

Book Review

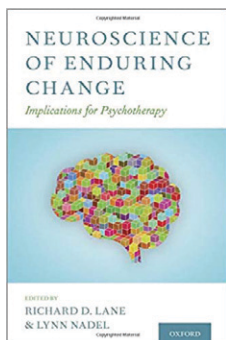
Neuroscience of Enduring Change: Implications for Psychotherapy

Edited by Richard D. Lane, M.D., Ph.D., and Lynn Nadel, Ph.D.; New York City, Oxford University Press, 2020, 488 pages

Neuroscience of Enduring Change: Implications for Psychotherapy is a tour de force that reunites empirical evidence and theoretical models embedded in clinical wisdom, leading to inspiring perspectives on how to study change in psychotherapy in the future. Lane and Nadel, the coeditors of this volume, have provided the field with a convincing view into the next generation of studies on neuroscience of enduring change. The editors have collected 16 chapters written by world-leading experts in neuroscience of enduring change, from both the basic sciences and clinical sciences. The result is a kaleidoscope of explanations of enduring change through psychotherapy, creating a sourcebook for researchers and clinicians alike. Topics such as the interaction between emotion and memory, types of memories from a process perspective, the impact of sleep on memory changes, a computational perspective on memory reconsolidation, emotion transformation in psychotherapy, inhibitory and regulatory models of emotion in psychotherapy, and the origins of relationship schematic patterns and their change in psychotherapy are discussed in this book. Across all these topics, the editors go to considerable lengths to ensure that chapters rooted in basic science establish linkages with clinical practices and, conversely, that chapters focusing on psychotherapy practice accurately reference concepts of basic science. This contribution is important for the next generation of studies of enduring change in psychotherapy for four reasons, described below.

Psychotherapy Change as a Multilevel Neurobehavioral Phenomenon

Clients seek psychotherapy either because they lack skills to cope with a challenging life situation or to deepen their understanding of themselves. Their lives are shaped or constrained by the experiences they have had in the past,



and, often unwillingly, they tend to repeat their old ways of responding and interacting. Without therapy, clients often continue this pattern in ways that not only shape their present relationships but also likely influence future behavior: more of the same old experiences with little chance of being able to quit these self-defeating negative cycles.

In regard to these cycles, memory reconsolidation is a particularly promising avenue to explain how psychotherapy works. Neurally determined schematic maladaptive patterns predict individuals' experiences and shape their in situ responses to interaction partners. Although acquired in early attachment relationships, these interaction patterns and experiences are stored as long-term memory structures, implicating the complex interactions among the hippocampus, amygdala, precuneus, and prefrontal cortex, and are ready to influence human behavior and experience on implicit levels. In privileged moments—a number of psychotherapy approaches are discussed in the book to explain how these may be created deliberately—these memory structures enter a labile state and can be updated and changed. Researchers are still unclear what neuronal underpinning causes this updating process. However, it is assumed that the hippocampus and the amygdala are implicated to form a corrective emotional experience in the here and now, which undoes—and contradicts—an individual's predictions based on the old memory of how interaction with other humans may work.

This book provides a model of the vital interactions between the neurofunctional dynamics and the neuroanatomic features on one hand and the observed interactional behaviors clients engage in on the other. This is a convincing and multifaceted hypothesis of change that could lead the next generation of psychotherapy research on the processes of change.

Psychotherapy Research as Integration-Fostering Science

This book provides a clear account of the importance of psychotherapy integration for the advancement of science. While at first glance, psychotherapy integration certainly fosters a coherent scientific understanding of psychotherapy, it goes beyond the clinical sciences and may also contribute to illuminating the basic sciences of emotion and memory. The study of processes of change in psychotherapy that focuses on the interactional behavior clients display in session—such as in emotion transformation (chapter by Pascual-Leone

and Greenberg) and memory change in exposure therapy (Huppert et al.)—contributes to a broad theory of how psychotherapy works. This knowledge may not only be relevant to specific forms of psychotherapy but may actually inform evidence-based principles of change that may be active to variable degrees in any context where individuals seek help. It may therefore be used by therapists from a variety of backgrounds, including psychodynamic therapy (chapter by Levenson et al.), coherence therapy (Ecker), or therapies such as the unified protocol or schematherapy (Goldman and Fredrick-Keniston). In particular, clinicians may find the proposed model of change useful in clinical contexts, such as when therapy has stagnated or when a client's clinical condition deteriorates.

Psychotherapy research focusing on processes of enduring change, such as phenomena related to memory reconsolidation, may draw from the basic science of emotion and memory as well. Knowing about the regularities of productive change that psychotherapy produces in long-term memories or arousal may inform experimental designs in unexpected ways. For example, the observation that corrective emotional experiences are important to produce change in psychotherapy may be modeled by using methods from computational neuroscience in terms of priors, or stable predictors in the model. These priors may be tested on the brain level (chapter by Smith et al.), for example by examining the role of the amygdala when confronted with novel information that contradicts an individual's assumption. Such perspectives may in turn inform affective neuroscience models of the role of the amygdala in modulating arousal when facing novel information.

Emotional Change as an Engine of Psychotherapy Change

Among all the factors that have been studied to explain psychotherapy change, one of the most promising candidates is emotional change. Emotional change is particularly promising because emotional activation is a biologically wired system affecting attachment, communication, long-term schematic patterns and level of distress. Furthermore, aspects of emotional change are discussed in all major models of psychotherapy; process-outcome research, along with controlled studies in psychotherapy research, speak to its relevance; and emotional change plays a central role in updating memory (although this latter point has been challenged; see chapter by Ecker). Emotion may be differentiated from affective responses; from a socio-constructivist viewpoint, emotion may even be a culturally constructed process mediated by language. Words make emotions, to paraphrase the chapter by Satpute et al. Changes therein, which may take the form of narrative change (chapters by Levenson et al. and by Pascual-Leone

and Greenberg), are therefore important. However, a number of research questions remain open. What is the optimal time frame to study the core emotional change? Are all emotions changed in similar ways, and are all emotion categories similarly important for explaining psychotherapy change? Which component of emotional change most strongly affects the process of memory updating? The model developed by Lane and several of this volume's contributors suggest emotional arousal, but are there others?

Memory Reconsolidation to Explain Lasting Psychotherapy Change

The notion of enduring change is central to the title of Lane and Nadel's book. Although this notion is intuitively appealing to psychotherapists and their clients (who does not want to get rid of, once and for all, maladaptive interaction patterns?), it is rather uncomfortable for psychotherapy researchers. Research on depressive, addictive, and anxiety disorders reports consistently good effect sizes for change due to psychotherapy, but recurrence of symptoms, while much less frequent after psychotherapy than after pharmacotherapy, remains probable in many cases. The situation is a bit different for personality disorders, which have lower recurrence rates after psychotherapy has ended, but still, very little is known about the shape of the long-term evolution and impact of memory processes on the evolution of distress. This book can be understood as a call to take recurrence of psychiatric disorders seriously. If psychotherapy researchers want to be even more useful to the daily practice of psychotherapists and the experiences of psychotherapy clients, a focus is needed on how memory updating can lead to change that is years-long and potentially permanent.

The field owes much to the editors of this volume for relaying the state of the art and hosting debates related to memory reconsolidation and lasting change by drawing on expertise in the basic sciences, neuroscience, and psychotherapy research. The book constitutes an inspiring call for researchers to examine the open questions outlined in the final chapter—a glimpse of what the future of psychotherapy research may look like—and a hopeful message to psychotherapists and their clients that lasting change may be within their reach.

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