

Memory, Emotion and the Neuroscience of Enduring Change: Implications for Psychoanalysis

Richard D. Lane, M.D., Ph.D.

Professor of Psychiatry, Psychology and Neuroscience

University of Arizona

Tucson, Arizona USA

Fulbright-Freud Visiting Lecturer in Psychoanalysis Hosted by the Freud Museum

Presented at the Department of Psychoanalysis and Psychotherapy at the Medical U of Vienna

Lecture: Tuesday 16:30-18:00 Optional discussion section Wednesday 16:30-18:00

Language: English

This is a 12-week elective course being offered in the spring 2023. Professor Lane is a Visiting Fulbright Fellow who will be presenting a modern, neuroscience-based perspective on the mechanisms of enduring change in psychoanalysis. The target audience ranges from advanced undergraduate and graduate students to experienced psychoanalysts.

Freud was a neurologist who invented the field of psychoanalysis in 1895 and hoped to someday create a neuroscience-based model of the mind that could inform treatment. Although he soon realized that neuroscience knowledge at the time was inadequate for the task, he expressed the hope that someday this would be possible. This course is based on the premise that over a century later, neuroscience knowledge has advanced sufficiently that a neuroscience-based model of how enduring change occurs in psychoanalysis and psychodynamic psychotherapy can now be envisioned.

Many of the familiar elements of psychoanalytic treatment can be recast within the perspective of modern systems neuroscience. These include the contributions of memory, memory-emotion interactions, early life trauma, unconscious processes, repetition, dreaming and emotional development. The aims of this new perspective are to place psychoanalysis on a stronger empirical foundation, bring it into the fold with other viable psychotherapy modalities, eliminate its status as an outlier exclusively reliant on its own intrinsic theoretical framework, and help to establish its unique value and indications. A particular goal of the course is to openly examine and debate the value of this new perspective and discuss what limitations, if any, remain to be addressed.

The primary text for the course will be Neuroscience of Enduring Change: Implications for Psychotherapy. Edited by Lane R & Nadel L. New York, Oxford University Press, 2020 supplemented by additional papers by Professor Lane and other authors.

Teaching sessions will consist of a 1-hour lecture and 30 minutes of discussion. An additional 90-minute discussion period will be offered each week to answer questions and discuss the implications of the material presented.

Session 1 (3/7/23): Memory reconsolidation, emotional arousal and the process of enduring change.

Description: Review of core theory paper. Introduction to and overview of the book featured in the course (NEC).

Reading:

- 1) Lane RD, Ryan L, Nadel L, Greenberg L. Memory reconsolidation, emotional arousal and the process of change in psychotherapy: New insights from brain science. *Behavioral and Brain Sciences* 2015; 38:1-19;
- 2) Introduction to NEC (ch. 1: Nadel and Lane)

Session 2 (3/14/23): Recurrent maladaptive patterns

Description: Updated perspectives on unconscious processes, development, defenses, conflict and treatment using language and concepts not intrinsic to the psychodynamic tradition; addressing what we are trying to change in psychoanalysis.

Reading:

- 1) Affective origin and treatment of recurrent maladaptive patterns. (NEC ch. 14: Lane)
- 2) Boston Change Process Study Group. (2007). The foundational level of psychodynamic meaning— implicit process in relation to conflict, defense and the dynamic unconscious. *International Journal of Psychoanalysis*, 88, 843– 860.

Session 3 (3/21/23): Memory-Emotion Interactions

Description: Implicit and explicit memory; episodic, semantic and schematic memory; consolidation and reconsolidation; emotion-memory interactions.

Reading:

- 1) What is memory that it can be changed? (NEC ch. 2 -- Nadel);
- 2) Emotion-memory interactions: Implications for the reconsolidation of negative memories (NEC ch 6: Dunsmoor & Kroes)

Session 4 (3/28/23): Sleep, napping, dreaming and memory reconsolidation

Description: Reconsolidation happens during sleep; empirical approaches to tracking reconsolidation during treatment.

Reading:

- 1) Stress and sleep interact to selectively consolidate and transform negative emotional memories (NEC ch. 7: Payne);
- 2) Simon, K. C., Gómez, R. L., & Nadel, L. (2020). Sleep's role in memory reconsolidation. *Current Opinion in Behavioral Sciences*, 33, 132-137.
- 3) Fischmann, Tamara, Gilles Ambresin, and Marianne Leuzinger-Bohleber. Dreams and trauma changes in the manifest dreams in psychoanalytic treatments—A psychoanalytic outcome measure. *Frontiers in Psychology* 12 (2021), 1-8.

Session 5 (4/18/23): Unconscious (embodied) emotion and the neural basis of emotional experience

Description: Brain basis of emotion and emotional awareness; the emotions that get transformed during psychoanalysis are initially embodied and enacted.

Reading:

- 1) The three-process model of implicit and explicit emotion (NEC ch. 3: Smith)

- 2) Smith R, Lane RD. Unconscious emotion: A cognitive neuroscientific perspective. *Neuroscience and Biobehavioral Reviews* 2016; 69: 216-238.
- 3) Panksepp J, Lane R, Solms M, Smith R. Reconciling the cognitive and affective neuroscience perspectives on the brain basis of emotional experience. *Neuroscience and Biobehavioral Reviews* 2017; 76: 187-215

Session 6 (4/25/23): Emotional awareness: evolution, development and consequences of trauma
Description: The uniquely human capacity for emotional awareness; the contribution of developmental experiences to individual differences in emotional awareness; the calibration of emotional awareness; the effects of trauma and their contribution to recurrent maladaptive patterns.

Reading:

- 1) Smith R, Steklis D, Steklis N, Weihs KL, Lane RD. Evolution and development of the uniquely human capacity for emotional awareness: synthesis of comparative anatomical, cognitive, neurocomputational and evolutionary psychological perspectives. *Biological Psychology* 107925, 2020.
- 2) Smith, R., Steklis, H. D., Steklis, N., Weihs, K. L., Allen, J. J., & Lane, R. D. (2022). Lower emotional awareness is associated with greater early adversity and faster life history strategy. *Evolutionary Behavioral Sciences*.

Session 7 (5/2/23): Dynamic unconscious revisited

Description: Levels of emotional awareness, affective agnosia, 3-process model, integration of conflict and deficit models in Operationalized Psychodynamic Diagnosis (OPD).

Reading (in order of importance):

- 1) Lane RD, Weihs KL, Herring A, Hishaw A, Smith R. Affective agnosia: Expansion of the alexithymia construct and a new opportunity to integrate and extend Freud's legacy. *Neuroscience and Biobehavioral Reviews* 2015; 55:594-611.
- 2) Smith R, Killgore WD, Lane RD. The structure of emotional experience and its relation to trait emotional awareness: a theoretical review. *Emotion* 2018; 18(5):670- 693.
- 3) Smith R, Lane RD, Parr T, Friston KJ. Neurocomputational mechanisms underlying emotional awareness: insights afforded by a deep temporal active inference model and their potential clinical relevance. *Neuroscience and Biobehavioral Reviews* 2019; 107: 473-491.
- 4) Smith R, Gündel H, Lane RD. Neurobiology of Emotions: anatomy, neural circuits, alexithymia, in Psychosomatic Medicine: Neurobiologically Sound and Evidence-based, Second Edition (Psychosomatik – Neurobiologisch Fundiert Und Evidenzbasiert) Edited by U. T. Egle, Christina Heim, B. Strauß, R. v. Kanel (Hrsg.): Ein Lehr- und Handbuch Verlag W. Kohlhammer, Stuttgart (in press).

Session 8 (5/16/23): Clinical expression of impaired emotional awareness

Description: Somatization as deficit state; physical and emotional pain in early life trauma; enactment and other clinical expressions of impaired awareness

Reading:

- 1) Stonnington CM, Ritenbaugh C, Locke DEC, Hsu C-H, Lane RD. Somatization is associated with deficits in affective theory of mind. *Journal of Psychosomatic Research* 2013; 74(6):479-85;
- 2) Smith R, Kaszniak AW, Katsanis J, Lane RD*, Nielsen L* (*joint senior authors). The importance of identifying underlying process abnormalities in alexithymia: Implications of the three-process model and a single case study illustration. *Consciousness and Cognition* 68, 33-46, 2019;
- 3) Lane RD, Sommer Anderson F, Smith R. Biased competition favoring physical over emotional pain: A possible explanation for the link between early adversity and chronic pain. *Psychosomatic Medicine* 2018; 80(9), 880-890

Session 9 (5/23/23): Treatment implications

Description: Corrective emotional experiences and corrective emotional relationships, self psychology and relational psychoanalysis.

Reading:

- 1) Viewing Psychodynamic/Interpersonal theory and practice through the lens of memory reconsolidation (NEC ch 12: Levenson, Angus and Pool)
- 2) Lane RD. Reconsolidation of emotional memories in psychotherapy: How corrective emotional experiences facilitate enduring change. In *Change in Emotion and Mental Health* (Eds. Samson A, Sander D, & Kramer D). Elsevier (in press).

Session 10 (6/6/23): Research implications

Description: Basic science and clinical research agenda for the memory reconsolidation model.

Reading:

Neuroscience of enduring change and psychotherapy: summary, conclusions and future directions (NEC ch. 18: Lane, Smith & Nadel)

Session 11 (6/13/23): New research findings obtained during this fellowship

Description: Transformation of trauma memories and dream reports in the MODE study.

Reading:

MODE = **M**ultimodal Neuroimaging **O**utcome Study of Psychoanalytic Psychotherapy in Chronically **D**epressed, **E**arly Traumatized Patients: an international multicenter randomized control trial

Reading - to be determined

Session 12 (6/20/23): The place of psychoanalysis in relation to other psychotherapy modalities

Description: Application of the memory reconsolidation model to other modalities (e.g. CBT, EFT); when high frequency psychoanalysis may be the treatment of choice.

Reading:

- 1) Lane RD, Greenberg L Subic-Wrana C, Yovel I. The role of enhanced emotional awareness in promoting change across psychotherapy modalities. *Journal of Psychotherapy Integration*, 2020, Sep 17.
- 2) Lane RD. Memory reconsolidation, emotional arousal and the process of change in psychoanalysis. In *Outcome research and the future of psychoanalysis: Clinicians and researchers in dialogue*. (Eds: Leuzinger-Bohleber, M, Solms M, Arnold SE). Routledge, 2020, pp. 188-205.