How does psychotherapy bring about change in mental health? Clarity about the core mechanisms that explain how enduring change occurs can be of great benefit to clinicians. While every practitioner develops particular techniques and theories that are often effective, these may not work or may not apply to a given patient.

This conference focuses on the core mechanisms of change that apply to all major modalities of therapy as described in a recent paper in a leading neuroscience journal. By better understanding how therapy works, clinicians will be able to take a fresh look at how they do therapy and potentially make changes to more effectively help patients to change. Emphasis will be placed on linking basic science to clinical application and examining the implications for clinical practice of this new model of enduring change.
Friday, September 15: BASIC SCIENCE

**Basic Science I**
(Chair: Lee Ryan)

- **7:30 – 8:00am** Registration & Continental Breakfast
- **8:00 – 8:15am** Welcome & Introduction
  Ole Thienhaus, MD, MBA & Richard D. Lane, MD, PhD
  University of Arizona
- **8:15 – 9:00am** What is a memory, that we can change it
  Lynn Nadel, PhD, University of Arizona
- **9:00 – 9:45am** Implicit and Explicit Emotion
  Ryan Smith, PhD, University of Arizona
- **9:45 – 10:00am** BREAK
- **10:00 – 10:45am** A neural window into affective experience
  Ajay Satpute, PhD, Northeastern University
- **10:45 – 11:30am** Dynamic Regulation of Internal Experience
  Jessica Andrews-Hanna, PhD, University of Arizona
- **11:30 – 12:15pm** Open Discussion
- **12:15 – 1:30pm** LUNCH

**Basic Science II**
(Chair: Lynn Nadel)

- **1:30 – 2:15PM** How Emotion Shapes Learning & Memory
  Joseph Dunsmoor, PhD, University of Texas
- **2:15 – 3:00pm** Stress and Sleep Interact to Enhance Memory Consolidation of Negative Events
  Jessica Payne, PhD, University of Notre Dame
- **3:00 – 3:15pm** BREAK
- **3:15 – 4:00pm** Autobiographical Memory and the Self
  Lee Ryan, PhD, University of Arizona
- **4:00 – 4:45pm** Between Safety and Threat: Attachment and Fear Learning in Infancy - Lessons from Developmental Neurobiology
  Jacek Debiec, MD, PhD, DPhil, MPhil, University of Michigan
- **4:45 – 5:30pm** Open Discussion
- **5:30 – 7:00pm** RECEPTION
Saturday, September 16: APPLICATIONS TO PSYCHOTHERAPY

Applications to Psychotherapy I (Chair: Richard Lane)

8:30 – 9:00am  Registration & Continental Breakfast
9:00 – 9:45am  Emotion Process in Psychotherapeutic Change
Leslie Greenberg, PhD, York University
9:45 – 10:30am Emotional Processing Therapy for Anxiety Related Disorders: The Case of PTSD
Edna B. Foa, PhD, University of Pennsylvania
10:30 – 10:45am BREAK
10:45 – 11:30am Optimizing extinction learning for treating fear and anxiety
Michelle G. Craske, PhD, University of California, Los Angeles
11:30 – 12:15am Open Discussion
12:15 – 1:30pm LUNCH

Applications to Psychotherapy II (Chair: Lynn Nadel)

1:30 – 2:15pm  Viewing Psychodynamic Theory and Practice Through the Lens of Memory Reconsolidation
Hanna Levenson, PhD, Wright Institute, Berkeley
2:15 – 3:00pm  Moving toward an integrative approach to emotional change: how recent neuroscientific developments have influenced the field of psychotherapy.
Rhonda Goldman, PhD, Illinois School of Professional Psychology
3:00 – 3:15pm  BREAK
3:15 – 4:15pm  Promoting Therapeutic Integration Through Conceptual Refinements Derived from Computational Neuroscience
Richard D. Lane, MD, PhD, University of Arizona
4:15 – 5:00pm  Open Discussion

Available speaker slides will be posted after the event at:
http://psychology.arizona.edu/NPC2017

For questions, contact Dale Schoonover at dschoonover@email.arizona.edu
For CE/CME credit questions, contact Manual Acuna at macuna@psychiatry.arizona.edu
Lynn Nadel, Ph.D.  
Regents’ Professor, University of Arizona

*What is a memory, that we can change it*

In this talk I will provide an overview of past and current ideas about how memory works, focusing on new views of memory stressing it’s multiplicity and malleability.

Ryan Smith, Ph.D.  
Postdoctoral Fellow, University of Arizona

*Implicit and Explicit Emotion*

The terms “Implicit Emotion” and “Explicit Emotion” have been used to refer to a range of distinct states and processes. In this talk, I will first outline an abstract model of how these states and processes interact to produce emotion-related behaviors and the conscious experiences associated with emotion. I will also outline how this model may be implemented within the brain. Finally, I will illustrate how this model may account for clinically relevant phenomena and provide potential targets for treatment and treatment-focused research.

Ajay B. Satpute, Ph.D.  
Assistant Professor of Psychology, Northeastern University, Boston MA  
www.ajaysatpute.com

*A neural window into affective experience*

When two people express the same sentiment, such as “I feel afraid!”, how similar are their subjective experiences? In this talk, I explore this question from an affective neuroscience approach. The guiding idea is: if I have information about someone’s brain activity, can I get a better sense of what their more salient or affective experiences are like? I first present work that uncovers the neurocognitive mechanisms that underlie how people report on their feelings with simple, but ubiquitously used, verbal categories, such as feeling “bad”. I then present several neuroimaging studies suggesting that the brain encodes not only for what is shared across distinct affective experiences (i.e. valence and arousal), but also for the more unique salient qualities that define a given affective experience. Collectively, these findings suggest that brain activity may be leveraged to provide a window into affective experience.
Jessica R. Andrews-Hanna, Ph.D.
Assistant Professor, Department of Psychology; Cognitive Science Program, University of Arizona

**Dynamic Regulation of Internal Experience**

Unlike our evolutionary ancestors, the minds of humans are not limited to the temporal, spatial, or perceptual constraints of the here-and-now. Our capacity for self-reflection and imagination affords a remarkable potential to transcend the immediate environment, giving rise to internal experiences that shape our unique sense of self. Yet our introspective capacity is a double-edge sword. On the one hand, it can bestow innovation, fulfillment, and happiness; on the other, it can fuel self-criticism, chronic worry, and distress. In this talk, I will bridge cognitive, clinical, and neuroscientific research to propose a unifying framework differentiating functional from dysfunctional self-generated thought. At the core of this framework lies the dynamics of internal experience, supported by fluctuating interactions between large-scale brain networks. I will discuss how automatic, affective biases — one’s learned history of thinking and feeling a certain way — can constrain the trajectory of thought, limiting its flexibility and instrumentality, and exacerbating poor mental health. Synthesizing the latest research from brain network science, I will position the brain’s default mode network — through it’s interactions with salience, limbic, and frontoparietal control networks — as an important battleground where therapy takes place. The talk will wrap up by considering psychotherapy as a tool to facilitate dynamics on longer scales, promoting change that hopefully endures for years.

Joseph Dunsmoor, Ph.D.
Assistant Professor, Department of Psychiatry
University of Texas at Austin
http://sites.utexas.edu/dunsmoor-lab/

**How Emotion Shapes Learning & Memory**

Emotion has the ability to preserve our memory of the past, and affects how we behave in the future. Here, I discuss recent investigations on emotional memory in humans and attempt to draw the correspondence between two academic fields—associative fear conditioning and emotional episodic memory—that are typically investigated separately. I discuss combining knowledge from rich literatures on associative learning and the emotional enhancement of memory to shed light on how meaningful experiences help select what we remember from what we forget.
Jessica Payne, Ph.D.
Associate Professor of Psychology
University of Notre Dame
http://ndsamlab.weebly.com/

**Stress and Sleep Interact to Enhance Memory Consolidation of Negative Events**

Separate lines of research demonstrate that elevated stress hormones (such as cortisol and norepinephrine) can selectively enhance the consolidation of negative emotional memories, as can the occurrence of sleep after learning. The first part of my talk will examine the separate roles that stress and sleep play in the formation of our emotional memories. In the second part of the talk, I will discuss new evidence, from behavioral, psychophysiological, and neuroimaging studies, suggesting that stress and arousal interact with sleep to augment memory consolidation, particularly for emotionally negative information. I will conclude the talk by 1) presenting a model arguing that stress hormones help ‘tag’ emotional information as important to remember at the time of encoding, thus enabling subsequent, sleep-based plasticity processes to optimally consolidate emotional information in a selective manner, and 2) discussing how sleep-stress hormone interactions may help shed light on our understanding of clinical conditions such as depression and anxiety disorders.

Lee Ryan, Ph.D.
Professor and Head, Psychology Department
Associate Director, Evelyn F. McKnight Brain Institute
University of Arizona

**Autobiographical Memory and the Self**

Autobiographical memory plays a critical role in the construction of the self-concept. The self-concept consists of traits (I am generous) and roles (I am a psychologist). Autobiographical memory is used to maintain and, when appropriate, update these traits and roles, and in the process helps to create continuity and coherence in one’s personal identity. Supporting the self-concept with memory has broad implications for emotional functioning, life satisfaction and self-appraisal. We will discuss recent findings that highlight the important connections between episodic memories, personal semantic knowledge, and the self-concept.
Between Safety and Threat: Attachment and Fear Learning in Infancy - Lessons from Developmental Neurobiology

Learning occurs throughout lifetime but what we learn and how we learn it changes to fit each developmental stage, typically using transient “sensitive periods” that filter what is learned by enhancing some aspects of learning and inhibiting others. Learning in early life is biased towards attachment and safety. However, infants and young children are uniquely sensitive to the caregiver’s distress and fear. This enables the caregiver to navigate infant’s learning about the world and what is threatening and what is safe. Heritable or experiential factors may affect the developmental equilibrium of threat and safety learning, and lead to the emergence of maladaptive attachment and fear.

Emotion Process in Psychotherapeutic Change

Emotion-focused therapy (EFT) is an evidence based treatment that is based on emotion assessment, principles of emotional change that helps people activate their underlying maladaptive emotion schematic memories of shame, fear and sadness to make them amendable to alternative emotionally adaptive responses. Access to adaptive emotions such as empowering anger at violation, sadness at loss, as well as more compassionate sentiments toward the self, then help combat feelings of fear based insecurity, sadness of lonely abandonment, powerlessness, self-contempt and shame. This leads to a change in self and in narratives. Research on this EFT process of change will be presented. Differential intervention with different emotions based on process diagnosis and the use of methods of dialoguing with parts of self and imagined significant others in an empty chair will be demonstrated.
In this presentation I will discuss emotional processing theory (EPT) that explains the psychopathology and treatment of anxiety disorders, with a focus on posttraumatic stress disorder (PTSD). I will introduce the conceptualization of fear and other emotions as memory structures and suggest that anxiety disorders reflect the presence of specific pathological negative emotion structures. In this context, I will suggest that PTSD reflects the presence of a pathological emotion (e.g., fear) structure in which safe stimuli representations are associated with the meaning of “danger,” and normal responses to trauma are associated with the meaning of “self-incompetence.” Accordingly, erroneous cognitions such as “the world is extremely dangerous” and “I am extremely weak and incompetent” underlie the development and maintenance of PTSD. Next, I will describe exposure therapy and discuss the mechanisms involved in its efficacy for anxiety disorders. According to EPT, successful symptom reduction reflects modification of the underlying emotional structure (i.e., emotional processing) and requires two conditions: 1) activation (emotional engagement) of the pathological fear structure, and 2) availability of information that disconfirms the pathological elements in the structure (i.e., change in negative pathological cognitions). Originally, EPT proposed three indicators of emotional processing (i.e., treatment success): fear activation (emotional engagement), within-session habituation (i.e., reduction in distress from the peak to the end of the exposure session), and between-session habituation (i.e., reduction of peak distress levels across successive exposure sessions). These indicators, along with changes in negative cognitions, have been hypothesized to be associated with successful outcome. Throughout my lecture, I will revisit the original suppositions and hypotheses that emerged from EPT based on research from both animal models and clinical trials, providing an updated account of EPT and its implications for treatment. Finally, I will discuss the limitations of EPT, and theoretical and empirical directions that will move the field forward.
Optimizing extinction learning for treating fear and anxiety

The therapeutic strategy of repeated exposure to fear producing stimuli is effective for fears and anxiety disorders, but a substantial number of individuals fail to respond or show a return of fear. Translation from the basic science of fear extinction inhibitory retrieval models, and inhibitory regulation, offers strategies for increasing response rates and decreasing relapse following exposure therapy. The underlying theories and evidence for these strategies will be presented, as well as their contrast with ‘fear habituation’ approaches for conducting exposure therapy. The strategies that optimize inhibitory learning/regulation include violation of expectancies by designing exposures to provide evidence that disconfirms expectancies, and by presenting multiple feared stimuli simultaneously as well as occasional exposures to aversive outcomes. Attention to the feared stimuli is considered critical to these processes while cognitive restructuring can be an impediment. Methods for rehearsal and other forms of consolidation following exposure therapy will be discussed. Variability in stimuli and context throughout exposure, utilization of retrieval cues, and methods for limiting hippocampal activation during exposure offer the potential to increase generalization of extinction/exposure therapy and limit return of fear. Although there is great promise in the disruption of reconsolidation of extinction, potential barriers to clinical application will be presented.

Viewing Psychodynamic Theory and Practice Through the Lens of Memory Reconsolidation

Within the last 20 years neuroscientists working in laboratories have documented that the process of memory reconsolidation (MR) can help create sudden transformations of past learning. Within the last ten years there has been a burgeoning attempt to apply this transtheoretical concept of MR to clinical situations of all types and orientations. In this talk several ways in which the MR paradigm might be applicable for improving our ability to understand and to achieve enduring and comprehensive changes in psychodynamic psychotherapy will be presented. Central facets of psychodynamic psychotherapy (e.g., unconscious processes, conflict, early childhood experiences, transference, the corrective emotional experience, resistance, and working through) will be seen through the lens of memory reconsolidation. Video excerpts from a case of time-limited dynamic psychotherapy (TLDP) will be used to illustrate.
Rhonda N. Goldman, Ph.D.
Illinois School of Professional Psychology at Argosy University and The Family Institute at Northwestern University

Moving toward an integrative approach to emotional change: how recent neuroscientific developments have influenced the field of psychotherapy.

The paper will discuss how the field of psychotherapy integration has been moved forward by recent developments in the neuroscience of emotion. It will consider basic premises set forth in the recent paper published by Lane, Ryan, Nadel, and Greenberg (2015) which proposes that emotional arousal and memory reconsolidation in combination may in fact represent common change processes inherent to each of the major schools of psychotherapy. Each of the major therapeutic modalities will be explored in order to understand how emotional change is viewed. The paper will examine concepts and common elements within each of the approaches that may have been influenced by recent developments in the neuroscience of emotional change. Differences inherent in each of the approaches will also be discussed as well as the implications for integration. The paper will consider whether a common understanding and approach to working with emotion and viewing change is emerging and what differences may remain.

Richard D. Lane, M.D., Ph.D.
Professor of Psychiatry, Psychology and Neuroscience
University of Arizona

Promoting Therapeutic Integration Through Conceptual Refinements Derived from Computational Neuroscience

Since its inception psychoanalysis has sought to derive general principles about the functioning of the human mind from observations and experiences made possible by analytic treatment. The central thesis of this chapter is that certain core concepts generated in this way have substantial explanatory power, but could have broader and more generalized clinical application by reframing and refining them from a normative perspective. Specific core concepts addressed in this way include the nature of the unconscious (including unconscious emotion), the nature of a developmental perspective, the origin of conflicts, the concept of defenses, and the mechanisms of therapeutic change. These conceptual refinements contribute to the integration across psychotherapeutic modalities by highlighting the importance of observable behavior, emotional experiencing, and learning in defining the source as well as treatment of clinical problems.
In 2007 in the Annual Review of Clinical Psychology, Professor Kasdin from Yale said, “After decades of psychotherapy research, we cannot provide an evidence-based explanation for how or why even our most well studied interventions produce change, that is, the mechanism(s) through which treatments operate.” In 2015, the organizers of this conference wrote a target article in Behavioral and Brain Sciences (a leading neuroscience journal) on the topic upon which this conference is based 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). This topic is sufficiently new and innovative that Oxford University Press has agreed to publish a book based on this conference. Learners need to learn about how emotion and memory interact in the brain to create and alter memories, and how knowledge about how that works can be used to inform the clinical practice of psychotherapy to make it more effective.

**EDUCATIONAL OBJECTIVES**

1) Explain the phenomenon of memory reconsolidation and how emotional arousal contributes to it.

2) Describe the critical role of emotional arousal in change in psychotherapy.

3) Explain how reconsolidation of emotional memories may be a common mechanism of change for all major psychotherapy modalities.

4) Give three examples of how practicing a new way of construing and responding to familiar situations can reinforce change.

5) Apply the above principles to the practice of at least one modality of psychotherapy, whether the modality is behavioral, cognitive-behavioral, emotion-focused/experiential or psychodynamic.

**ACCREDITATION**

You must sign in both mornings at the conference registration desk to confirm your attendance at the general session presentations—and to complete the separate credit verification form and online course evaluation. These are required by our CME office. Following the conclusion of the conference, staff will tally credit hours for participants. Certificates will be emailed by October 16 after receipt of credit verification form and online course evaluation.

**MEDICINE**

The University of Arizona College of Medicine – Tucson is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

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