

# Affective Neuroscience in Psychotherapy with Francis Stevens, Ph.D.

Kaden Page, B.A., David Puder, M.D.

On this week's episode, Dr. Puder interviews Francis Stevens, Ph.D., a clinical psychologist and author of the new book, [Affective Neuroscience in Psychotherapy: A Clinician's Guide for Working With Emotions](#). Dr. Stevens trained as a therapist under cognitive behavioral and psychodynamic theories, as well as completing a postdoctoral degree in neuroscience. The lack of emphasis on emotion in these two approaches led Dr. Stevens to begin research on the neurobiological basis of emotion and to ultimately compile this book.

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## What is Affective Neuroscience?

With the recent advancements in neuroimaging, neuroscience has begun to play a large role in the understanding of psychopathology and the advancement of psychotherapy. To break it down simply, affective neuroscience is a scientific theory that merges the complex research of neurocognition and neurobiology and its indication in helping clinicians reach a deeper understanding of their patient's affect. In his book, Dr. Stevens states that "affective neuroscience helps us to understand the important role emotions play in our mind and behavior" ([Stevens, 2022](#)). In chapter 3 of the book, Dr. Stevens presents a comprehensive summary of the work that has been done over the past several decades regarding emotion and mentions the James-Lange, Cannon-Bard, and Schachter & Singer theories to have pioneered the basis for emotional theory in psychotherapy. Also included in chapter 3 is a crash course on neuroanatomy and basic functions of the brain, which is a great refresher before diving into the affective neuroscience approach.

## Theories of Emotion

The James-Lange theory of emotion was one of the first attempts at measuring the connection between emotion and the brain. They hypothesized that a person experiences a stimulus (activating event), which triggers a physiologic response and is then interpreted by the brain. The Cannon-Bard theory challenged the James-Lange theory by suggesting that after presentation of stimulus, physiologic response and emotional response occur simultaneously. Following these two theories, Schachter and Singer developed a theory of emotion stating that emotion is dependent on both physiological arousal and cognitive processing ([Stevens, 2022](#)).

[Yip et al., \(2020\)](#) provide empirical data that those with higher emotional intelligence actually know when and when not to listen to their level of physiologic arousal when taking risks. Conversely, those with lower EQ, when having higher physiological arousal, ended up interpreting this as a moment in which they should take a risk. Part of learning about your emotional world and the meanings of your emotions might mean you are better able to take

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risks at the right times (or understand your emotions and levels of physiological arousal and then make decisions that meet the needs of the moment more accurately).

Dr. Stevens references the “shaky bridge study”, which was conducted by [Dutton and Aron in 1974](#) and set out to examine the link between sexual desire and physiological arousal. Male subjects would interact with an attractive female after either crossing a suspension bridge (which induced high arousal), a sturdy bridge (which induced low arousal), or a period of time after the subjects had crossed the bridge and their heart rate had time to decrease. After completing the task, researchers observed which subjects would then call and follow up with the female confederate. It was found that subjects who were in a high arousal condition after crossing the suspension bridge were much more likely to call the female, which led the researchers to theorize that the participants were mistaking their level of arousal from the stimulus as arousal from the female.

Emotional intelligence is associated with better understanding our own and others emotions. As we view other’s [microexpressions](#) or flashes of emotion, in clinical practice we observe that they often precede the body becoming more aroused physiologically. This makes sense because it takes longer for the HPA axis to activate the adrenal glands to produce cortisol than a moment of emotion that can flash on the face when collecting a stressful event.

Also as we postulate what the brain can teach us about psychotherapy, we want to be humble because there are 86 billion neurons, some with 40 thousand connections.

## Reasoning for Affective Neuroscience

After beginning to practice psychotherapy under techniques of cognitive behavioral therapy (CBT) and more insight-based psychodynamic therapy, Dr. Stevens found himself looking for new ways to address the emotional disconnect he was feeling with his patients. Dr. Stevens makes the point that while CBT excels in assisting patients process their thoughts and gain insight into their behaviors, it falls short in the category of providing efficacious emotional regulation and decreasing shame. As a provider, Dr. Stevens was dissatisfied with himself and his perceived inability to help patients reach the ultimate goal of regulating emotion. He says in his introduction that “I found that many of my patients were not improving much from my Socratic questioning, and at times they felt misunderstood or patronized” (Stevens, 2022). After spending some time training at the Boston Institute for Psychotherapy, Dr. Stevens found himself displeased with the assumption that improvement of a patient’s cognition and insight will subsequently lead to amelioration of symptoms.

For Dr. Stevens, the main question is, “Is cognition the only thing that can change emotion, or can we change emotion with itself?”. This question led Dr. Stevens to shift his interventions and psychotherapeutic approach to deal with emotions head on, instead of as afterthought or byproduct. After seeing success in his patients and fine tuning interventions, Dr. Stevens

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created the following six-step guide for clinicians to implement with their own patients and use emotion as the basis of their psychotherapeutic approach.

## Affective Neuroscience in Psychotherapy

The following is a surface-level synopsis of the therapeutic interventions that Dr. Stevens outlines in his book, as well as clinical pearls taken from the discussion between Dr. Puder and Dr. Stevens regarding these steps.

### 1) Emotional Awareness/Mindfulness

- a) Dr. Stevens suggests that mindfulness exercises are an effective way to begin a session, as it increases a patient's awareness of themselves.
- b) Neuroimaging shows that an increase in a patient's emotional awareness is correlated with activation of the rostral anterior cingulate cortex, an area of the brain that is crucial for emotional recognition and regulation ([Lane et al., 1998](#)).
- c) Dr. Stevens adds that mindfulness also assists the patient with the beginning part of this approach, which is to separate the feeling from the self (Stevens, 2022).
- d) One important point to emphasize is that while the patient is now more aware of their feelings, the initial emotion should be left unchanged until both clinician and patient are ready to move forward (Stevens, 2022).

### 2) Emotional Validation

- a) In order to build a strong therapeutic alliance with a patient, validation and empathy are two strong tools that are necessary to hold as a clinician. Dr. Stevens commonly reminds his patients, "We cannot control our feelings, only how we react to them" (Stevens, 2022).
- b) Validation of a patient's feelings and experiences can be the key to breaking maladaptive coping mechanisms, such as dissociation or repression.
- c) When there is negative emotion directed towards the therapist, the clinician has an opportunity to validate that emotion in real time and uncover its origin.
- d) Therapeutic alliance carries the name of "shared neural activation" in the neuroscientific literature and suggests that the empathic trait of sharing and validating another's emotions activates mirror neurons that put the two parties on the same wavelength ([Likowski et al., 2012](#); [Schmidt, Sojer, Hass, Kirsch, & Mier, 2020](#)).

### 3) Self-Compassion

- a) One goal of emotional awareness and validation is to encourage patients to begin validating their own emotions and experiences and practice compassion for themselves.

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- b) A study was conducted via fMRI that showed compassion from healthcare professionals can decrease activity in the left anterior insula, thus decreasing feelings of distress ([Sarinopoulos et al. 2013](#)).
- c) “When I practice self-compassion with patients, I have the patient speak out loud to themselves and if they can’t do that, I provide the compassionate statement and then ask them to repeat it in their own words. This is important in intervention, as it helps patients take ownership over the process” (Stevens, 2022).

## 4) Understanding the Nature of Emotion

- a) Dr. Stevens suggests the first step in understanding the nature of emotion is to ensure the patient is cognitively and emotionally available. Moderate arousal is preferred for emotion processing in session. For example, if a patient is dissociated, or in a manic state, the level of awareness will not be conducive and the level of success may be minimized.
- b) Dr. Stevens states, “Once we have recognized, validated, and provided self-compassion for our feelings, the next step is to try and understand them. For if we can understand our feelings, we might be able to prevent negative feeling states in the future” (Stevens, 2022).

## 5) Emotional Regulation

- a) The previous steps promote thinking about emotion, but it is also important to feel the emotion. “So, for many feelings like sadness, if you’re sad, you’re sad. You can try and distract yourself or avoid the feeling, but it does not just go away” (Stevens, 2022).
- b) Applying coping skills to help regulate minute feelings of emotion is a good way for patients to practice mastering their emotions and can lead to a substantial confidence boost.
- c) Dr. Stevens suggests that if a patient presents with acute emotional distress, it may be beneficial to start with emotional regulation in order to maintain a level of arousal that is appropriate for application of the other steps.
- d) The interventions that Dr. Stevens includes to aid with emotional regulation are broken down into two categories: physiologic and cognitive.
- e) Cognitive reappraisal, one of the cognitive interventions that Dr. Stevens highlights, has been shown to involve the dorsolateral, dorsomedial, and ventromedial prefrontal cortex, which are the areas of the brain in which executive functioning and goal-oriented tasks are processed, as well as decreasing activation of the amygdala, which can lead to emotional regulation in response to fear ([Buhle et al., 2014](#)).

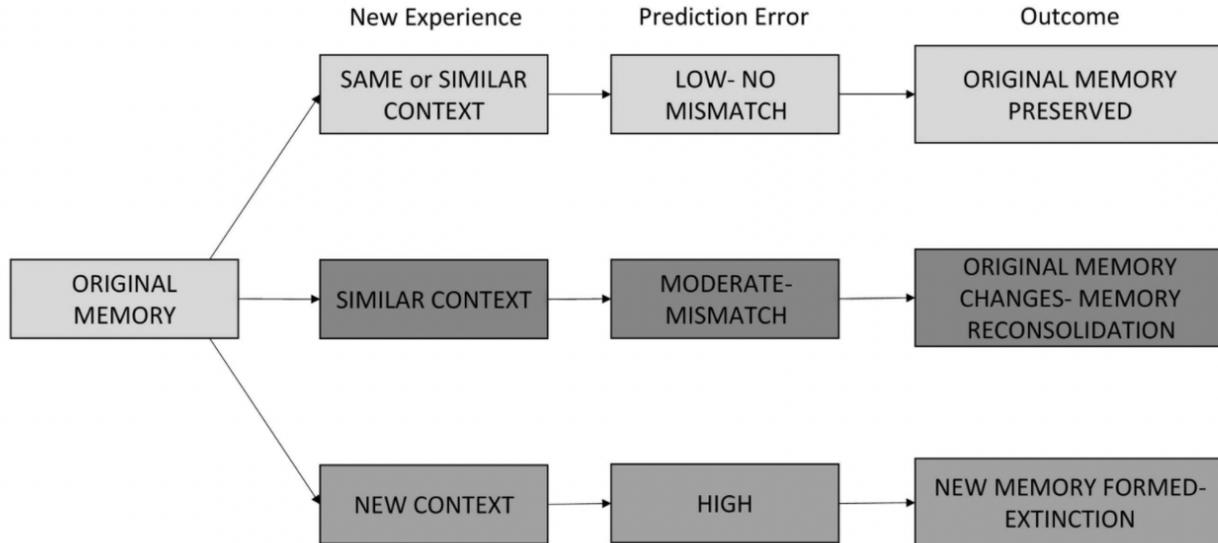
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- f) Chapter 9 is dedicated to handling specific emotions (i.e., anger, forgiveness, disgust, etc.) and provides education as well as interventions for regulation of the specific emotion. Our prior episode on forgiveness can be found [here](#).

## 6) Affect Reconsolidation

- a) Dr. Stevens has memory/affect reconsolidation as the final step, which is the process in which the patient processes their memory and then their feelings about the memory are validated by the clinician. The patient and clinician work together to reconstruct the emotional response to said memory. “It’s not the nature of the memory that is changing, but the emotions surrounding the memory” (Stevens, 2022).
- b) The hippocampus, prefrontal cortex, medial temporal lobe, and amygdala are shown to be activated as a result of accessing emotional memories in psychotherapy ([Dahlgren, Ferris, & Hamann, 2020](#)).
- c) In order to reconsolidate that affective response to a negative memory, those same brain regions are activated as well. The goal is to activate the old memory while simultaneously creating a new, positive one that replaces it and then reinforcing it. Dr. Stevens goes into great depth on how to achieve this in chapter 11.



Pictured above is figure 11.1 from Dr. Stevens book, which provides a comprehensive breakdown of the process of affect reconsolidation.

To learn more about Dr. Stevens and his work, visit [drfrancisstevens.com](http://drfrancisstevens.com), where he has archived publications and links to his book.

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