

Letters to the Editor

Reconsolidation of Traumatic Memories Using Psychotherapy

TO THE EDITOR: We applaud Dr. Brunet's team for continuing research on the potential role of propranolol in the treatment of posttraumatic stress disorder (PTSD) (1), and we similarly applaud Dr. Friedman for his thoughtful editorial on memory reconsolidation, which appears to be the unique mechanism of propranolol (distinct from other adrenergic agents, such as prazosin) (2). (The article and editorial were published in the May 2018 issue of the *Journal*.) We agree that the memory reconsolidation paradigm holds great promise for advancing the field beyond current evidence-based mainstays of treatment derived largely from extinction learning or cognitive-behavioral mechanisms.

We would like to highlight that, in addition to efforts to produce healthy reconsolidation through medications, a growing number of psychotherapy techniques also need to be considered in the emerging field of "memory therapeutics." Some examples include accelerated resolution therapy (3), reconsolidation of traumatic memories (or the "rewind" technique) (4), and cognitive restructuring and imagery modification (5). These therapies involve facilitating a novel experience (or expectation mismatch) within the reconsolidation window, permitting the memory to be reconsolidated with a new emotional valence. Examples of such facilitation include helping the patient feel unexpectedly fewer distressing sensations upon memory activation, achieve a novel perspective, rescript a different ending, or transform the trauma-associated imprint using metaphors. For example, accelerated resolution therapy, which is a direct adaptation of eye movement desensitization and reprocessing, uses visualization facilitated by eye movements to activate a traumatic memory, process associated somatic sensations, and rescript the memory within the brief reconsolidation window (of an hour-long psychotherapy session), during which the memory is labile and vulnerable to change (3).

Like Brunet et al.'s propranolol-assisted therapy, reconsolidation-focused psychotherapies also appear to be more efficient than traditional evidence-based psychotherapies, although well-controlled randomized trials are needed to validate initial evidence that efficacy can be achieved in PTSD treatment in as few as one to five treatment sessions (3–5). A recent meta-analysis of rescripting techniques also suggests that the reconsolidation paradigm will advance the treatment of other psychiatric conditions, as well as PTSD. Two-thirds of the 19 trials of psychotherapies that used rescripting procedures demonstrated significant improvement in three or fewer sessions (6). Clearly, more efficient

therapies based on the reconsolidation framework would represent a huge innovation in the treatment of PTSD and other psychiatric disorders.

REFERENCES

1. Brunet A, Saumier D, Liu A, et al: Reduction of PTSD symptoms with pre-reactivation propranolol therapy: a randomized controlled trial. *Am J Psychiatry* 2018; 175:427–433
2. Friedman MJ: Eradicating traumatic memories: implications for PTSD treatment (editorial). *Am J Psychiatry* 2018; 175:391–392
3. Kip KE, Shuman A, Hernandez DF, et al: Case report and theoretical description of accelerated resolution therapy (ART) for military-related post-traumatic stress disorder. *Mil Med* 2014; 179: 31–37
4. Gray R, Budden-Potts D, Bourke F: Reconsolidation of traumatic memories for PTSD: a randomized controlled trial of 74 male veterans. *Psychother Res* 2017; 14:1–19
5. Müller-Engelmann M, Steil R: Cognitive restructuring and imagery modification for posttraumatic stress disorder (CRIM-PTSD): a pilot study. *J Behav Ther Exp Psychiatry* 2017; 54:44–50
6. Morina N, Lancee J, Arntz A: Imagery rescripting as a clinical intervention for aversive memories: a meta-analysis. *J Behav Ther Exp Psychiatry* 2017; 55:6–15

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The views of this letter are those of the authors and do not represent an official position of the U.S. Army, Department of Defense, or listed institutions.

Dr. Waits has equity ownership in Reimbursify. Dr. Hoge reports no financial relationships with commercial interests.

Accepted September 10, 2018.

Am J Psychiatry 2018; 175:1145; doi: 10.1176/appi.ajp.2018.18060646

On the Use of Memory Update Mechanisms to Treat Patients: Response to Waits and Hoge

TO THE EDITOR: We thank Drs. Waits and Hoge for their constructive comments on our placebo-controlled trial investigating the clinical efficacy of traumatic memory reactivation under the influence of the reconsolidation blocker propranolol for posttraumatic stress disorder (PTSD) (1). In assessing the usefulness of various therapeutic approaches derived from reconsolidation theory, it is important to understand that a reactivated (i.e., deconsolidated) memory can either be updated with new information or have its reconsolidation blocked. Reconsolidation blockade using propranolol is supported by an animal model (2), by two meta-analyses involving healthy participants and patient populations (3), and

by some imaging studies (4). In other words, because of this background knowledge, we know for a fact that propranolol is a reconsolidation blocker.

In contrast to this, Waits and Hoge's letter draws attention to nonpharmacological techniques involving memory reconsolidation "update" mechanisms to treat patients, such as accelerated resolution therapy and cognitive restructuring and imagery modification. One concern with nonpharmacological interventions involving reconsolidation update mechanisms is that it is extremely difficult to determine whether the memory has deconsolidated in the first place and then reconsolidated in an updated (and desired) form, or if extinction processes have been initiated instead of reconsolidation. It remains a black box from a mechanistic viewpoint, and we can only speculate as to what is really going on during the therapy process.

Beyond the issue pertaining to the mechanism of action, other questions are prompted by treatment techniques such as accelerated resolution therapy and the visual-kinesthetic dissociation protocol (5). Negative consequences of deliberately imposed alterations to the content of patients' memory, along with the therapist's responsibilities, can presently only be hypothesized and should be considered in assessing the attractiveness of rescripting treatments.

Shorter-term therapy is also mentioned by Waits and Hoge as one advantage of novel therapies over more classical therapies. However, compared with reconsolidation therapy (a total of 120–150 minutes) (1), the novel memory update therapies remain relatively long (e.g., imagery rescripting, at 360–480 minutes) or hold promise for only a subset of PTSD patients with specific symptoms (5).

That said, we are happy to see that reconsolidation is gaining recognition as a novel and exciting paradigm to

treat mental disorders. The clinical possibilities opening up in relation to reconsolidation theory are exciting and plural. We predict that many more such modalities will emerge in the coming years.

REFERENCES

1. Brunet A, Saumier D, Liu A, et al: Reduction of PTSD symptoms with pre-reactivation propranolol therapy: a randomized controlled trial. *Am J Psychiatry* 2018; 175:427–433
2. Besnard A, Caboche J, Laroche S: Reconsolidation of memory: a decade of debate. *Prog Neurobiol* 2012; 99:61–80
3. Loneragan MH, Olivera-Figueroa LA, Pitman RK, et al: Propranolol's effects on the consolidation and reconsolidation of long-term emotional memory in healthy participants: a meta-analysis. *J Psychiatry Neurosci* 2013; 38:222–231
4. Mahabir M, Tucholka A, Shin LM, et al: Emotional face processing in post-traumatic stress disorder after reconsolidation impairment using propranolol: a pilot fMRI study. *J Anxiety Disord* 2015; 36: 127–133
5. Gray RM, Liotta RF: PTSD: extinction, reconsolidation, and the visual-kinesthetic dissociation protocol. *Traumatology* 2012; 18:3–16

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The authors thank Caroline Diekmann, M.A., Janna Marie Heyen, B.Sc., and Nemat Jaafari, M.D., Ph.D., for their assistance with this reply.

The disclosures of the article authors appear with the original article.

Accepted September 10, 2018.

Am J Psychiatry 2018; 175:1145–1146; doi: 10.1176/appi.ajp.2018.18060646r