CRATER Therapy for Veterans With Mild to Moderate Cognitive Impairment and Comorbid PTSD

By Harriet K. Zeiner, PhD

In patients with comorbid Acquired Brain Injury (ABI) and Post Traumatic Stress Disorder (PTSD), standard practice in the VA is to treat PTSD first then refer for treatment of the ABI, including the use of cognitive remediation (reduction of cognitive deficits by training to improve or compensate with strategies, attention, memory, language or executive function). This article presents an alternative treatment model used at the Palo Alto VA Health Care System: treatment of the ABI with CRATER Therapy followed by PTSD treatment using Prolonged Exposure (PE), Cognitive Processing Therapy (CPT) or Acceptance and Commitment Therapy (ACT).

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CRATER Therapy is one-on-one psychotherapy with embedded cognitive remediation for mild to moderate cognitive deficits, focusing on strategies used in social settings. It was developed in response to repeated findings that cognitive remediation for those with ABI results in increased functional gains during and at the end of training sessions, a decrease in gains at three months, and no effect one year post-training. The results were primarily due to the following psychological factors not being addressed in "pure" cognitive retraining:

- Regardless of warnings that cognitive strategies must be used lifelong, patients want their *memory, speed of processing, attentional focus, and ability to multi-task* to return to previous levels and manner of processing. Patients consider these cognitive characteristics to be a part of the self, and they want to return to former levels of wholeness and competence. They do not want to appear different from peers.

- Acknowledging damage to the self is difficult, cannot be a one-time event, and must not be socially stigmatizing.

- Cognitive deficits result in the individual's thinking abilities being overwhelmed in social situations. The overwhelmed person gives a consistent catastrophic dysphoric affect that is frequently seen by others as a psychiatric difficulty rather than as a cognitive difficulty.

- Most cognitive deficits with accompanying catastrophic reactions appear in social situations; most cognitive remediation is not taught in the social context whether the training is one-on-one or in groups. Patients are expected to generalize strategies for use in the social context on their own.

- Group cognitive retraining is almost always totally ineffective; patients are unable to keep up, get the point, remember the material, or stay focused. In other words, patients with cognitive impairment fail in groups because of their cognitive deficits even when mild.

CRATER therapy has six important components, encapsulated by acronym:

Catastrophic reaction: tying the socially acceptable cognitive strategy performance to the symptom of cognitive overload in the environment that evokes it.

Regularization of the sleep/wake cycle to reduce fatigue and provide physiological anchors for cognitive strategy performance.

Alliance between therapist, patient and significant other to

Triangulate and

Externalize the blame for symptoms to something outside of the patient.

Resilience by coping rather than by competing as competition is no longer an option for most patients.

The evidence from holistic, milieu ABI programs is clear: success in the community, work or school after cognitive remediation occurs if treatment includes cognitive remediation *integrated* with psychotherapy (Cicerone, 2008; Klonoff, 2001, 2007; Malec, 2002). The same techniques work for varied ABI conditions: traumatic brain injury, stroke, brain tumor, encephalitis, and Mild

Cognitive Impairment. The ability of the patient to use remediation unassisted, ally with therapists, and reduce the effects of slowed information processing appears predictive of outcome success in the community one year or more post-treatment.

The Components of CRATER Therapy

CRATER therapy has six important components (see figure on previous page).

The patient learns to identify the catastrophic reaction (Goldstein, 1943) resulting from cognitive overwhelm in social situations. There are six possible reactions, but individuals display only one or two consistently:

- Flight, avoidance
- Anger (simplifies the complex demand which elicits the overwhelm; other people go away as a result)
- Laughing (rare)
- Crying (often mistaken for depression, but can be distinguished as it immediately ceases if the situation simplifies)
- Freezing, mind goes blank
- Confusion (the patient does not ask for clarification, but impulsively jumps into action or speech, usually incorrectly)

In CRATER therapy, the patient uses the inevitable catastrophic reaction as the cue to perform a strategy that slows the world down to a manageable speed and level. This helps those with cognitive deficits who see the world as coming too fast or as demanding of impossible multitasking. The response strategy must be socially acceptable so that patient does not look unusual and must be taught to patients not "discovered" by them.

Regularization of routine, including rise time, bedtime, and mealtimes (with food taken every two to three daylight hours to maintain blood sugar) creates a behavioral schedule and physiological anchors for attachment of behavior chains, reducing the burden on memory and initiation.

The "ATE" component is the formation of an *alliance between therapist, significant other, and patient, as well as triangulating and externalizing blame to the ABI*. This tactic removes censure from the patient, allowing the family member to be educated about brain injury symptomatology. It also gives the patient a reason to contain the effects of brain injury or they will continue appearing unreliable to others. Patients learn that *reinforcement and self-esteem come from being resilient*, which is defined as controlling the rate of information that comes at them. The world is socially too fast when it cognitively overwhelms them. It is the patient's responsibility to slow the rate down using communally acceptable, overlearned phrases when cognitively overwhelmed.

Patients with ABI often have lowered ability to learn and remember compared to their pre-morbid characteristics. After ABI, learning and memory characteristics are often qualitatively as well as quantitatively different from that of peers. Although neuropsychological evaluation accurately describes the level of impairment of learning and memory (mild, moderate or severe), evaluations cannot describe the new characteristics (how many repetitions over days until a new material is reliably available in social situations). New learning characteristics have to become a process variable in therapy, constantly fed back to patients when they successfully learn in small steps.

Implementing CRATER Therapy

Treating ABI, not PTSD, initially. Patients with mild to moderate cognitive impairment and comorbid PTSD receive CRATER therapy first. Patients learn to modulate the rate at which information comes at them prior to initiating PE, CPT or ACT. Patients are seen in 90-minute sessions, weekly, for six months. If available, a significant other is present in most sessions; they learn what the patient learns, especially how long it takes the patient to overlearn (so that the strategy is available even in stressful social situations). The same therapist treats the members of the couple, sometimes individually, sometimes as a dyad. The relationship is not the focus of treatment as it is in couple's therapy; the emphasis is on teaching the patient to slow the world down with overlearned strategies given to catastrophic reaction cues. Patients undergo CRATER individually if no partner is available.

Schedule regularization. After an initial explanation of CRATER therapy, regularization of rise time, bedtime and mealtimes is attempted, over a minimum time period of one month.

Use of a handheld application for cueing and scheduling support. Use of Planning and Execution Assistant and Trainer (PEATTM) software (Levinson, 1997) via smartphone is taught simultaneously during regularization training. PEATTM is a voice-cued calendar and memory prosthetic; single events during the day are stored and later cued. Software includes features that can be tied to physiological anchors. An example is a cupcake icon ("PEATTM Dessert"). After every meal, the patient presses the cupcake icon on the phone screen. This action immediately shows today's and tomorrow's events in the calendar, orienting the patient to what is coming up in the next 24 hours. All that needs to be learned is, "After you eat, press the cupcake."

Stages of learning. The amount of time it takes to learn each smartphone or PEATTM software feature is taught to the patient as a stage of learning: "first learn with assist, then learn to cue, then spontaneously perform the task as overlearned."

Addressing the catastrophic reaction. The patient learns to identify his or her consistent catastrophic reaction and what elicits it in social settings then learns to perform the strategy that compensates and/or slows information down in a socially acceptable way. Examples of some strategies are:

- *Inability to keep up with a conversation*—The patient gets angry, recognizes anger as the catastrophic reaction caused by others talking too fast, and asks others to repeat the information, which slows the speaker's rate.

- *Too many simultaneous demands on a patient who has trouble multitasking*—The patient's strategy is to say: "You've given me several things to do. Which do you want me to do first? Which is the most important?"

- *Freezing, going blank*—"I need to think about that, I'll get back to you shortly;" delay is utilized as a socially acceptable response.

- *Following conversation in a group meeting for a patient with attentional switching problems*—In a family meeting, the patient learns to take one person aside to have a one-on-one discussion as a response to confusion. In work meetings, the patient learns to track only one speaker in the group in order to follow some aspect of the conversation.

Couples skills. The partner is taught to give the patient one thing to do at a time, rather than a list of tasks. The partner (and therapist trainee) is educated to offer compliments realistically (in a 5:1 ratio of positive comments to one correction), and to recognize that the family needs for the patient's rate of progress may be different from the possible rate of progress (based on the patient's learning rate). Closed-ended statements are suggested to promote conversation. In sum, the ideal is to underwhelm not overwhelm.

Establishing resilience. Begin with regularization, the easiest achievable change. Encourage small step changes to ensure successes. The task of the therapist is to become the behavioral historian, using graphed feedback in session. Teach learning and memory characteristics as process. Promote the notion of "the sage," the patient as a "wise person" who knows how to survive neurological impairment, struggle to reach skill competency a second time, achieve a meaningful life when all is not perfect, and cope with adversity and reduced life expectations.

Outcome

Our current research, currently being analyzed for publication, shows the following statistically significant results:

1. Veterans who regularize their schedule in 14 weeks show 20% more activity during the day as measured by actigraph. However, no aspect of their sleep quality improves.

2. Effects of cognitive training are seen at 3 months and 1-year post therapy in patients who show regularization of rise time/bedtime (there is significant increase in attendance of scheduled general medical appointments compared pre- and post-CRATER therapy).

3. Patients with ABI and comorbid PTSD, given a Clinician-Administered PTSD Scale prior to and after 14 weeks of CRATER training, show a decrement in hypervigilant symptomatology.

Teaching veterans with PTSD that anger or avoidance may be a sign of cognitive overload in social situations, asking others to repeat what they have said to slow the world down, and routinizing rise time/bedtime gives patients some control of the environment. They are awake when others are awake. They are practicing cognitive strategies in social situations and getting help from family members who recognize their difficulty as memory-, attention- and speed of processing-related.

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