functions—all operating on the ongoing flow of emotional arousal (Greenberg & Pascual-Leone 1995; Pascual-Leone & Johnson 2004). This process depends on, but is not reducible to, remembering things differently. A memory model explains the accumulation of how progress is updated but it does not explain the actual mechanism of generating new emotional experiences or insights: For that, emotional problem-solving processes are also needed.

Let’s be skeptical about reconsolidation and emotional arousal in therapy

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Abstract: Lane et al. imply hypotheses that are questionable: that emotional arousal is a cause of positive change and reconsolidation research can be applied to therapy to alter memory. Given the history of problematic attempts to incorporate memory distortion or high emotional arousal into therapeutic techniques, both of which heralded premature optimism and hubris, I urge open-minded skepticism.

If high emotional arousal were as therapeutic as claimed, perhaps the article by Lane et al. itself could be given to memory and clinical psychology researchers of a skeptical bent as a trigger. There are two main problems with the article: the assertion that high emotional arousal during therapy is beneficial, and the way reconsolidation research is applied to therapy. With regard to the former problem, I question whether emotional arousal in cognitive behavioral therapy (CBT), behavioral, and exposure therapies is actually a causal factor in positive therapeutic change. In discussing CBT the authors state, “Eliciting emotional responses through role-playing, imagination, and homework exercises is key to the identification and reformulation of these maladaptive thoughts” (sect. 1, para. 4). This is a rhetorical stretch, because CBT does not aim at high emotional arousal, nor does it always induce it, and yet it works well for a number of conditions (Butler et al. 2006).

An exception could be that exposure therapy can often arouse emotions, but that is not to say that emotional arousal is the causal agent of positive change. In section 4, paragraph 2, the authors cite Jaycox et al. (1998) as evidence that high emotional arousal in exposure therapy led to positive outcomes for patients with post-traumatic stress disorder (PTSD). However, Jaycox et al. actually found that those who exhibited high initial emotional arousal and gradual habituation improved more than those with high initial emotional arousal without habituation. Thus it is probably not the high initial engagement that matters; it is whether they habituate to the exposure therapy.

Lane et al. claim (sect. 1, para. 4) that a study by Missirlian et al. (2005) provides evidence that emotional arousal is a predictor of therapeutic success. However, I find further reason for doubt because Table 3 in Missirlian et al. shows that after adjusting for other variables, emotional arousal was not a significant predictor of reduction in post-therapy depression. Sample size in that analysis was only 31. Indeed, Model 4 in Table 3 shows that Levels of Client Perceptual Processing (LCPP) accounts for more of the variance than emotional arousal. High LCPP includes the processing of information, reevaluation, integration, and a controlled and reflective manner of processing. Perhaps it is this perceptual cognitive processing, much like that found in CBT that is driving the positive self-report.

Lane et al. write that research shows re-experiencing a memory of the original traumatic event strengthens the memory (sect. 7, para. 8). Strengthening a traumatic memory might not be helpful. Indeed, although debriefing therapy is mentioned in the article (sect. 4, para. 6), and Lane et al. acknowledge the problematic nature of the intervention, they do not seem to notice that the failure of debriefing therapy (Van Emmerik et al. 2002) contradicts their theory that emotional arousal in therapy is a driving force of improvement.

The idea of high emotional expression during therapy is not new (e.g., Hart et al. 1975; Janov 1970); nor is the idea that memory distortion might be used to undo traumatic memory (see Janet 1894, p. 129). Recent research on memory reconsolidation is exciting and has made it into the news and the top journals Nature and Science. Even if we put aside doubts about reconsolidation (Miller & Matzel 2000) and assume reconsolidation research is reliable and not overstated, we still must take care extrapolating from basic neuroscience to the therapy room (for a grounding in neuroscience skepticism see Lilienfeld & Satel 2013; Weisberg et al. 2008). Memory distortion phenomena probably happen in a number of ways neurologically, and the specific mechanism identified in reconsolidation may be just one of many routes to distortion. If reconsolidation is defined as a specific mechanism (e.g., involving Zif268, see Lee et al. 2004), we do not know whether that mechanism specifically is occurring in any of the therapies mentioned in the article. Typically, the type of foundational reconsolidation studies (which uncover the specific mechanisms distinct to reconsolidation) involve the elimination of fear responses to electric shocks in animals; neither the stimuli nor the subjects are generalizable to the kind of rich autobiographical memories involved in therapy. Much in the same way that finding “false memories” in rodents (Ramirez et al. 2013) or memory distortions in people with superior memory (Patihis et al. 2013) does not legitimize such techniques in therapy, the evidence that memory alteration happens in reconsolidation experiments does not mean it should happen in therapy. The application of basic neuroscience to therapy leaptrogs over some important proximal sciences (e.g. social, cognitive, and clinical psychological science).

There is insufficient evidence for the claim that changing memories causes improvement in therapy. Even if it were true, I would question how ethical the manipulation would be, given that changing memories may undermine a person’s ability to predict future events accurately. Changing emotional memories may also be unfair to people involved in the client’s revised memories—especially family members such as parents— if that change is towards a more strongly negative emotional reaction. Fear extinction may be acceptable in therapy, but reconsolidation is taken to mean more than mere extinction (see Merlo et al. 2014).

Finally, the target article seems to be something of a Trojan horse in that it promotes high emotional arousal and memory change and thus implicitly endorses one of the author’s (Greenberg) therapeutic interventions, called emotion-focused therapy (EFT). The Trojan horse itself involves a well-informed account of memory research, although its length and interpretations could be seen as obscurantist. It should also be noted that emotion-focused therapy is apparently different from emotionally focussed therapy, and care should be taken not to take evidence for one as evidence for the other. Emotion-focused therapy appears to often involve individual therapy in which clients re-experience early traumatic memories and focus on the emotions that arise (Greenberg 2004). For example, one case study reads:

One of her earliest memories was of her father forcing her and her siblings to watch him drown a litter of kittens. This was to “teach her a lesson about life” and the client believed that he enjoyed it. The client accessed a core self-organization, which included her “screamed of horror” from this experience. While imaginatively reliving this scene in therapy the therapist guided her attention to the expression of disgust in her mouth while she was feeling afraid. (Greenberg 2004, p. 13).