentic) and main (core value) perspectives as they simultaneously co-occur in daily life restores agency and reduces PTSD-related avoidance while preserving the crucial dialectical relationship between survival-based (self-protective, posttraumatic) and self-sustaining cognitions. The provision of two preprocessing steps in the FREEDOM sequence prepares the therapist and client for the subsequent cognitive processing steps by interrupting symptomatic reactions with rapid emotion modulation (focusing with the SOS) and also heightening purposeful experiential awareness of the PTSD intrusive reexperiencing, avoidance, emotion dysregulation and hyperarousal (recognizing specific triggers) symptoms to further reduce maladaptive hypervigilance and avoidance.

The FREEDOM steps are learned and practiced incrementally through dialogue with a therapist or counselor or in guided interactions in a therapy group or a milieu program. This involves the application of cognitive behavioral therapy techniques including observational learning via modeling, opportunities for guided practice with coaching and self-monitoring, and individualized applications in the youth’s natural environment to promote generalization and refine the application of skills. A structured FREEDOM practice exercise template is provided for the client to review recent or historical experiences either with the clinician or independently between or following therapy sessions. The practice exercise is designed to enable clients to distinguish “alarm reactions” from focused self-regulation to enhance their ability to use their innate skills for focused self-regulation while experiencing PTSD symptoms. The goal is not to eliminate symptoms (which may paradoxically increase their severity) but to encourage mindful awareness and acceptance (Hayes, Luoma, Bond, Masuda, & Lillis, 2006) by self-monitoring them, recognizing their adaptive value, and choosing to focus on and use more self-congruent emotions, thoughts, goals, actions, and criteria for self-evaluation.

TARGET also has a creative arts activity designed to enhance positive and negative emotion recognition skills by having participants create personalized “lifelines” via collage, drawing, poetry, and writing. The lifeline provides a way to apply the SOS and FREEDOM steps to constructing a life narrative that includes traumatic and stressful events but does not involve repeated retelling of them. TARGET does not require trauma memory processing but instead engages clients in a process of learning how to systematically reconstruct narratives describing current or past stressful events. The intervention’s premise is that knowing how to reconstruct memories that are predominantly dysphoric, fragmented, and incomplete to make them more emotionally and cognitively coherent and complete will enhance the client’s ability to regulate distressing emotions related either to past traumas or current stressful events. Thus, the FREEDOM sequence is compatible with trauma memory processing—in fact, it is designed to enhance clients’ abilities to purposefully and mindfully engage in memory processing while also acquiring a transparent set of skills for independently reconstructing implicit as well as explicit aspects of memories (of other
traumatic events or other important nontraumatic experiences) in a coherent narrative while also cognitively achieving emotional regulation.

Case Example

To ensure that privacy and confidentiality are preserved, all names and personal details for this case have been disguised as a composite of several actual clients and their families.

Arianna, the 16-year-old daughter of Robert (a high school physical education teacher of White ethnicity) and Marianne (a school nurse of Latina/African Caribbean ethnicity), was seen for outpatient psychotherapy at the University of Connecticut Child and Adolescent Psychiatry Clinic 6 months after a sexual assault by a former boyfriend. Arianna presented reluctantly (“My parents want me to talk about what happened and get over it, but I feel better when I can forget about it and get on with my life”) but acknowledged experiencing intrusive memories (especially when at school or when alone in her room at home); avoidance of any contact with the former boyfriend or their mutual friends; feeling generally irritable, bored, and unhappy; thinking that she would never be able to trust men or have another boyfriend; thinking that there was something wrong with her and that her friends and teachers blamed her for leading her boyfriend on and then getting him into trouble by accusing him of the assault; not being able to sleep and feeling exhausted; and being unable to concentrate on schoolwork—on a daily basis.

When the therapist was reviewing potential traumatic experiences while getting a psychosocial history, Arianna disclosed that she had been sexually molested by an uncle when visiting her cousins for several weeks during the summer at age 11 years. She had felt afraid to tell anyone until she returned home to her parents and then she felt ashamed and guilty when her parents reported the molestation to the police and he was sent to jail after she had to testify for the trial. She said that her parents had been so angry and upset that, even though they tried to comfort her and reassured her that it was not her fault, she worried that she had hurt them and the rest of her family—and she felt sure that her cousins hated her because her parents would never allow to visit or talk to them or their family again. Arianna recalled being taken to a therapist for several months afterward and described learning mental and relaxation coping skills, which had helped her “not cry all the time” and feel calmer when she felt upset. She also wrote a story about what had happened, with the therapist’s help, and when she read it to her parents, she said that the therapist helped them to feel better after they started crying. She said that the writing was especially beneficial in making the molestation seem like it was in the past and over and done.

When Arianna said that she had always enjoyed writing and wanted to become an author ever since she first started reading books, the therapist asked her if she had been writing anything since the recent sexual assault. Arianna became tearful and said that she had tried to write a story like she had with her therapist when she was younger, but every time she started, her mind would just go blank or she would start sobbing or feeling so angry that she wanted to punch the walls. She said that was why she did not think therapy would help because something seemed to be wrong with her and neither the writing nor the coping skills she had learned previously worked any more. She said that there must be something really wrong with her for this to have happened again, and now she was certain her parents thought she should just get over it because they seemed “sick and tired of me always ruining everyone’s life by being a victim and not just getting over it.”

The therapist empathically acknowledged how confusing and hurtful the betrayals, first by a trusted adult family member and then by a trusted boyfriend, had been for Arianna and how frightening and frustrating it was for her to have to deal with not only her own but also many other people’s upset feelings and everyone’s wish that this had never happened or could be forgotten. She asked Arianna if she would like to revisit some of the therapy activities that she had...
found helpful in the past and together figure out why they were not working as well now and how
they together could revise them to be helpful now. Arianna withdrew angrily at this suggestion,
saying that she had tried that already and either she was too messed up for that to work or the
therapy was just for children and she did not want to be treated like a child who cannot handle life
on her own. The therapist affirmed Arianna’s desire to be seen and treated as a young adult and to
handle things independently and agreed that having had a terrible betrayal happen in two trusted
relationships could make anyone feel deeply injured, pretty hopeless about future relationships,
and ashamed, especially if they, like Arianna, cared a lot about other people’s happiness as well as
their own.

The therapist added, “You’re an honest, responsible, and caring person who’s too smart to
just pretend it’s no big deal when you’re feeling that way. So you’ll probably decide that it’s some-
thing about you and you’re all messed up—even though, if it was anyone else, I doubt you would
blame or judge them. It won’t matter even if everyone genuinely tells you that you’re not to blame
and this doesn’t mean anything bad about you. So you’re living a story that’s not fiction, it’s your
real life, but it isn’t working out and you don’t know why. And you can’t do the one thing that
you’re really good at and that helps you, which is to figure things out by writing.

But maybe there’s a good reason why you’re feeling so trapped and blocked, and it’s not
something wrong with you as a person that’s going to ruin the rest of your life. Would you be will-
ing to hear me out if I explain how this kind of extreme stress changes how the brain and body
deal with stress? [Arianna looks skeptical, but nods yes.] I can show you some practical ways to get
your brain out of high stress mode and back to normal again. Actually nothing you don’t already
know—it’s just that no one’s shown you how your brain works under stress. To start with, do you
know that you have a stress alarm in your brain, and how to turn it down?”

The therapist proceeded to give Arianna a brief description of the meta-model of the brain’s
stress response system. The concepts were highlighted with examples drawn from Arianna’s dis-
closures to illustrate how her PTSD symptoms were the result of her brain’s alarm going into
emergency/survival mode to protect her during the traumas and getting stuck in that hyperactive
state because of an instinctive attempt to not be caught off guard again after trauma struck twice.
The therapist also used this meta-model and Arianna’s self-descriptions to show her how, despite
having her brain hijacked by its own alarm, there still were times where she was able to activate
her thinking center effectively when she focused herself by drawing on memory files based on her
core values (e.g., honesty, hard work, compassion, trustworthiness).

Arianna’s immediate response was, “How come nobody ever told me about this alarm be-
fore?” She quickly deduced that the reason why periods of apparent normalcy were short-lived
was because she had not known to use her brain’s thinking center by focusing her mind, and as a
result, her brain’s trauma-reactive alarm was stuck in survival mode. And she was quick to grasp
that, although writing had become very difficult because of being in an alarm state and there-
fore less able to concentrate than previously, writing could be a way to focus and activate her
thinking center so it would reset her brain’s alarm. She was curious why writing about a trauma
memory had apparently worked to reset her brain’s stress response system previously, but now
that didn’t seem possible. The therapist explained that, although there was no certain answer to
that question, one possibility was that having her brain’s alarm become supercharged as a result of
experiencing a second trauma and having a more sophisticated brain as the result of normal de-
velopment as a young adult, she might need a different way now to fully activate her brain’s more
complex thinking center and to reset her highly reactive alarm. She spontaneously decided to use
writing fiction based on her own life as way to harness the power of her brain’s thinking center
and also to refine and reorganize her brain’s memory files. She found that this helped her to un-
lock and regain, and to increase, her sense of personal control despite still having many moments
of high stress in her life. Arianna could mentally picture how the FREEDOM sequence helped
her activate her thinking center and write not only about experiences that were troubling but also about her (and her fictional characters’) core values, goals, and dreams: “I used to use writing just to feel sorry for myself or vent, but now, I write to focus my brain and figure out how to really deal with stuff. Maybe I’m not all messed up, I just gotta keep an eye on my alarm!”

The therapist explained that although the FREEDOM sequence usually was best learned by applying it to current experiences in which Arianna experienced intense or problematic alarm reactions, she could subsequently apply it in therapy (in sessions or in her independent writing) to intrusive memories (either of the recent assault or memories of the prior molestation and its aftermath that were reactivated). Arianna initially did not want to talk (or think) about her memory of the assault, but as she applied the FREEDOM sequence to unpacking (and later to preparing for and handling in vivo) daily life dilemmas in which she either “overreacted” or “shut down,” she described feeling no less strongly remembering the assault but not needing to avoid the memories: “I hate remembering what happened. I wish it would just go away or never happened. I never want to see him again, but I’m not scared to remember what happened.”

The therapist suggested, but did not require, that Arianna consider what she would write if she ever did write about the sexual assault and about the relationship with that boyfriend and how his betrayal had affected her. Arianna responded by talking in more detail than ever before about the relationship, how shattering it had been for her emotionally when he suddenly assaulted her. In so doing, she used the FREEDOM sequence as a structure to organize an oral narrative that included details of the assault that were relevant to her—for example, “The trigger moment when my alarm was going off strongest was when I saw a look on his face that I’d never seen. After that it seemed like my brain just shut down, but now, I realize that my alarm was still protecting me and keeping me alive. And I remember I had one main thought that I don’t think I even realized I was thinking at the time—I saw my mom reaching out her hand to me and I knew she’d help me get free and safe again. I guess that was my main goal, too, because here I am!”

About two-thirds of the way through the therapy, Arianna seemed to slip back into a state of diffuse dysphoria and irritability, with no clear triggering events or trauma reminders. After a few sessions in which the therapist gently inquired—to no avail—about what might be setting her alarm off, she began a session by expostulating: “What good is it if I’m focused, when the people around me don’t know how to handle their own alarm reactions? They don’t even know they have an alarm in their brain, let alone how to use their [expletive] thinking centers to reset it so that their alarms aren’t constantly setting off other people’s! I’m not sure they even have a thinking center in their brains, but they sure know how to set off all my alarms.” Arianna then clarified that her parents and younger brother had been irritable with her “because they can’t deal with the fact that I’m a normal human being who has moods and isn’t always a happy camper!” The therapist inquired whether Arianna thought it would be helpful for her to share some of what she had learned about stress, the brain, and focusing to reset the alarm, with her family.

In some cases, clients realize that when other people trigger them it may be because of an alarm reaction that originates with the other person, regardless of whether the other person has experienced trauma. Rather than viewing either themselves or the other person, or both, as at fault when there is conflict, tension, or disappointment in relationships, this reframing can offer the client an opportunity to share some of their newfound knowledge and talk with friends or family about relational difficulties in a nonjudgmental manner using the meta-model, SOS, and FREEDOM steps. However, when either the relational difficulties or the other person’s alarm reactions are deeply entrenched, the client may try to use TARGET in a futile attempt to be the informal therapist for their family member(s) or friend. The therapist discussed this dilemma with Arianna, and they jointly decided to offer to have a colleague meet with Arianna’s parents and brother to give them an introduction to TARGET and how trauma affects even the healthiest brain. Arianna’s mother and brother accepted the offer and were very grateful to learn a way to
understand Arianna’s moods and behavior as expectable—and not permanent—reactions by her brain’s alarm to protect her from being hurt again. Both mother and brother were reassured that the therapy relied on a skill, mental focusing, which they found quite familiar, to accomplish a goal which they could relate to in their own lives—resetting the brain's alarm. Arianna was surprised but quite pleased that her family members seemed able to stop worrying about her or that she no longer cared about them: “They stopped pressuring me and criticizing me all the time. Finally, their alarms aren’t always going off and setting off mine!”

After 5 months of weekly (or in the final 6 weeks, twice-monthly) psychotherapy, Arianna described her PTSD symptoms as consistently mild or nonexistent with one exception. She still felt intense, but manageable, distress when she saw or heard any man expressing anger. This was consistent with her identified trigger moment in the traumatic assault and suggests that she may benefit from trauma memory processing related to that trigger. However, Arianna also was able to distinguish cognitively between anger that was expressed in a malicious, assaultive, or out-of-control manner versus intense but with no aggression. She realized that she actually had seen her former boyfriend “losing it, or on the verge of losing it, or just really mean” before the incident, but she had assumed that he would never act that way toward her because she had done nothing to deserve it. Her conclusion was, “I still don’t like being around guys who think they’re so special that they do anything they want no matter who gets hurt. They better grow up and learn how to deal with their own alarms, but that’s their problem, not mine. I deserve better.”

The Evidence Base and Dissemination Infrastructure for TARGET

TARGET was developed and tested clinically and scientifically first with adults with psychiatric and/or substance abuse disorders comorbid with complex PTSD. In a randomized controlled trial comparing outpatient group therapy with or without TARGET, the TARGET condition was shown to be effective in this format in reducing PTSD-related beliefs and significantly more effective than treatment as usual in sustaining sobriety self-efficacy with adults in substance abuse treatment (Frisman et al., 2008). In a subsequent randomized controlled trial comparing TARGET versus a manualized supportive group psychotherapy with incarcerated women with complex PTSD, both interventions achieved statistically significant reductions in PTSD and associated symptom severity and increased self-efficacy, with low dropout rates (<5%; Ford, Chang, Levine, & Zhang, 2013). However, TARGET was significantly more effective in increasing sense of forgiveness toward self and toward others who have caused harm in the past, and showed tentative evidence of stronger reductions in trauma-related negative beliefs about self and relationships and increases in affect regulation capacities. TARGET thus appears to address outcomes related to self and relational attributions that have not been shown to be consistently achieved by cognitive behavioral therapies for PTSD except the newer therapy models that also focus on affect regulation (Bryant et al., 2013; Cloitre et al., 2010).

TARGET also has been tested as a one-to-one psychotherapy for adults with PTSD. A randomized controlled trial compared TARGET versus a manualized social problem–solving therapy that had previously demonstrated efficacy for PTSD (McDonagh et al., 2005). TARGET was shown to have incremental efficacy in achieving sustained (at 3- and 6-month follow-up assessments) reductions in PTSD severity and enhanced affect regulation capacities with low-income mothers caring for young children (Ford, Steinberg, & Zhang, 2011). TARGET also was more effective than the social problem–solving therapy in reducing anxiety, trauma-related self-cognitions, and blame and increasing active coping and secure attachment working models. This study further demonstrated TARGET’s capacity to achieve improvements in trauma-related self-attribution and relational capacities as assessed with an additional set of outcome measures.
One randomized clinical trial with girls involved in delinquency and two field trials with adolescents in juvenile justice residential programs have provided evidence of TARGET’s effectiveness with children and adolescents ages 11–18 years. In the randomized clinical trial study, TARGET delivered as a one-to-one therapy was more effective than a relational therapy in reducing PTSD (intrusive reexperiencing and avoidance) and anxiety symptoms and improving posttraumatic cognitions and emotion regulation (J. D. Ford, Steinberg, Hawke, Levine, & Zhang, 2012). The relational therapy was an active intervention rather than a minimal contact control condition, as evidenced by its superiority to TARGET in reducing girls’ self-reported anger and increasing their sense of hope. TARGET also achieved reductions in anger and increases in hope, suggesting that a combination of a relational framework and TARGET’s psychoeducation and affect regulation skills may be optimal for an adolescent female population.

In the two quasi-experimental design juvenile justice field trial studies, TARGET was delivered as a group and milieu intervention and was found to be associated with greater reductions in violent incidents and punitive disciplinary sanctions (e.g., restraints, seclusion; Ford & Hawke, 2012; Marrow et al., 2012), reductions in recidivism (Ford & Hawke, 2012), reductions in depression and anxiety (Marrow et al., 2012), and improvements in sense of hope and engagement in rehabilitation (Marrow et al., 2012) than matched comparison groups receiving services as usual. TARGET’s benefit as a milieu intervention may extend to enhancing safety by promoting affect regulation, responsible behavior, and collaboration among troubled youth and adult caretakers, although further research is needed to test this hypothesis.

Thus, TARGET shows promise with complexly traumatized adults and youth as a one-to-one, group, and milieu therapy model. The TARGET model can be delivered on a modular basis to enhance treatment outcomes for nonresponders using the SMART research paradigm (Lei, Nahum-Shani, Lynch, Oslin, & Murphy, 2012). For example, TARGET is being provided to assist parents in dealing with their own emotion regulation in a pilot randomized clinical trial study that begins with either trauma-focused cognitive behavior therapy or a trauma-focused family systems therapy. In that study, children who do not show clinically significant progress after receiving 10 sessions of the initial psychotherapy are randomly assigned either to additionally receive the other initial therapy or to have their parent(s) receive TARGET. Based on the growing research literature showing that parental PTSD or affective dysregulation is associated with more severe and persistent problems with PTSD by their children, TARGET is hypothesized to benefit the parent directly and to indirectly enhance the child’s response to trauma-focused individual or family therapy.

Another example of flexible deployment of TARGET comes from a recently completed study with college students who wanted to overcome clinically significant problem drinking. Abbreviated versions of the TARGET psychoeducation about stress, trauma, and the brain, and TARGET modules teaching the FREEDOM emotion regulation skills, were incorporated into a therapist-delivered cognitive-behavioral intervention that was based on a web-based curriculum. The TARGET modules were seamlessly added to the responsible drinking CBT protocol, keeping the amount of therapist contact time constant for the CBT-alone and CBT + TARGET conditions. Reductions in the frequency and severity of problem drinking were found for both treatment conditions based on standardized questionnaire and daily self-report measures (Ford et al., 2015). The TARGET-enhanced CBT achieved greater reductions in days of drinking, days of heavy or problem drinking, and PTSD symptoms, and increases in emotion regulation than CBT-alone. These findings suggest that TARGET can be successfully integrated with CBT protocols for problems frequently comorbid with PTSD such as alcohol abuse.

TARGET also has a dissemination infrastructure for exportation of the model to large organizations and service systems. TARGET has been implemented in several statewide behavioral health, juvenile and adult criminal justice systems in the United States, and in multiprogram...
agencies and organizations in North America and Europe providing mental health, child welfare, juvenile justice, substance abuse treatment, and homelessness services. The University of Connecticut has copyrighted the TARGET model and licensed a small business (Advanced Trauma Solutions, Inc., http://www.advancedtrauma.com) as the sole commercial distributor of the model. The implementation program involves an intensive organizational readiness assessment, multiday trainings for clinicians and staff who directly implement the intervention, overview presentations for all other agency/organization administrators and staff to support consistent implementation, and a multiyear protocol for quality assurance (including independent rating by the trainers of videotape recordings of TARGET sessions), ongoing consultation to ensure fidelity and enhance competence of implementation, assistance with implementation and analysis of data from outcome, alliance, and satisfaction measures, and a certification process for both TARGET providers and TARGET trainer/consultants. The implementation infrastructure and process was rated as 4.0 on a 4.0 scale by the Substance Abuse and Mental Health Services Administration (SAMHSA) National Registry of Evidence-based Programs and Practices (see http://www.nrepp.samhsa.gov). Adaptations of the TARGET model are under development and disseminated on a limited pilot-testing basis by the Center for Trauma Recovery and Juvenile Justice in the National Child Traumatic Stress Network (http://www.nctsn.org).

**CONCLUSION**

Cognitive psychotherapy for PTSD may be at the threshold of important advances based on emerging findings from cognitive affective neuroscience research. TARGET is an example of how such translational efforts can yield novel refinements of existing interventions that are well-suited for empirical validation and systematic dissemination. TARGET’s therapeutic and psychoeducation framework might at first glance seem to “medicalize” PTSD (Deacon, 2013), which could iatrogenically exacerbate rather than reducing stigma associated with the disorder (Kvaale, Gottdiener, & Haslam, 2013; Kvaale, Haslam, & Gottdiener, 2013). Biological explanations that could be misinterpreted as implying pathological determinism, irreversible impairment, and social deviance may be stigmatizing (e.g., perceptions of dangerousness) and can lead to pessimism (Kvaale, Gottdiener, et al, 2013; Kvaale, Haslam, et al., 2013). However, Kvaale and colleagues found in their meta-analyses that these adverse effects were weak and “a mixed blessing”—the strongest relationship identified in the meta-analyses was that “biogenetic explanations for mental disorders confer mixed blessings for stigma” because “people who hold biogenetic explanations for mental disorders tend to blame affected persons less for their problems” (Kvaale, Gottdiener, et al., 2013, p. 95).

TARGET provides a biobehavioral rather than purely biogenetic or neurochemical model to explain posttraumatic stress reactions as survival-based adjustments in adaptive psychobiological capacities that can be recalibrated cognitive-behaviorally to now instead be adaptive in nontraumatic circumstances. TARGET’s psychoeducation and therapeutic framework thus is designed to not only reduce blame and prevent or ameliorate stigma but moreover to support realistic optimism and shared commitment by the therapist and client to work together to build on the client’s strengths —consistent with research demonstrating that a strengths-based approach and a therapeutic relationship are consistently associated with client engagement in psychotherapy (Holdsworth, Bowen, Brown, & Howat, 2014). The finding across several studies that participants’ ratings of therapy credibility and expectancy of positive therapeutic outcome was significantly higher in TARGET than in active comparison therapies further supports the use of TARGET’s biobehavioral framework (Ford et al., 2012; Ford et al. 2011).
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