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Minding the findings: Let's not miss the message of

memory reconsolidation research for psychotherapy

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Abstract: That memory reconsolidation is the process underlying decisive, lasting therapeutic change has long been our proposal, and the recognition of its critical role by Lane et al. is a welcome development. However, in our view their account has significant errors due to neglect of research findings and neglect of previous work on the clinical application of those findings.

Lane et al. provide masterful coverage of learning and memory as relevant to psychotherapy. However, we take issue with their account of memory reconsolidation. Despite their central focus on reconsolidation, and despite affirming (rightly, in our view) that "clinical change occurs through the process of memory reconsolidation" (sect. 1, para. 8), their article provides no account of (a) abundant research findings that have identified the specific process of memory reconsolidation, or (b) extensive previous development by others of the article's main themes – the use of reconsolidation for psychotherapy and for a new framework of psychotherapy integration – or of the challenge that reconsolidation poses to nonspecific common factors theory (Ecker 2008; 2011; 2013; Ecker & Toomey 2008; Ecker et al. 2012, 2013; Welling 2012).

Throughout the twentieth century, myriad studies of extinction demonstrated that the memory circuits of a conditioned (learned) response are suppressed temporarily, but never erased, by extinction. Researchers concluded therefore that the brain lacks any neuroplastic process that could truly delete a learning that has been installed in long-term memory by the process of consolidation (whereas new learnings are unstable and disruptable prior to consolidation). Consolidation was believed irreversible, and consolidated memory circuits were believed to be stable and indelible for the individual's lifetime (e.g., LeDoux et al. 1989).

Then, during the late 1990s, several studies, culminating with that of Nader et al. (2000), found that the neural circuitry encoding a consolidated learning transformed into a deconsolidated, destabilized, disruptable state following a reactivation of the learning by cues that were salient features of the original learning experience. The existence of deconsolidation meant that memories also reconsolidate, and that the target learning could be completely eliminated while destabilized, not just suppressed temporarily. Erasure occurs either endogenously, through new learning that re-encodes the unlocked neural circuitry, or exogenously, as when chemical agents prevent circuits from reconsolidating, destroying them.

However, it was not until 2004 that the brain's inherent rules for launching deconsolidation/reconsolidation were identified (Pedreira et al. 2004), with subsequent confirmation by many other studies (for a list, see http://tiny.cc/7yutfx, Ecker 2015 or Ecker et al. 2012, p. 21). Those studies, taken together, have clarified what the brain requires for deconsolidating the neural encoding of a target learning or schema: (1) The target learning or schema has to be reactivated, vivifying its expectations of how the world or self will operate, and (2) concurrently the subject also has to experience something saliently novel or discrepant in relation to what the target learning expects or "knows" according to its schematic or semantic content or model.

Those two concurrent conditions constitute what reconsolidation researchers term a "mismatch experience" or "prediction error experience," and what we have termed a "juxtaposition experience" in the clinical context (e.g., Ecker 2008; Ecker et al. 2012; 2013). Reactivation without concurrent discrepancy fails to induce deconsolidation, and the memory remains stable (e.g., Sevenster et al. 2012). Lane et al. contend every reactivation of a memory is destabilizing, which has already been disproved. Neuroscientists view reconsolidation as the brain's process for updating memories because it launches only if discrepant experience accompanies schema reactivation. Lane et al.'s central message appears to be that emotional arousal is necessary for inducing memory reconsolidation. The research shows otherwise. The mismatch requirement has been detected for many types of memory ranging from cortical, factual learnings having no emotional content (e.g., changed set of syllable pairings; Forcato et al. 2009) to subcortical, intensely emotional learnings (e.g., change of safety position in animal studies; Morris et al. 2006). The brain clearly does not require emotional arousal per se for inducing deconsolidation. That is a fundamental point. If the target learning happens to be emotional, then its reactivation (the first of the two required elements) of course entails an experience of that emotion, but the emotion itself does not inherently play a role in the mismatch that then deconsolidates the target learning, or in the new learning that then rewrites and erases the target learning (discussed at greater length in Ecker 2015). Naturally, target learnings or schemas in psychotherapy usually are emotional, and the observable emotion accompanying their reactivation is a key marker of adequate reactivation. For those reasons, emotional arousal is usually present during moments of deep therapeutic change, but Lane et al. conflate that phenomenology of emotion with the mismatch phenomenology that deconsolidates the reactivated learning and allows transformational change.

The same considerations imply that "changing emotion with emotion" (stated three times by Lane et al.) inaccurately characterizes how learned responses change through reconsolidation. Mismatch consists most fundamentally of a direct, unmistakable perception that the world functions differently from one's learned model. "Changing model with mismatch" is the core phenomenology. Emotions then change as a derivative effect of change in semantic structures (models, rules and attributed meanings). Lane et al. propose a psychotherapy integration scheme based on the structure of memory. We have proposed a psychotherapy integration framework centered on the brain's required steps that induce schema destabilization and erasure (Ecker 2011; Ecker et al. 2012, pp. 126–56), and have shown that the diverse systems of therapy can be unified by identifying how their distinctive methodologies do, or do not, facilitate those critical, universal steps. This approach creates "a shared, empirically based frame of reference and a shared vocabulary, allowing these practitioners to discuss their methods in a manner meaningful to each other and to practitioners of yet other clinical systems"

(Ecker et al. 2012, p. 152). We predicted that the sequence of experiences required for schema destabilization and erasure could be found in any therapy sessions that produce deep, lasting change.

Furthermore, we argued (Ecker et al. 2012, pp. 153–55; Ecker 2013) that if transformational change of acquired responses indeed requires the specific behavioral steps that induce deconsolidation, then those steps constitute specific factors that are responsible and indispensable for decisive therapeutic change. This would mean that memory reconsolidation challenges the assertion of nonspecific common factors theory that specific factors can never be a major determinant of clinical outcome (e.g., Wampold 2001).

In short, reconsolidation research findings have far-reaching ramifications for psychotherapy, warranting close attention and nuanced understanding. <C-Text ends>

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