- **Integrating Recent Research Findings from Neurobiology & Positive Psychology into Actionable Clinical Strategies to Help Struggling Couples & Families**

- ***Presenter: Rick Weinberg, PhD***

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Integrating Recent Research Findings from Neurobiology & Positive Psychology into Actionable Clinical Strategies to Help Struggling Couples & Families

Tampa, FL
Sept 13, 2025

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Disclosure

Book in preparation

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Three Key Takeaways

- **fMRI | Neuroscience**. To paint a picture of recent fMRI findings on several neural pathways linking the amygdala, prefrontal cortex, reward centers, memory and emotion. These pathways are directly involved in unproductive emotional responding as well as more thoughtful and effective functioning.
- **Positivity**. This neuroscience research will then be integrated with findings from positive psychology, expectancy theory, and savoring to fashion a model intended to explain how systemic therapy works in fostering healthy change in couples and families.
- **Therapeutic applications**. This review will then lay the groundwork to inform specific therapeutic strategies emanating from the research and model that will be articulated in hour 2.

Foundations of Model

Lead with Love

"Nothing cures like time and love..."

Laura Nyro

Time and Love
New York Tendaberry (1969)

Lead with Love

April, Andrea & Art

- "What brings you in?"
- Session's first 20-25 minutes
- April's disdain and disengagement my own discouragement
- My discovery about a dozen years ago
- "I have a question"– inquire about love; talk to *each other*, not with the therapist
- "What's it like for you to be loved?"
- Savor that feeling
- I noticed everyone in the room smiling
- "Would you like to have conversations that feel like this more often?"

Lead with Love

- So many reasons in this world that we forget to be kind, to be thoughtful, to be considerate with and to our loved ones
- Most people, when offered the choice would prefer to be appreciated, to be valued, to be respected
- This review is going to bring in lots of science, research, lots of technical, but when all is said and done...
- Maxi Priest- “It all comes back to love”

Lead with Love

Foundations of Model

- Rekindling (leading with) love
- Fostering inner-efficacy and positive expectancies
- Understanding and employing neuroplasticity
- Using positivity-based systemic interventions
- Training and encouraging couples and families to be mindful of, and savor their strengthening, healing and growth

Foundations of Model

- Rekindling (leading with) love
- **Fostering inner-efficacy and positive expectancies**
- Understanding and employing neuroplasticity
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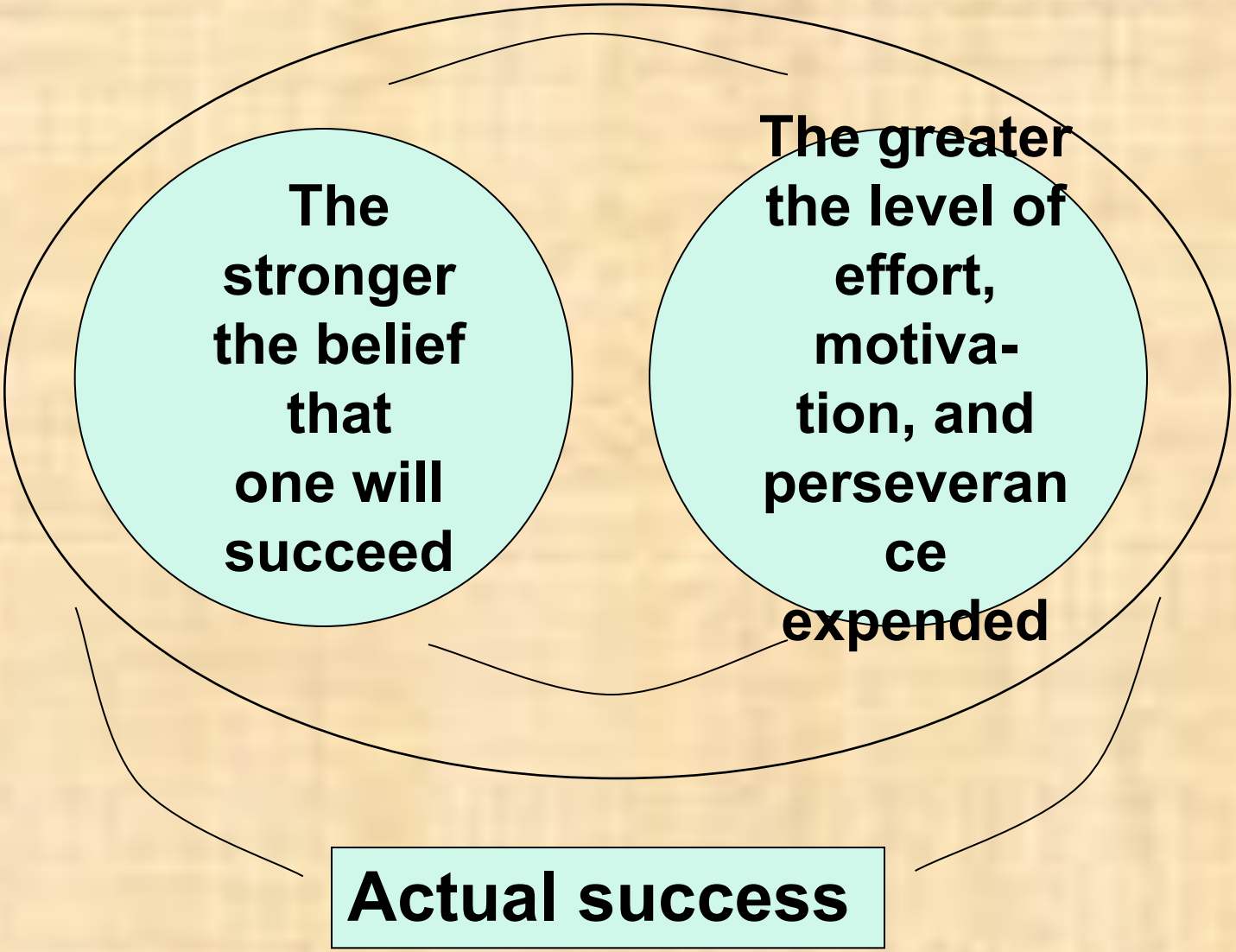
Inner-Efficacy & Positive Expectancies

- After leading with love, next most important factor in success with couples and families is attitudinal
- Foster the belief that change is likely, IF they want it, and if they want to work for it
- Three independent bodies of research–
- Self-Efficacy (Bandura, 1977, 1986, 1997)
- Expectancy (e.g., Brugnera et al., 2024; Constantino et al., 2011, 2012, 2018, 2019, 2023), and
- Hope (Cheavens & Whitted, 2023; Snyder, 2000, 2002, 2004)
- (also Carol Dweck's 2017 Growth Mindset theory of success)

Inner-Efficacy & Positive Expectancies



Bandura, 1977, 1986, 1997; Dweck, 2017; Cheavens & Whitted, 2023; Constantino et al., 2023; and many more

Inner-Efficacy & Positive Expectancies

Psychotherapy Research, 2024
https://doi.org/10.1080/10503307.2024.2328302

RESEARCH ARTICLE

Patient and therapist change process expectations: Independent and dyadic associations with psychotherapy outcomes

AGOSTINO BRUGNERA [1], MICHAEL J. CONSTANTINO [2], ARIELLA GROSSMAN-GIRON[3], TZVIEL BEN DAVID[3], & DANA TZUR BITAN[4,5]

[1]*Department of Human and Social Sciences, University of Bergamo, Bergamo, Italy;* [2]*Department of Psychological and Brain Sciences, University of Massachusetts, Amherst, USA;* [3]*Department of Psychology, Ariel University, Ariel, Israel;* [4]*Department of Community Mental Health, University of Haifa, Haifa, Israel &* [5]*Shalvata Mental Health Center, Hod Hasharon, Israel*

(Received 30 August 2023; revised 29 February 2024; accepted 4 March 2024)

Abstract

Objective: Patients and therapists possess psychotherapy-related expectations, such as their forecast of what processes will promote improvement. Yet, there remains limited research on such *change process expectations*, including their independent and dyadic associations with psychotherapy outcome. In this study, we explored the predictive influence of participants' change process expectations, and their level of congruence, on therapeutic outcomes.

Methods: Patients ($N = 75$) and therapists ($N = 17$) rated their change process expectations at baseline, and patients rated their psychological distress at baseline and three months into treatment.

Results: Multilevel models indicated that patients' expectations for therapy to work through sharing sensitive contents openly and securely were positively related to subsequent improvement ($B = -1.097$; $p = .007$).

Inner-Efficacy & Positive Expectancies

So how to boost inner-efficacy and positive expectancies with April and her family?

- Positivity dinner
- Savoring
- Explain to family- Prepare atmosphere: "Connection before correction"
- Tie it back to presenting complaint

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Inner-Efficacy & Positive Expectancies

Tieing it back to presenting complaint

- After dinner, feeling the glow, SAVOR
- Put self in others' shoes… THINK
- Write questions and talking points
- This is where we begin next session

Foundations of Model

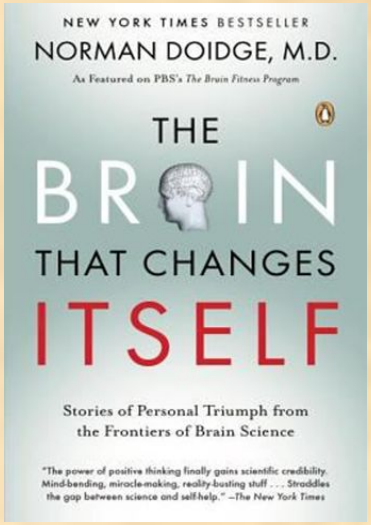
- Rekindling (leading with) love
- Fostering inner-efficacy and positive expectancies
- **Understanding and employing neuroplasticity/neuroscience**
- Using positivity-based systemic interventions
- Training and encouraging couples and families to be mindful of, and savor their strengthening, healing and growth

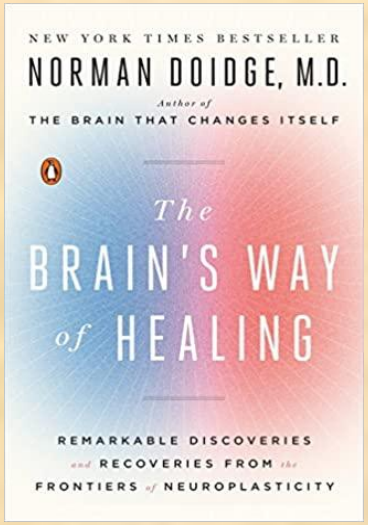
Foundations of Model

Some salient Neurobiology

Neuroplasticity (NP)

- The capacity of neural pathways and networks to grow, reroute themselves, and reorganize
- Structural NP (neurogenesis) and functional NP (synaptogenesis): Our experiences modify and grow our brains





https://www.normandoidge.com/?page_id=1259

https://www.normandoidge.com/?page_id=1042

Foundations: Neurobiology

frontiers in Cellular Neuroscience

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Check for updates

The Impact of Studying Brain Plasticity

Pedro Mateos-Aparicio and Antonio Rodríguez-Moreno**

Department of Physiology, Anatomy and Cell Biology, University Pablo de Olavide, Seville, Spain

Keywords: plasticity, development, learning and memory, recovery after injury, plasticity windows

Neural plasticity, also known as neuroplasticity or brain plasticity, can be defined as the ability of the nervous system to change its activity in response to intrinsic or extrinsic stimuli by reorganizing its structure, functions, or connections. A fundamental property of neurons is their ability to modify the strength and efficacy of synaptic transmission through a diverse number of activity-dependent mechanisms, typically referred as synaptic plasticity. Research in the past century has showed that neural plasticity is a fundamental property of nervous systems in species from insects to humans. Indeed, studies into synaptic plasticity have not only been an important driving force in neuroscience research but they are also contributing to the well-being of our societies as this phenomenon is involved in learning and memory, brain development and homeostasis, sensorial training, and recovery from brain lesions. However, despite intense research into the mechanisms governing synaptic plasticity, it is still not clear exactly how plasticity shapes brain morphology and physiology. Thus, studying synaptic plasticity is clearly still important if we wish to fully understand

Foundations: Neurobiology

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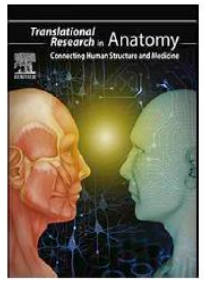

Review Article on adult neurogenesis in humans

Daba Abdissa, Nigusse Hamba, Asfaw Gerbi

Department of Biomedical Sciences, Division of Clinical Anatomy, College of Medical Sciences, Institute of Health Sciences, Jimma University, Ethiopia

ARTICLE INFO

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Neural stem cells
Factors
Clinical significance
Methods

ABSTRACT

The concept of neurogenesis in the adult human brain was conceived in the 1960s, revisited in the 1980s and confirmed in the 1990s. It was a controversial area of research due to methodological challenges. It is now widely accepted that new neurons are continually generated in specific regions in the adult brain. This occurs primarily in the subventricular zone of the lateral ventricles and the subgranular zone of the dentate gyrus in the hippocampus. Neuroblasts from the subventricular zone migrate along the rostral migratory stream into the olfactory bulb, whereas neuroblasts from the subgranular zone show relatively little migratory behavior, and

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NEURAL REGENERATION RESEARCH
www.nrronline.org

Review

Adult neurogenesis: a real hope or a delusion?

Ghulam Hussain[1, *], Rabia Akram[1], Haseeb Anwar[1], Faiqa Sajid[1], Tehreem Iman[1], Hyung Soo Han[2], Chand Raza[3], Jose-Luis Gonzalez De Aguilar[4]

https://doi.org/10.4103/1673-5374.375317

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Date of web publication: May 31, 2023

From the Contents

Abstract

Adult neurogenesis, the process of creating new neurons, involves the coordinated division, migration, and differentiation of neural stem cells. This process is restricted to neurogenic niches located in two distinct areas of the brain: the subgranular zone of the dentate gyrus of the hippocampus and the subventricular zone of the lateral ventricle, where new neurons are generated and then migrate to the olfactory bulb. Neurogenesis has been thought to occur only during the embryonic and early postnatal stages and to decline with age due to a continuous depletion of neural stem cells. Interestingly, recent years have seen tremendous progress in our understanding of adult brain neurogenesis, bridging the knowledge gap between embryonic and adult neurogenesis. Here, we discuss the current status of adult brain neurogenesis in light of what we know about neural stem cells. In this notion, we talk about the importance of intracellular signaling molecules in mobilizing endogenous neural stem cell proliferation. Based on the current understanding, we can declare that these molecules play a role in targeting neurogenesis in the mature brain. However, to achieve this goal, we need to avoid the undesired proliferation of neural stem cells by controlling the necessary checkpoints, which can lead to tumorigenesis and prove to be a curse instead of a blessing or hope.

Key Words: adult neurogenesis; aging; brain-derived neurotrophic factor; dentate gyrus; hippocampus; neural stem cells; neurotrophic factors; Notch; oxidative stress; stem cells; subgranular zone

Introduction

The process of generating mature and functional neurons from neural

that new neurons could be generated in the DG and SVZ of the adult brain in cat and rat models (Altman, 1962, 1963; Altman and Das, 1965). Subsequently, Fernando Nottebohm found evidence for this in songbirds

Foundations: Neurobiology

Crucially important feature for neural and synaptic growth is:

Repetition, repetition, repetition

Pascual-Leone et al., (2005; 2009)

Zacharek et al., (2024)

Foundations: Neurobiology

Annual Review of Neuroscience, 28: 377-401

The Plastic Human Brain Cortex

Alvaro Pascual-Leone, Amir Amedi, Felipe Fregni, and Lotfi B. Merabet

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2005. 28:377–401

doi: 10.1146/
annurev.neuro.27.070203.144216

0147-006X/05/0721-
0377$20.00

Key Words

stroke, blindness, neurorehabilitation, neuromodulation, crossmodal plasticity, cortical stimulation, functional neuroimaging

Abstract

Plasticity is an intrinsic property of the human brain and represents evolution's invention to enable the nervous system to escape the restrictions of its own genome and thus adapt to environmental pressures, physiologic changes, and experiences. Dynamic shifts in the strength of preexisting connections across distributed neural networks, changes in task-related cortico-cortical and cortico-subcortical coherence and modifications of the mapping between behavior and neural activity take place in response to changes in afferent input or efferent demand. Such rapid, ongoing changes may be followed by the establishment of new connections through dendritic growth and arborization. However, they harbor the danger that the evolving pattern of neural activation may in itself lead to abnormal behavior. Plasticity is the mechanism for development and learning, as much as a cause of pathology. The challenge we face is to learn enough about the mechanisms of plasticity to modulate them to achieve the best behavioral outcome for a given subject.

Foundations: Neurobiology

Zacharek, S. J., Gabrieli, J. D., & Hofmann, S. G. (2024). Brain plasticity and prediction of response to psychotherapy. In P. Steffen & D. Moss (Eds.). *Integrating Psychotherapy and Psychophysiology: Theory, Assessment, and Practice*, 101. DOI:10.1093/oso9780198888727.0030005

4

Brain Plasticity and Prediction of Response to Psychotherapy

Sadie J. Zacharek, John D. E. Gabrieli, and Stefan G. Hofmann

Introduction

Psychotherapy for psychiatric disorders has a long history, rising to prominence with the works of Freud and Jung and transforming into modern versions with the work of Aaron Beck and others. Supported by the strong empirical evidence of many well-controlled studies, cognitive and behavioral therapies (CBT) have since become the dominant approach for treating virtually all mental health problems (Hofmann et al., 2012). This psychotherapeutic approach is often contrasted with pharmacological treatments. To the extent that either kind of treatment benefits a patient in regard to changes in thoughts, feelings, and behaviors, however, it must do so through *brain plasticity* that mediates all forms of human psychological change. Advances in neuroimaging methods and technologies over the past three decades have allowed, for the first time, measurement, and visualization of therapeutic brain plasticity for

Foundations of Model

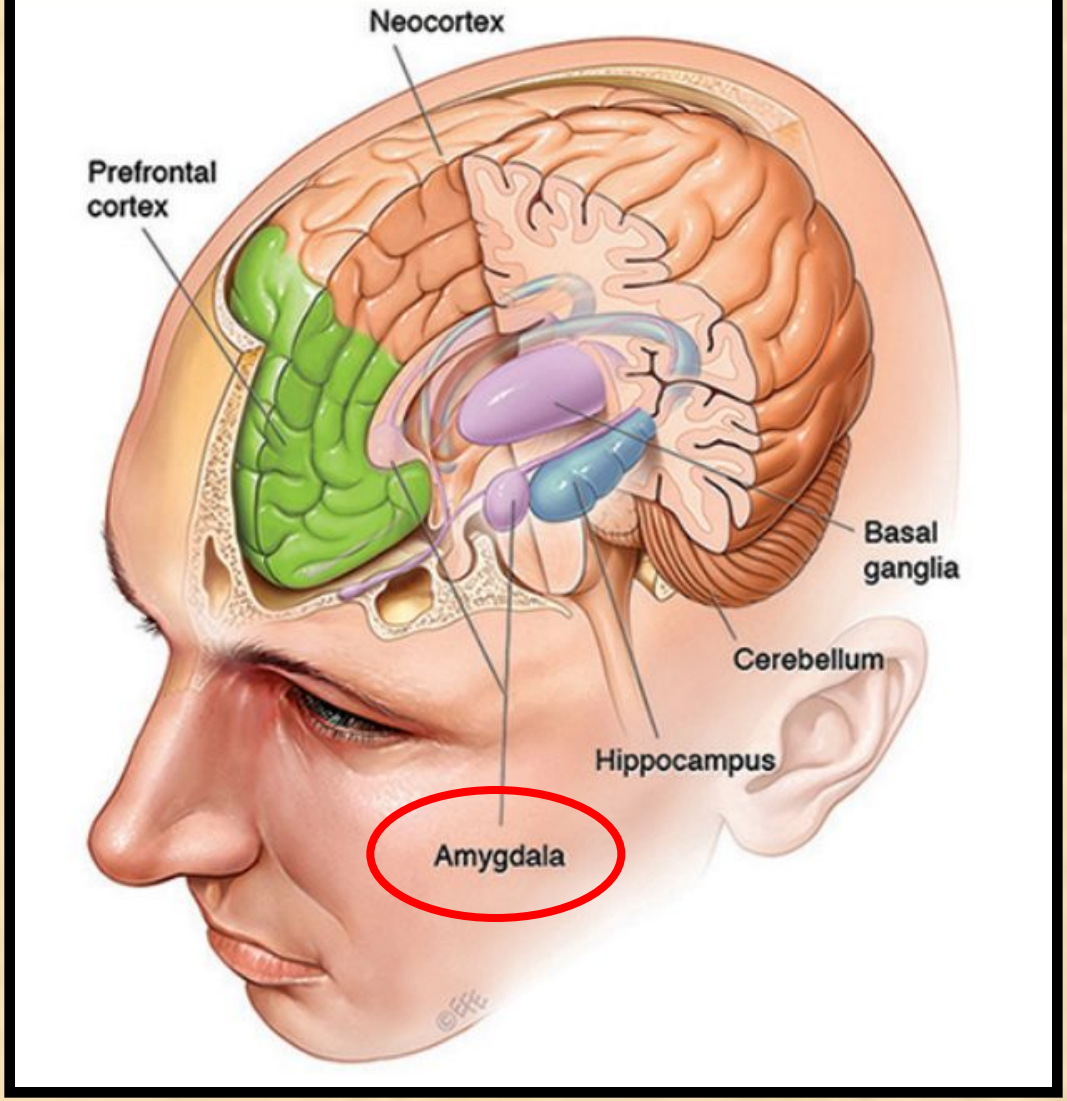
Some salient neuroanatomy

Foundations: Some Neuroanatomy

Three parts of the brain critical for understanding how behavioral and relational changes occur

Activating parts of the brain

Our Amygdala



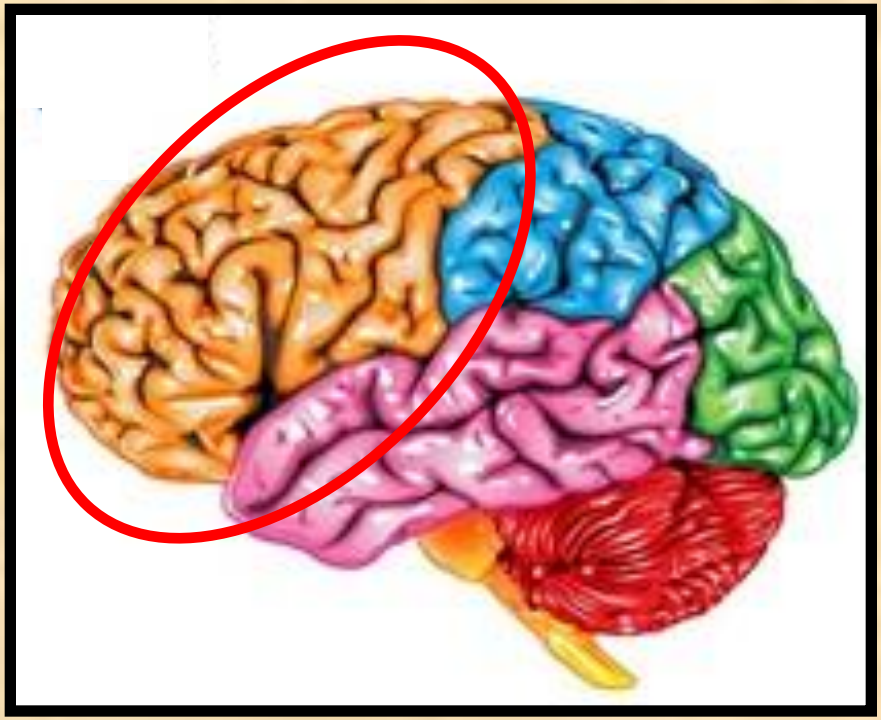
- Part of limbic system
- Threat detector
- 24 | 7 | 365
- Fight-or-flight
- Adrenaline
- Cortisol
- Overactive
- "Amygdala Hijack"
- Genetics
- ACEs

https://qbi.uq.edu.au/brain-basics/memory/where-are-memories-stored

https://www.neuroscientificallychallenged.com/blog/know-your-brain-amygdala

Modulating parts of the brain

Prefrontal Cortex (PFC)



- Higher mental processes
- Judgment & flexibility
- Planning
- Considers past & future
- Considers context
- Impulse control
- Day dreaming
- Self-monitoring
- Self-reflection
- Decision-making
- Problem-solving
- Goal-setting to action

Function: Involved in higher mental processes such as impulse control, thinking, day dreaming, self-reflection, decision-making, problem-solving, planning, flexibility, judgement, reconstructing new narratives, etc. It intelligently integrates thought, memory, action, and emotion, including an important filtering function, i.e., the inhibition of unnecessary thoughts and memories, distractions, maladaptive actions and feelings. Thus it allows for a seamless wedding of past to future, and goal-setting to action steps.

https://www.neuroskills.com/brain-injury/frontal-lobes.php

http://brainmadesimple.com/frontal-lobe.html

https://www.youtube.com/watch?v=i47_jiCsBMs

Necessary clarification

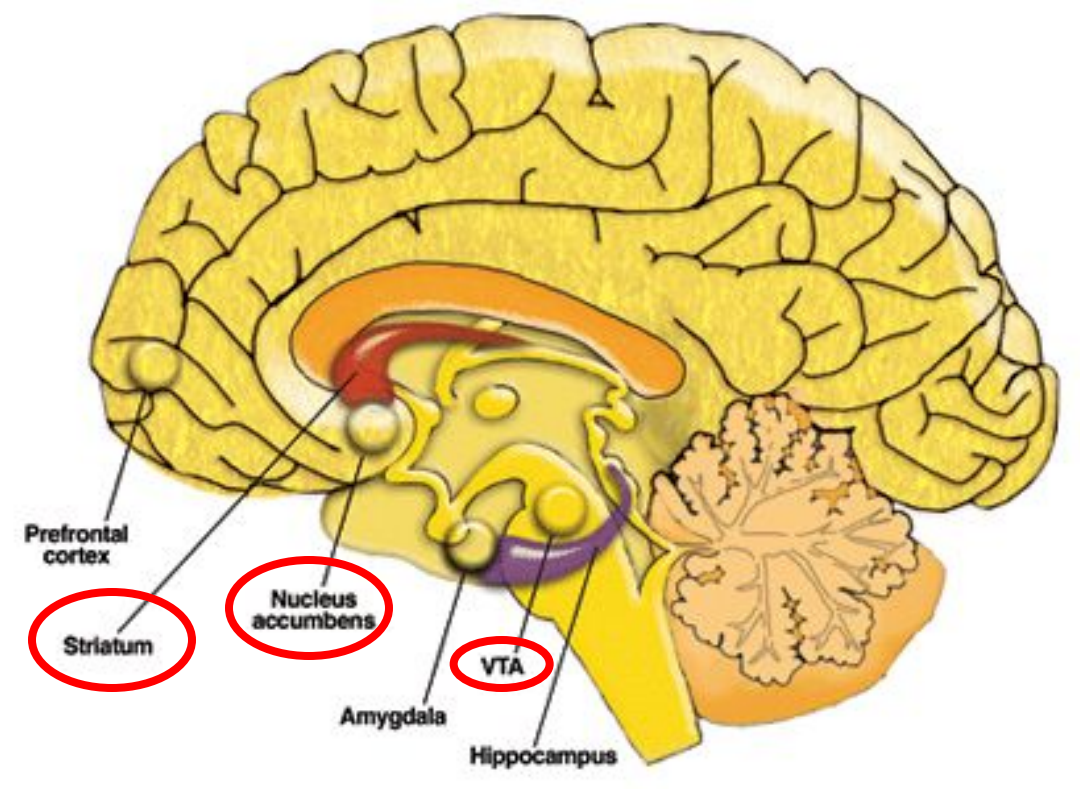
Prefrontal Cortex (PFC) =

- Medial PFC (mPFC)
- Ventromedial PFC (vmPFC)
- Dorsolateral PFC (dlPFC)
- Orbitofrontal PFC (OFC)
- Anterior cingulate cortex (ACC) (Marusak et al, 2016)

Marusak, H. A., Thomason, M. E., Peters, C., Zundel, C., Elrahal, F., & Rabinak, C. (2016). You say 'prefrontal cortex'and I say 'anterior cingulate': Meta-analysis of spatial overlap in amygdala-to-prefrontal connectivity and internalizing symptomology. *Translational Psychiatry*, *6*(11), e944-e944. **https://doi.org/10.1038%2Ftp.2016.218**

Reward or Pleasure Centers of the Brain

Brain Reward System



- Uplifting feelings
- Pleasure
- Motivation
- Rewards
- Dopamine
- Endogenous opioids
- Not hard-wired
- Social Development

The reward system is responsible for positive feelings and motivation. Feelings supply the context and foundation for sensory and motor activities and can alter how one perceives the world and behaves in it. This portion of the brain physically connects the survival-oriented brain stem (which operates without our awareness) with the cognitively oriented cortex.

http://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain

The Reward System

- The brain's reward system or 'pleasure centers' hasn't garnered anywhere near the attention that the amygdala-driven, HPA, fight-flight-freeze system has.

- Attention is only recent. Only recently has science devoted time, energy and resources to studying the ~~neurobiology of happiness~~, and then much of the energy in looking at pleasure has been in the context of addiction.

- Evolution/survival: Far more important for our neural networks to alert us to what was dangerous in our environment than what was pleasant. ***Survival beats happiness.***

The Reward System

Dopamine vs. Endogenous Opioids and Endocannabinoids (Berridge et al)

Two related, but distinct pathways

- **Dopamine: Wanting/needing**
- **Endogenous opioids: Liking/enjoying**

(we'll talk more about clinical implications of this in part 2)

Berridge, 2003; Berridge & Robinson, 2016; Kringelbach & Berridge, 2017; Nguyen et al, 2021

Also Lieberman & Long (2019)- *The Molecule of More*

The Reward System

Significant distinction

- Craving/needing (dopamine) is way more powerful and lasts a lot longer than liking/enjoying (endogenous opioids) (Baugh et al., 2022; Nguyen et al, 2021)
- When craving is triggered, the anticipated rewards are fueled by the release of large torrents of dopamine, and can "deactivate" the PFC (Anselme & Robinson, 2016; Baugh et al., 2022; Berridge & Dayan, 2021; Weinstein, 2023)

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Reward, motivation and brain imaging in human healthy participants – A narrative review

Aviv M. Weinstein*

Department of Psychology and Behavioral Sciences, Ariel University, Ari'el, Israel

Over the past 20 years there has been an increasing number of brain imaging studies on the mechanisms underlying reward motivation in humans. This narrative review describes studies on the neural mechanisms associated with reward motivation and their relationships with cognitive function in healthy human participants. The brain's meso-limbic dopamine reward circuitry in humans is known to control reward-motivated behavior in humans. The medial and lateral Pre-Frontal Cortex (PFC) integrate motivation and cognitive control during decision-making and the dorsolateral PFC (dlPFC) integrates and transmits signals of reward to the mesolimbic and meso-cortical dopamine circuits and initiates motivated behavior. The thalamus and insula influence incentive processing in humans and the motor system plays a role in response to action control. There are reciprocal relationships between reward motivation, learning, memory, imagery, working memory, and attention. The most common method of assessing reward motivation is the monetary incentive delay task (DMRT) and there are several meta-analyses of this paradigm. Genetics modulates motivation reward, and dopamine provides the basis for the interaction between motivational and cognitive control. There is some evidence that male adolescents take more risky decisions than female adolescents and that the lateralization of reward-related DA release in the ventral striatum is confined to men. These studies have implications for our understanding of natural reward and psychiatric conditions like addiction, depression and ADHD. Furthermore, the association between reward and memory can help develop treatment techniques for drug addiction that interfere with consolidation of memory. Finally, there is a lack of research on reward motivation, genetics and sex differences and this can improve our

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Important Brain Connections

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Important Brain Connections

Neural pathways between:

- **the amygdala and prefrontal cortex (PFC)**
- **the PFC and the reward centers**

Banks et al (2007) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2566753/

Important Brain Connections

Communication between amygdala and PFC

Communication Between Amygdala & PFC

- Neural interstate between amygdala & PFC
- Ordinarily equal lanes of one-way traffic, separated by median
- Because of genetics (Arnsten, 2009) or ACEs (e.g., Teicher et al, 2016) more lanes needed on amygdala side → fewer lanes on PFC side
- More bandwidth from amygdala to PFC → less capacity for PFC to quell amygdala
- Good therapy over time pushes median back and opens up more lanes of traffic (i.e., more capacity) for PFC to do its job

Andrewes & Jenkins, 2019; Arnsten, 2009; Clark & Beck, 2010; Haller et al., 2024; Hanson et al., 2019; Lieberman et al., 2007; Mason et al, 2017; Teicher et al., 2016; Yuan et al., 2022; Zacharek et al., 2024

Neuropsychology Review (2019) 29:220–243
https://doi.org/10.1007/s11065-019-09398-4

REVIEW

The Role of the Amygdala and the Ventromedial Prefrontal Cortex in Emotional Regulation: Implications for Post-traumatic Stress Disorder

David G. Andrewes[1] · Lisanne M. Jenkins[2]

Received: 26 November 2017 / Accepted: 14 February 2019 / Published online: 14 March 2019

Abstract

The importance of the amygdala as a salience detector and in emotional learning is now well accepted. The mechanisms that regulate and inhibit the amygdala, however, are less well understood. This review provides evidence from imaging and lesion studies to support the role of the ventromedial prefrontal cortex (vmPFC) as a moderator and inhibitor of the amygdala. The *dual inhibition* model centres on the broadly defined ventromedial prefrontal cortex (vmPFC) and the distinct role of two of its subcomponents, the rostral anterior cingulate cortex and orbitofrontal cortex. The *dual inhibition model* posits that these two regions, along with their associated inhibitory pathways, must interact for adequate inhibitory control of the amygdala and emotional regulation. Following a description of the model's experimental support, it is then proposed as a neuropsychological mechanism for post-traumatic stress disorder (PTSD). *Flashbacks,* as a defining feature of PTSD, are described in terms of a subcortical orienting network. Finally, there is a discussion of how a neuropsychological understanding of post-traumatic stress disorder (PTSD) might inform a clinician's approach to treatment and how the dual inhibition model might have a more general application to understanding emotional dysregulation.

Keywords Ventromedial prefrontal cortex · Post traumatic stress disorder · PTSD · Amygdala · Emotion · Emotional regulation · Treatment · Emotional dysregulation · Anxiety · Neuropsychology · Affective neuroscience · Brain

Development and Psychopathology (2019), **31**, 1053–1066
doi:10.1017/S0954579419000592

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Special Issue Article

Resting state coupling between the amygdala and ventromedial prefrontal cortex is related to household income in childhood and indexes future psychological vulnerability to stress

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Abstract

While child poverty is a significant risk factor for poor mental health, the developmental pathways involved with these associations are poorly understood. To advance knowledge about these important linkages, the present study examined the developmental sequelae of childhood exposure to poverty in a multiyear longitudinal study. Here, we focused on exposure to poverty, neurobiological circuitry connected to emotion dysregulation, later exposure to stressful life events, and symptoms of psychopathology. We grounded our work in a biopsychosocial perspective, with a specific interest in "stress sensitization" and emotion dysregulation. Motivated by past work, we first tested whether exposure to poverty was related to changes in the resting-state coupling between two brain structures centrally involved with emotion processing and regulation (the amygdala and the ventromedial prefrontal cortex; vmPFC). As predicted, we found lower household income at age 10 was related to lower resting-state coupling between these areas at age 15. We then tested if variations in amygdala–vmPFC connectivity interacted with more contemporaneous stressors to predict challenges with mental health at age 16. In line with past reports showing risk for poor mental health is greatest in those exposed to early and then later, more contemporaneous stress, we predicted and found that lower vmPFC–amygdala coupling in the context of greater contemporaneous stress was related to higher levels of internalizing and externalizing symptoms. We believe these important interactions between neurobiology and life history are an additional vantage point for understanding risk and resiliency, and suggest avenues for prediction of psychopathology related to early life challenge.

Keywords: amygdala, brain, poverty, psychopathology, stress

Foundations of Model

Research has focused much more on the threat, fight-flight, alarming emotions of fear, anxiety, stress, agitated depression, etc. because of their survival value.

Also because they are more intense and last longer than the positive emotions.

Foundations of Model

However, it's also important for counselors and therapists to look in the opposite, more pleasant direction—to more thoroughly understand the processes that bring our clients deeper satisfaction, greater enjoyment, and richer fulfillment.

In other words, it's time to better understand the pleasure networks in our brain.

Foundations of Model

- Rekindling (leading with) love
- Fostering inner-efficacy and positive expectancies
- Understanding and employing neuroplasticity
- **Using positivity-based systemic interventions**
- Training and encouraging couples and families to be mindful of, and savor their strengthening, healing and growth

Important Brain Connections

The PFC and the Reward Center

Important Brain Connections

- Important neural network: PFC, reward center (VTA, striatum, nucleus accumbens) & hippocampus
- Episode occurs, evokes pleasure (endorphinergic) response.
- When attended to (i.e., savored), the memory is encoded in hippocampus in "positive" gift wrap.
- When recalled the memory re-evokes the positive memory
- When done so repeatedly it strengthens this network and facilitates evoking happiness

Chen et al, 2022; Felix-Ortiz & Tye, 2014; Kensinger & Ford, 2021; LaBar & Cabeza, 2006; LeBrecht & Badre, 2008; Rouhani et al, 2023; Sherman et al, 2024; Wager et al., 2008; Zhang et al, 2020

LaBar, K. S., & Cabeza, R. (2006). Cognitive neuroscience of emotional memory. *Nature Reviews Neuroscience*, *7*(1), 54-64. doi:10.1038/nrn1825

Cognitive neuroscience of emotional memory

Kevin S. LaBar and Roberto Cabeza

Abstract | Emotional events often attain a privileged status in memory. Cognitive neuroscientists have begun to elucidate the psychological and neural mechanisms underlying emotional retention advantages in the human brain. The amygdala is a brain structure that directly mediates aspects of emotional learning and facilitates memory operations in other regions, including the hippocampus and prefrontal cortex. Emotion–memory interactions occur at various stages of information processing, from the initial encoding and consolidation of memory traces to their long-term retrieval. Recent advances are revealing new insights into the reactivation of latent emotional associations and the recollection of personal episodes from the remote past.

Arousal
A dimension of emotion that varies from calm to excitement.

Valence
A dimension of emotion that varies from unpleasant (negative) to pleasant (positive), with neutral often considered an intermediate value.

Emotional memories constitute the core of our personal history. Philosophers and psychologists have long theorized about how emotion enhances or disrupts memory. Francis Bacon called strong emotion one of the six "lesser forms of aids to the memory"[1] and, more recently, Daniel Schacter referred to emotional persistence as one of the seven "sins of memory"[2]. Over the past century, emotional faculties were analysed primarily through the methods of animal behaviourism and social/clinical

on memory for events, or episodic memory, and, in the case of non-declarative memory, we focus primarily on fear conditioning, as the greatest advances so far have been made in these areas. Most studies have examined emotional influences under conditions of moderately high arousal, but some studies on the effects of valence in the absence of high arousal are mentioned briefly. Although emotion predominantly benefits memory, long-lasting detrimental consequences are sometimes

Kensinger & Ford (2021)

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Guiding the Emotion in Emotional Memories: The Role of the Dorsomedial Prefrontal Cortex

Elizabeth A. Kensinger and Jaclyn H. Ford
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Abstract

Models of episodic emotional memory typically concern why emotional events are more likely to be remembered than neutral events, focusing on interactions between the amygdala and other medial temporal lobe regions. But memories of emotional events can be distinguished by their affective tone and framing. We propose that the dorsomedial prefrontal cortex (dmPFC), a region that is increasingly recognized to crosscut socio-affective and cognitive domains, plays a key role in this aspect of emotional memory. After briefly reviewing the role of the dmPFC in the control of behaviors ranging from actions to emotions to social cognition, we delve into the accumulating evidence that its functions also subserve the abstraction of meaning from events and the control of memories, particularly emotional memories. Its role begins during the encoding of emotional experiences, continues through their stabilization, and endures during the retrieval of memory content. At each phase, the dmPFC participates in the integration of affective and cognitive components of memories, setting up networks and framings that either emphasize or de-emphasize emotional content. Incorporating the dmPFC into models of episodic emotional memory should provide leverage in understanding the affective tone with which experiences are brought to memory.

Keywords

affect, episodic memory, emotional memory, encoding, retrieval

Neuron
Previews

Lebrecht, S., & Badre, D. (2008). Emotional regulation, or: how I learned to stop worrying and love the nucleus accumbens. *Neuron, 59(6)*, 841-843.
https://doi.org/10.1016/j.neuron.2008.09.007

Cell PRESS

Emotional Regulation, or: How I Learned to Stop Worrying and Love the Nucleus Accumbens

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[2]Department of Psychology
Brown University, Providence, RI 02912, USA
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DOI 10.1016/j.neuron.2008.09.007

How does the brain control emotion? In this issue of *Neuron*, Wager et al. use a novel mediation analysis of neuroimaging data to show two independent pathways for the control of emotion by the prefrontal cortex: a path through the amygdala predicts a greater negative emotional response, and a path through the nucleus accumbens/ventral striatum predicts a greater positive response.

Humans have a remarkable capacity to regulate their emotions. During the course of our lives, we encounter a variety of stressful, sad, scary, and otherwise emotional events. Nevertheless, we are capable of coping in most of these cases and

tional response to an event—correlates with increased activation in lateral prefrontal cortex (PFC) (Ochsner et al., 2002, 2004; Ochsner and Gross, 2008).

In addition to PFC, activation associated with reappraisal is commonly ob-

suggest a network model for the cognitive control of emotion, whereby PFC regulates emotion by acting on subcortical structures in order to modulate the emotional response. However, the critical piece missing from these results is direct

Review

Multiple routes to enhanced memory for emotionally relevant events

Nina Rouhani,[1] Yael Niv,[2] Michael J. Frank,[3] and Lars Schwabe[4,*]

Events associated with aversive or rewarding outcomes are prioritized in memory. This memory boost is commonly attributed to the elicited affective response, closely linked to noradrenergic and dopaminergic modulation of hippocampal plasticity. Herein we review and compare this 'affect' mechanism to an additional, recently discovered, 'prediction' mechanism whereby memories are strengthened by the extent to which outcomes deviate from expectations, that is, by prediction errors (PEs). The mnemonic impact of PEs is separate from the affective outcome itself and has a distinct neural signature. While both routes enhance memory, these mechanisms are linked to different – and sometimes opposing – predictions for memory integration. We discuss new findings that highlight mechanisms by which emotional events strengthen, integrate, and segment memory.

Highlights

Memory is enhanced for threatening and rewarding events, which has important implications for psychiatric disorders.

Arousal and motivation ('affect route') are driving forces in the encoding and consolidation of emotional memory, shaping the course of systems consolidation.

In addition to this affect route, a 'prediction route', governed by reinforcement-learning prediction errors, boosts memory for emotionally relevant events.

Putative dopaminergic and noradrenergic mechanisms both enhance memory;

Revisiting emotional memory: remembering the unexpected

Important Brain Connections

Psychotherapy and connectivity changes between the PFC and the Reward Center

Important Brain Connections

There is a growing body of evidence that effective therapy changes neural connectivity between the amygdala, PFC, and the Reward Center

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ARTICLE

Haller, S.P. et al (2024). *AJP, 181(3),* 201-212.

Normalization of Fronto-Parietal Activation by Cognitive-Behavioral Therapy in Unmedicated Pediatric Patients With Anxiety Disorders

Simone P. Haller, D.Phil., Julia O. Linke, Ph.D., Hannah L. Grassie, B.Sc., Emily L. Jones, B.A., David Pagliaccio, Ph.D., Anita Harrewijn, Ph.D., Lauren K. White, Ph.D., Reut Naim, Ph.D., Rany Abend, Ph.D., Ajitha Mallidi, B.Sc., Erin Berman, Ph.D., Krystal M. Lewis, Ph.D., Katharina Kircanski, Ph.D., Nathan A. Fox, Ph.D., Wendy K. Silverman, Ph.D., Ned H. Kalin, M.D., Yair Bar-Haim, Ph.D., Melissa A. Brotman, Ph.D.

Objective: Anxiety disorders are prevalent among youths and are often highly impairing. Cognitive-behavioral therapy (CBT) is an effective first-line treatment. The authors investigated the brain mechanisms associated with symptom change following CBT.

Methods: Unmedicated youths diagnosed with an anxiety disorder underwent 12 weeks of CBT as part of two randomized clinical trials testing the efficacy of adjunctive computerized cognitive training. Across both trials, participants completed a threat-processing task during functional MRI before and after treatment. Age-matched healthy comparison youths completed two scans over the same time span. The mean age of the samples was 13.20 years (SD=2.68); 41% were male (youths with anxiety disorders, N=69; healthy comparison youths, N=62). An additional activation changes (thresholded at $p<0.001$) were examined using task-based blood-oxygen-level-dependent response.

Results: Before treatment, patients with an anxiety disorder exhibited altered activation in fronto-parietal attention networks and limbic regions relative to healthy comparison children across all task conditions. Fronto-parietal hyperactivation normalized over the course of treatment, whereas limbic responses remained elevated after treatment. In the at-risk sample, overlapping clusters emerged between regions showing stable associations with anxiety over time and regions showing treatment-related changes.

Conclusions: Activation in fronto-parietal networks may normalize after CBT in unmedicated pediatric anxiety patients. Limbic regions may be less amenable to acute CBT effects.

Important Brain Connections

PSYCHOLOGICAL SCIENCE

Short Report

Changes in Anterior Cingulate and Amygdala After Cognitive Behavior Therapy of Posttraumatic Stress Disorder

Kim Felmingham,[1,2] Andrew Kemp,[1,2] Leanne Williams,[1,2] Pritha Das,[1,3] Gerard Hughes,[1,4] Anthony Peduto,[1,4] and Richard Bryant[1,5]

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Posttraumatic stress disorder (PTSD) may develop from impaired extinction of conditioned fear responses. Exposure-based treatment of PTSD is thought to facilitate extinction learning (Charney, 2004). Fear extinction is mediated by inhibitory control of the ventromedial prefrontal cortex (vmPFC) over amygdala-based fear processes (Phelps, Delgado, Nearing, & LeDoux, 2004; Quirk, Russo, Barron, & LeBron, 2000). Most neuroimaging studies of PTSD reveal reduced vmPFC activity

METHOD

Eight individuals (5 females) with PTSD following assault (n = 4) or car accidents (n = 4) were recruited from the Westmead PTSD Unit, New South Wales, Australia. Average time post trauma was 65 months (SD = 64.0), and the subjects' mean age was 36.8 years (SD = 8.8). Subjects were assessed using the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1990)

Important Brain Connections

Psychological Medicine

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Original Article

*Shared first authorship

†Shared senior authorship

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Keywords:
Anxiety disorders; cognitive-behavioral therapy; meta-analysis; salience network; task-based fMRI; treatment response prediction

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Neural predictors of cognitive-behavior therapy outcome in anxiety-related disorders: a meta-analysis of task-based fMRI studies

Maria Picó-Pérez[1,2,3,*], Miquel A. Fullana[4,5,*], Anton Albajes-Eizagirre[5,6], Daniel Vega[7,8], Josep Marco-Pallarés[9,10], Ana Vilar[11], Jacobo Chamorro[12], Kim L. Felmingham[13], Ben J. Harrison[14], Joaquim Radua[5,15,16,†] and Carles Soriano-Mas[17,18,19,†]

Abstract

Background. Cognitive-behavior therapy (CBT) is a well-established first-line intervention for anxiety-related disorders, including specific phobia, social anxiety disorder, panic disorder/agoraphobia, generalized anxiety disorder, obsessive-compulsive disorder, and posttraumatic stress disorder. Several neural predictors of CBT outcome for anxiety-related disorders have been proposed, but previous results are inconsistent.

Methods. We conducted a systematic review and meta-analysis of task-based functional magnetic resonance imaging (fMRI) studies investigating whole-brain predictors of CBT outcome in anxiety-related disorders (17 studies, $n = 442$).

Results. Across different tasks, we observed that brain response in a network of regions involved in salience and interoception processing, encompassing fronto-insular (the right inferior frontal gyrus-anterior insular cortex) and fronto-limbic (the dorsomedial prefrontal cortex-dorsal anterior cingulate cortex) cortices was strongly associated with a positive CBT outcome.

Conclusions. Our results suggest that there are robust neural predictors of CBT outcome in anxiety-related disorders that may eventually lead (probably in combination with other data) to develop personalized approaches for the treatment of these mental disorders.

Important Brain Connections

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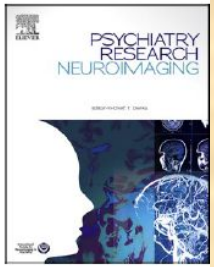

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Functional connectivity changes between frontopolar cortex and nucleus accumbens following cognitive behavioral therapy in major depression: A randomized clinical trial*

Nariko Katayama [a], Atsuo Nakagawa [a,b,*], Satoshi Umeda [c], Yuri Terasawa [c], Kazushi Shinagawa [c], Toshiaki Kikuchi [a], Hajime Tabuchi [a], Takayuki Abe [b,d], Masaru Mimura [a]

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[d] School of Data Science, Yokohama City University, Yokohama, Japan

A B S T R A C T

Cognitive behavioral therapy (CBT) is a psychotherapy that challenges distorted cognitions; however, the neural mechanisms that underpin CBT remain unclear. Hence, we aimed to assess the treatment-related resting-state functional connectivity (rsFC) changes in the brain regions associated with future thinking and the associations

Important Brain Connections

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Behaviour Research and Therapy

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Changes in neural reward processing following Amplification of Positivity treatment for depression and anxiety: Preliminary findings from a randomized waitlist controlled trial

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[c] Department of Psychology, University of California, Riverside, United States
[d] Department of Psychology, San Diego State University, United States

ARTICLE INFO

Keywords:
Positive affect
Clinical trial
Reward processing
fMRI
Depression
Anxiety

ABSTRACT

Positive valence system (PVS) deficits are increasingly recognized as important treatment targets for depression and anxiety. Emerging behavioral treatments designed to upregulate the PVS show initial promise; however, neural mechanisms underlying these approaches remain unknown. This study investigated neural reward-processing-related changes following Amplification of Positivity (AMP)—a treatment designed to enhance positive thinking, emotions and behaviors through positive activity interventions (Clinicaltrials.gov: NCT02330627).

Individuals with depression and/or anxiety ($N = 29$) were randomized to 10 sessions of AMP ($n = 16$) or waitlist (WL; $n = 13$). Participants completed a monetary incentive delay task during fMRI at baseline and post-assessment. Hypothesis-driven region of interest (ventral striatum, insula, anterior cingulate) and exploratory whole-brain activation and connectivity analyses evaluated pre-to-post changes for AMP vs. WL when anticipating potential monetary gain or loss.

No between-group brain activation changes emerged in regions of interest or whole-brain analyses. Increased neural connectivity from pre-to-post-treatment was observed in AMP vs. WL, including ventral striatum, anterior insula, and anterior cingulate connectivity with prefrontal, limbic, occipital and parietal regions—predominantly during loss anticipation.

This preliminary study is the first to examine neural mechanisms of positive activity interventions in depression and anxiety and suggests that AMP may strengthen brain connectivity in reward processing, attention, and emotion regulation networks.

1. Introduction

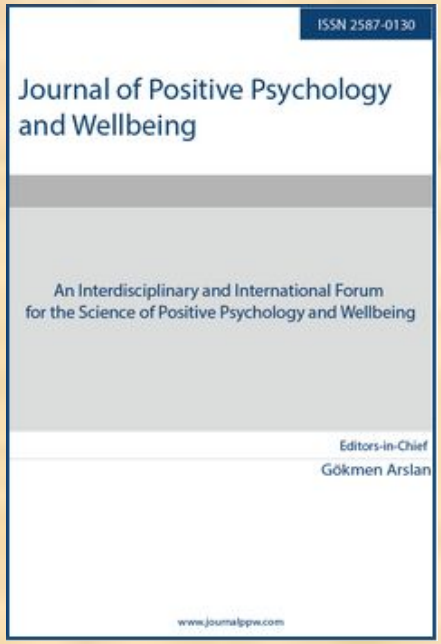
et al., 2020). Emerging behavioral interventions targeting the PVS in

Positive Psychology

Foundations: Positive Psychology

Positive Psychology is the scientific study of strengths and virtues that enable individuals and communities to thrive. The field is founded on the belief that people want to lead meaningful and fulfilling lives, to cultivate what is best within themselves, and to enhance their experiences of love, work, and play.

Seligman, M.E.P. & Csikszentmihaly, M. (2000). Positive Psychology: An introduction. American Psychologist, 55, 5-14.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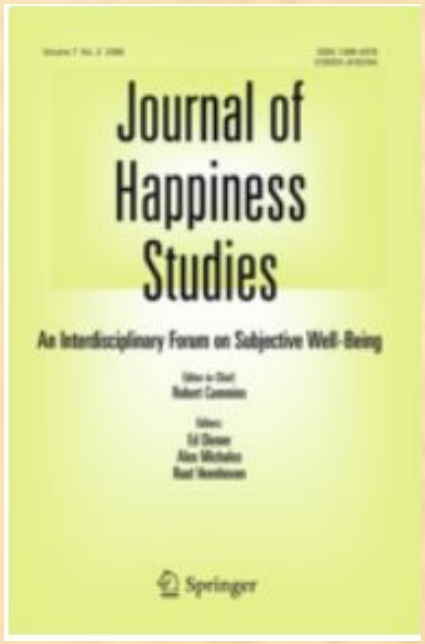
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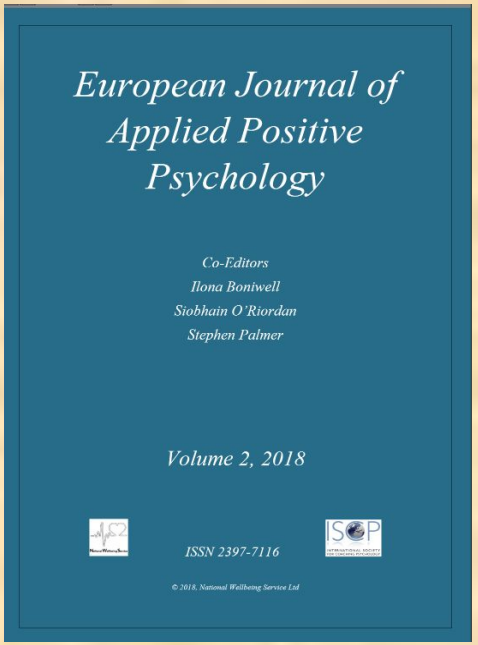
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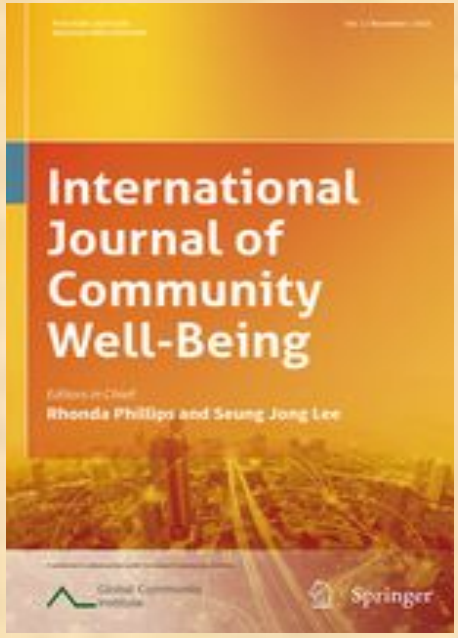
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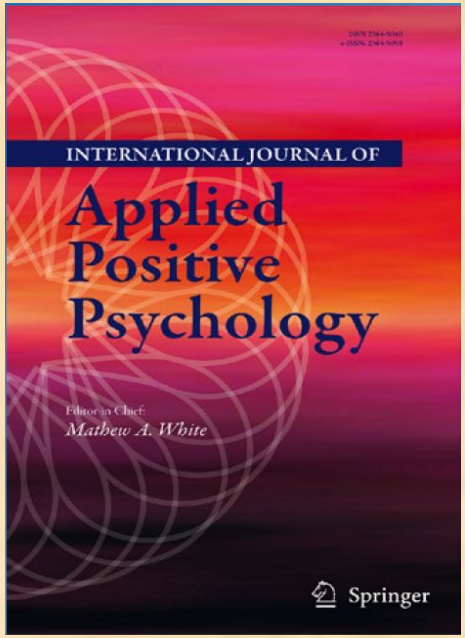
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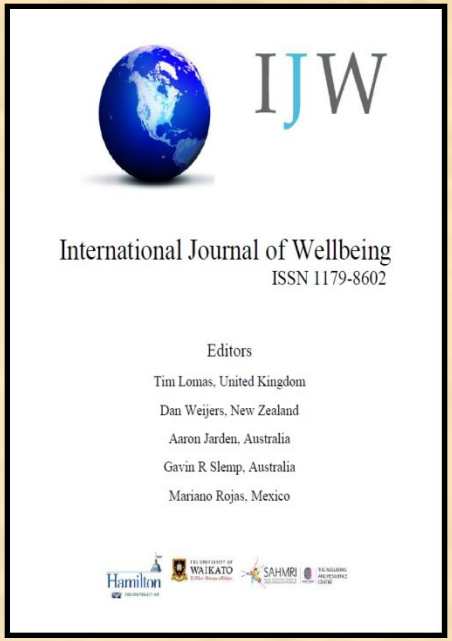
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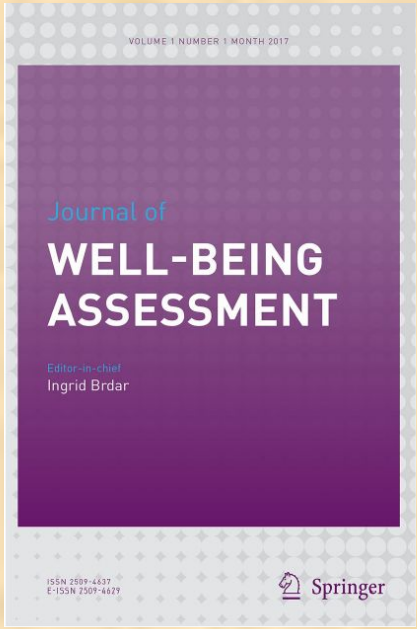
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Positive Psychology:

Some important findings related to health

JAMA Network Open

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September 27, 2019

Original Investigation | Cardiology

Association of Optimism With Cardiovascular Events and All-Cause Mortality

A Systematic Review and Meta-analysis

Alan Rozanski, MD; Chirag Bavishi, MD, MPH; Laura D. Kubzansky, PhD; Randy Cohen, MD

229,391 subjects

Abstract

IMPORTANCE Optimism and pessimism can be easily measured and are potentially modifiable mindsets that may be associated with cardiovascular risk and all-cause mortality.

OBJECTIVE To conduct a meta-analysis and systematic review of the association between optimism and risk for future cardiovascular events and all-cause mortality.

DATA SOURCES AND STUDY SELECTION PubMed, Scopus, and PsycINFO electronic databases were systematically searched from inception through July 2, 2019, to identify all cohort studies investigating the association between optimism and pessimism and cardiovascular events and/or all-cause mortality by using the following Medical Subject Heading terms: *optimism, optimistic explanatory style, pessimism, outcomes, endpoint, mortality, death, cardiovascular events, stroke, coronary artery disease, coronary heart disease, ischemic heart disease,* and *cardiovascular disease*.

DATA EXTRACTION AND SYNTHESIS Data were screened and extracted independently by 2 investigators (A.R. and C.B.). Adjusted effect estimates were used, and pooled analysis was performed using the Hartung-Knapp-Sidik-Jonkman random-effects model. Sensitivity and subgroup analyses were performed to assess the robustness of the findings. The Meta-analysis of Observational Studies in Epidemiology (MOOSE) reporting guideline was followed.

Key Points

Question Is a mindset of optimism associated with a lower risk of cardiovascular events and all-cause mortality?

Findings In thi[illegible]eta-analysis of [illegible] studies includ[illegible]ng 229,391 individuals optimism was associat[illegible] lower risk of cardiovascular events and pessimism was associated with a higher risk of cardiovascular events; the pooled association was similar to that of other well-established cardiac risk factor[illegible]

Meaning The findings suggest that a mindset of optimism is associated with lower cardiovascular risk and that promotion of optimism and reduction in pessimism may be important for preventive health.

Meaning: The findings suggest that a mindset of optimism is associated with lower cardiovascular risk and that promotion of optimism and reduction in pessimism may be important for preventive health.

Contents lists available at ScienceDirect

Neuroscience and Biobehavioral Reviews

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Review article

Association of positive psychological well-being with circulating inflammatory markers: A systematic review and meta-analysis

Claudia Zuccarella-Hackl [a,*], Mary Princip [a], Bianca Auschra [a], Rebecca E. Meister-Langraf [a,b], Jürgen Barth [c,1], Roland von Känel [a,1]

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[b] Clienia Schlössli AG, Oetwil am See, Zurich, Switzerland
[c] Institute for Complementary and Integrative Medicine, University Hospital Zurich, University of Zurich, Zurich, Switzerland

94,700+ subjects

ARTICLE INFO

Keywords:
Positive psychological well-being
Inflammation
Circulating inflammatory biomarkers
Immune functioning

ABSTRACT

Accumulating evidence shows a protective effect of positive psychological well-being (PPWB) on health outcomes. However, the underlying mechanisms remain poorly understood. One pathway relates to enhanced immune functioning (Boehm, 2021). The aim of this project was to conduct a systematic review and meta-analysis of the association between PPWB and circulating inflammatory biomarkers and determine the magnitude of this association. After examining 748 references, 29 studies were included. Results from over 94'700 participants revealed a significant association between PPWB and reduced levels of interleukin (IL)– 6 ($r = -0.05$; $P < .001$) and C-reactive protein (CRP) ($r = -0.06$; $P < .001$) with a heterogeneity of $I^2 = 31.5\%$ and $I^2 = 84.5\%$, respectively. Only the association of PPWB with CRP was independent of co-variates included in the individual studies ($r = -0.04$; $P = .027$). The findings of this systematic review and meta-analysis suggest that PPWB is associated with lower levels of inflammatory biomarkers IL-6 and CRP in the circulation. Such relationships with inflammatory biomarkers may partly explain positive effects of PPWB on health.

Life satisfaction, optimism, purpose & meaning → less inflammation

Social Science & Medicine 197 (2018) 235–243

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Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Positive emotional well-being, health Behaviors, and inflammation measured by C-Reactive protein

Gail Ironson, M.D, Ph.D [a, *], Nikhil Banerjee, M.S [a], Calvin Fitch, M.S [a], Neal Krause, Ph.D [b]

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[b] School of Public Health, University of Michigan, Ann Arbor, United States

n = 1979

Results: Both positive affect and life satisfaction were significantly related to lower CRP even after controlling for demographics and depression, in both the overall sample and chronically ill group. Only life satisfaction remained significantly related to CRP when controlling for health behaviors. When both depression and health behaviors were controlled, neither positive affect nor life satisfaction was significantly related to CRP. Moderate exercise emerged as the strongest mediator, followed by BMI and smoking. Individuals with low positive affect or low life satisfaction were at increased odds (OR = 1.40 and OR = 1.54, respectively) of having clinically elevated (≥3 mg/L) CRP.

Conclusion: Our results add to a growing literature reporting an association between aspects of PEWB, especially life satisfaction, and a health-related biomarker of inflammation. Those with low positive affect or life satisfaction face increased risk of having clinically elevated CRP. Health behaviors, especially BMI and moderate exercise, account for some but not all of this relationship. Future studies should determine whether increasing life satisfaction and positive affect may contribute to improvements in health behaviors, inflammation, and better health outcomes.

Ben-Shaanan, T. L., et al., (2016). Activation of the reward system boosts innate and adaptive immunity. *Nature Medicine*, *22*(8), 940-944. http://dx.doi.org/10.1038/nm.4133

nature medicine

Activation of the reward system boosts innate and adaptive immunity

Tamar L Ben-Shaanan[1,2], Hilla Azulay-Debby[1,2], Tania Dubovik[1], Elina Starosvetsky[1], Ben Korin[1,2], Maya Schiller[1,2], Nathaniel L Green[1,2], Yasmin Admon[1], Fahed Hakim[1,3], Shai S Shen-Orr[1,4,5] & Asya Rolls[1,2,5]

Positive expectations contribute to the clinical benefits of the placebo effect[1,2]. Such positive expectations are mediated by the brain's reward system[3,4]; however, it remains unknown whether and how reward system activation affects the body's physiology and, specifically, immunity. Here we show that activation of the ventral tegmental area (VTA), a key component of the reward system, strengthens immunological host defense. We used 'designer receptors exclusively activated by designer drugs' (DREADDs) to directly activate dopaminergic neurons in the mouse VTA and characterized the subsequent immune response after exposure to bacteria (*Escherichia coli*), using time-of-flight mass cytometry (CyTOF) and functional assays. We found an increase in innate and adaptive immune responses that were manifested by enhanced antibacterial activity of monocytes and macrophages, reduced *in vivo* bacterial load and a heightened T cell response in the mouse model of delayed-type hypersensitivity. By chemically ablating the sympathetic nervous system (SNS), we showed that the reward system's effects on immunity are, at least partly, mediated by the SNS. Thus, our findings establish a causal

focused on dopaminergic neurons in the VTA, a central mediator of reward-related stimuli and positive expectations[17].

To manipulate neuronal activity, we used DREADDs, which are G-protein-coupled receptors (GPCRs) that have been mutated to be activated only by an otherwise inert ligand (clozapine-*N*-oxide; CNO)[18]. These DREADDs activate endogenous downstream signal transduction pathways to augment neuronal activity[18]. To express DREADDs and a fluorescent reporter marker in VTA dopaminergic neurons, we stereotactically injected a viral vector that expresses a Cre-dependent DREADD construct (AAV8-h*Syn1*-DIO-hM3D(Gq)-mCherry) under the control of the human synapsin I (*Syn1*) promoter in mice that express *Cre* under the tyrosine hydroxylase (*Th*) promoter (which we refer to as TH-Cre mice). As a control, we infected another group of mice with a sham virus that expresses only the fluorescent reporter (**Fig. 1a**). Throughout the study, mice injected with the sham virus were used as the control group. Immunohistochemical analysis revealed that TH^+ cells in the VTA expressed the fluorescent reporter (**Fig. 1b** and **Supplementary Fig. 1**). Among these TH^+ cells, the efficiency of viral infection was 58% ± 4% (**Fig. 1c**). We verified DREADD-induced neuronal activation by analyzing the expression

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The relationship between positive psychological characteristics and longer telomeres

Nicola S. Schutte[a]*, Suresh K.A. Palanisamy[b] and James R. McFarlane[b]

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(*Received 16 March 2016; accepted 15 August 2016*)

Objective: Longer telomeres are associated with better health and longevity. This research investigated the relationship between positive psychological dispositional traits and telomere length. Positive traits examined were typical high positive affect, typical low negative affect, life satisfaction, trait mindfulness, trait emotional intelligence, general self-efficacy and optimism.
Design and Measures: One hundred and twenty women and men, with a mean age of 40.92, completed measures of positive characteristics and provided samples for telomere length analysis.
Results: Together the positive dispositional characteristics explained significant variance in telomere length, $R = .40$. Among the individual characteristics, greater optimism and higher emotional intelligence were associated with longer telomeres after adjustment for age and gender and the association between optimism and telomere length remained significant after adjusting for age and gender as well as the other positive characteristics, with a partial correlation r of .30.
Conclusion: These results in conjunction with previous research findings provide a platform for further exploration of biological pathways connecting positive characteristics such as optimism to telomere length and investigation of the impact of increasing a characteristic such as optimism on telomere functioning.

Keywords: telomeres; positive characteristics; positive psychology; optimism;

Effects of Positive Emotion on Pain: Mechanisms and Interventions

Emma Hitchcock, Afton L. Hassett, and Tor D. Wager

The Oxford Handbook of Positive Emotion and Psychopathology
Edited by June Gruber

Print Publication Date: Nov 2019 Subject: Psychology, Social Psychology, Neuropsychology
Online Publication Date: Oct 2019 DOI: 10.1093/oxfordhb/9780190653200.013.27

Abstract and Keywords

The relationship between negative affect and health outcomes is widely studied. One finding, clearly supported by both behavioral and biological data, is that pain and poor health lead to greater negative affect. We aim to challenge this paradigm by exploring the ways that positive affect can affect pain and health outcomes. Current models of pain show that painful experiences are more than just a direct mapping of nociceptive input: They are mediated by complex cerebral processes and psychological input. The objective of this chapter is to examine the role that positive affect plays in alleviating pain and benefitting health overall. In medical and clinical settings, positive affect is often overlooked and considered a mere negative correlate to negative affect. This chapter examines the true relationship between positive and negative affect and the implications of this relationship or balance in individuals with pain. The chapter suggests that positive and negative affect cannot be characterized as opposite ends of a single spectrum or as orthogonal factors produced by distinct systems. Each experience of positive and negative affect is a complex mapping within an affective sphere. Potentially beneficial manipulations of positive affect (intervention studies), informed by work on the brain basis of emotions, are explored.

Keywords: Pain, positive emotion, positive affect, chronic pain, negative affect, painful experience

APPLIED PSYCHOLOGY: Health and Well-Being

APPLIED PSYCHOLOGY: HEALTH AND WELL-BEING, 2011, *3* (1), 1–43
doi:10.1111/j.1758-0854.2010.01045.x

Happy People Live Longer: Subjective Well-Being Contributes to Health and Longevity

Ed Diener*
University of Illinois and the Gallup Organization, USA

Micaela Y. Chan
University of Texas at Dallas, USA

Seven types of evidence are reviewed that indicate that high subjective well-being (such as life satisfaction, absence of negative emotions, optimism, and positive emotions) causes better health and longevity. For example, prospective longitudinal studies of normal populations provide evidence that various types of subjective well-being such as positive affect predict health and longevity, controlling for health and socioeconomic status at baseline. Combined with experimental human and animal research, as well as naturalistic studies of changes of subjective well-being and physiological processes over time, the case that subjective well-being influences health and longevity in healthy populations is compelling. However, the claim that subjective well-being lengthens the lives of those with certain diseases such as cancer remains controversial. Positive feelings predict longevity and health beyond negative feelings. However, intensely aroused or manic positive affect may be detrimental to health. Issues such as causality, effect size, types of subjective well-being, and statistical controls are discussed.

Combined with ex-perimental human and animal research, as well as naturalistic studies of changes of subjective well-being and physiologocal processes over time, the case that subjec-tive well-being influ-ences health and longevity in healthy populations is compelling.

Song *et al. BMC Geriatrics* (2023) 23:440
https://doi.org/10.1186/s12877-023-04030-w

BMC Geriatrics

RESEARCH Open Access

Happy people live longer because they are healthy people

Cai Feng Song[1], Peter Kay Chai Tay[1], Xinyi Gwee[2], Shiou Liang Wee[1*] and Tze Pin Ng[2]

N = 6073

Abstract

Objectives Higher levels of happiness are associated with longer life expectancy. Our study assessed the extent to which various factors explain the protective effect of happiness on all-cause mortality risk, and whether the association differs between older men and women.

Methods Using data from the Singapore Longitudinal Aging Studies ($N=6073$) of community-dwelling older adults aged ≥ 55 years, we analyzed the association of baseline Likert score of happiness (1 = very sad to 5 = very happy) and mortality from mean 11.7 years of follow up. Cox regression models were used to assess the extent to which confounding risk factors attenuated the hazard ratio of association in the whole sample and sex-stratified analyses.

Results Happiness was significantly associated with lower mortality ($p<.001$) adjusted for age, sex and ethnicity: HR = 0.85 per integer score and HR = 0.57 for fairly-or-very happy versus fairly-or-very sad. The HR estimate (0.90 per integer score) was modestly attenuated (33.3%) in models that included socio-demographic and support, lifestyle or physical health and functioning factor, but remained statistically significant. The HR estimate (0.94 per integer score) was substantially attenuated (60%) and was insignificant in the model that included psychological health and functioning. Including all co-varying factors in the model resulted in statistically insignificant HR estimate (1.04 per integer score). Similar results were obtained for HR estimates for fairly-to-very happy versus fairly-to- very sad).

Discussion Much of the association between happiness and increased life expectancy could be explained by socio-demographic, lifestyle, health and functioning factors, and especially psychological health and functioning factors.

Algoe, S. B. (2019). Positive interpersonal processes. *Current Directions in Psychological Science, 28 (2),* 183-188.

Having fun, sharing laughs, mutual kindness, showing gratitude leads to increased happiness and better overall health

Positive Interpersonal Processes

Current Directions in Psychological Science
2019, Vol. 28(2) 183–188

DOI: 10.1177/0963721419827272
www.psychologicalscience.org/CDPS
SAGE

Sara B. Algoe
Department of Psychology and Neuroscience, The University of North Carolina at Chapel Hill

Abstract
Good relationships are characterized by frequent positive social interactions, such as having fun together, sharing laughs, doing kind things for one another, and expressing gratitude. Here, building on rapidly emerging findings, I articulate core features of *positive interpersonal processes* for the first time. This approach leads to useful specificity in predictions about relationship consequences and simultaneously contributes to both affective and relationship science, two domains that span disciplines within the psychological literature. In turn, basic research on everyday positive interpersonal processes points toward new avenues for understanding the well-established links between good relationships and health.

Keywords
positive emotion, interpersonal processes, relationships, health

THE JOURNAL OF POSITIVE PSYCHOLOGY
2021, VOL. 16, NO. 6, 749–769
https://doi.org/10.1080/17439760.2020.1818807

Routledge
Taylor & Francis Group

Effectiveness of positive psychology interventions: a systematic review and meta-analysis

Alan Carr, Katie Cullen, Cora Keeney, Ciaran Canning, Olwyn Mooney, Ellen Chinseallaigh and Annie O'Dowd

School of Psychology, University College Dublin, Dublin, Ireland

347 studies; over 72,000 subjects

ABSTRACT

A meta-analysis of positive psychology intervention (PPIs) studies was conducted. PPIs were defined as interventions in which the *goal* of wellbeing enhancement was achieved through *pathways* consistent with positive psychology theory. Data were extracted from 347 studies involving over 72,000 participants from clinical and non-clinical child and adult populations in 41 countries. The effect of PPIs with an average of ten sessions over six weeks offered in multiple formats and contexts was evaluated. At post-test, PPIs had a significant small to medium effect on wellbeing ($g = 0.39$), strengths ($g = 0.46$), QoL ($g = 0.48$), depression ($g = -0.39$), anxiety ($g = -0.62$), and stress ($g = -0.58$). Gains were maintained at three months follow-up. Individuals in non-western countries with clinical problems, who engaged in longer individual or group therapy programs containing multiple PPIs benefited most. This meta-analysis shows that PPIs have an extensive evidence base supporting their effectiveness.

ARTICLE HISTORY
Received 26 November 2019
Accepted 18 August 2020

KEYWORDS
Positive psychology interventions; positive psychology interventions meta-analysis; positive psychology interventions systematic review; positive psychotherapy; quality of life; wellbeing; strengths; depression; anxiety

Introduction

Positive psychology first emerged in the late 1990s (Snyder et al., 2016). The growth of this field has been vast and rapid (Rusk & Waters, 2013). A central mission of this new branch of psychology was the identification, development, and evaluation of interventions that aimed to enhance wellbeing (Wood & Johnson, 2016). These included, for example, setting valued goals, imagining Csikszentmihalyi, 2000). Their function is to enhance wellbeing, rather than to reduce psychopathological symptoms. However, there is evidence that wellbeing may reduce the recurrence of symptoms and increase longevity (Chida & Steptoe, 2008; Lamers et al., 2012; Wood & Joseph, 2010).

A consensus has not yet been reached on the precise definition of PPIs. A narrow definition limits PPIs to procedures explicitly labelled as positive psychology

Oxytocin and Vasopressin

Oxytocin and vasopressin are both neuropeptide hormones secreted from the pituitary gland. They are involved in regu-lating social bonding and reproduction, enhancing social reward, increasing the salience of social communication, and moderating aggression.

Rigney, N., de Vries, G. J., Petrulis, A., & Young, L. J. (2022). Oxytocin, vasopressin, and social behavior: from neural circuits to clinical opportunities. *Endocrinology*, *163*(9), 1-13.

Oxytocin & Vasopressin

Oxytocin and vasopressin have been found to:

- Reduce anxiety and fear in social situations (Meyer-Lindenberg et al., 2011)
- Calm the amygdala (Jurek & Neuman, 2018)
- Increase connectivity between the amygdala and PFC (Zink et al., 2010)

But they go beyond lowering unpleasantness. They also:

- Increase interpersonal trust, even among people who just met each other (Kosfeld et al., 2005; Zak et al., 2005)
- Increase creative thought (Chong et al, 2021; Yang et al, 2025)
- Increase cooperation and pleasant communication among married or cohabitating couples who were having a disagreement (Ditzen et al, 2009)

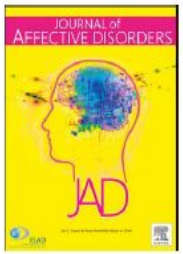
So we definitely want these two hormones active and doing their job as much as possible in therapy sessions (Jobst et al. 2018)

Journal of Affective Disorders 227 (2018) 206–213

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad



Research paper

Oxytocin plasma levels predict the outcome of psychotherapy: A pilot study in chronic depression

A. Jobst[a,*], L. Sabaß[a,c], D. Hall[a], B. Brücklmeier[a], A. Buchheim[b], J. Hall[a], N. Sarubin[a,c], P. Zill[a], P. Falkai[a], E.-L. Brakemeier[d,e,1], F. Padberg[a,1]

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[b] Department of Psychology, Clinical Psychology, University of Innsbruck, Austria
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ARTICLE INFO

Keywords:
Chronic depression
Cognitive behavioral analysis system of psychotherapy
CBASP
Oxytocin
Social exclusion
Ostracism

ABSTRACT

Background: Oxytocin is associated with bonding and social deficits in psychiatric disorders and has also been discussed as a potential therapeutic intervention to augment psychotherapy. The Cognitive Behavioral Analysis System of Psychotherapy (CBASP) is a specific form of psychotherapy for chronic depression, an illness in which interpersonal deficits play a major role. In this pilot study, we investigated whether Oxytocin plasma levels predict the clinical outcome of chronic depressive patients after CBASP.

Methods: Sixteen patients with chronic depression participated in a 10-week CBASP inpatient program. Oxytocin plasma levels were measured before and after participants played a virtual ball-tossing game (Cyberball) that mimics social exclusion. Clinical outcome after CBASP was evaluated with the Beck Depression Inventory-II (BDI-II) and the 24-item Hamilton Depression Rating Scale (HAMD-24).

Results: After CBASP, depressive symptoms decreased significantly: the response rates were 44% (BDI-II) and

Savoring

Bryant, F. B. (2021). Current progress and future directions for theory and research on savoring. *Frontiers in psychology*, *12*, 1-17. doi: 10.3389/fpsyg.2021.771698

Foundations: Savoring

Strengthening the neural connection between the PFC and reward centers (striatum, nucleus accumbens, ventral tegmental area [VTA])

Foundations: Savoring

Savoring:

The upregulation of positive emotion, i.e., generating, prolonging and intensifying enjoyment of pleasant experiences or situations like joy, happiness, pride, calmness, good fortune, by *intentionally focusing* on them.

Three time frames in which to savor:

- **Savoring through <u>reminiscing</u> (past-focused)**
- **Savoring the <u>moment</u> (present-focused)**
- **Savoring through <u>anticipation</u> (future-focused)**

Foundations: Savoring

Savoring is encouraged when:

- During the first session when each partner is asked what s/he loves about his husband/wife
- Comparing homework results with former ways of interacting
- Holding hands
- Enjoying fun activities together
- Resolving conflict
- When asked in session, “what would you like to thank your partner for this week?”
- When EVER one can associate pleasure with being in the relationship

Speer, M.E., Bhanji, J.P. & Delgado, M.R. (2014). Savoring the past: Positive memories evoke value representations in the striatum. *Neuron, 84,* 847–856.

Reminiscing strengthens Striatum-Prefrontal Cortex circuit → ↑happiness

Neuron
Article

Savoring the Past: Positive Memories Evoke Value Representations in the Striatum

Megan E. Speer,[1] Jamil P. Bhanji,[1] and Mauricio R. Delgado[1,*]
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http://dx.doi.org/10.1016/j.neuron.2014.09.028

SUMMARY

Reminders of happy memories can bring back pleasant feelings tied to the original experience, suggesting an intrinsic value in reminiscing about the positive past. However, the neural circuitry underlying the rewarding aspects of autobiographical memory is poorly understood. Using fMRI, we observed enhanced activity during the recall of positive relative to neutral autobiographical memories in corticostriatal circuits that also responded to monetary reward

stress (i.e., resilience; Philippe et al., 2009). Individuals afflicted with depression tend to recall fewer autobiographical memories, especially positive ones (Young et al., 2013), and have difficulties sustaining positive emotions (Carl et al., 2013; Heller et al., 2009). Critically, these patients also show aberrant activation patterns in neural circuits involved in reward processing (Delgado, 2007; Haber and Knutson, 2010; O'Doherty, 2004), such as reduced striatum responses to reward (Pizzagalli et al., 2009) and positive feedback (Elliott et al., 1998), as well as difficulty sustaining reward-related activity in the ventral striatum in response to positive stimuli (Heller et al., 2009). Together, these

Abstract: Reminders of happy memories can bring back pleasant feelings tied to the original experience, suggesting an intrinsic value in reminiscing about the positive past. However, the neural circuitry underlying the rewarding aspects of autobiographical memory is poorly understood. Using fMRI, we observed enhanced activity during the recall of positive relative to neutral autobiographical memories in corticostriatal circuits that also responded to monetary reward. Enhanced activity in the striatum and medial prefrontal cortex was associated with increases in positive emotion during recall, and striatal engagement further correlated with individual measures of resiliency. Striatal response to the recall of positive memories was greater in individuals whose mood improved after the task. Notably, participants were willing to sacrifice a more tangible reward, money, in order to reminisce about positive past experiences. Our findings suggest that recalling positive autobiographical memories is intrinsically valuable, which may be adaptive for regulating positive emotion and promoting better well-being.

Reminiscing and Nostalgia

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OXFORD

doi: 10.1093/scan/nsv073
Advance Access Publication Date: 8 June 2015
Original article

Memory and reward systems coproduce 'nostalgic' experiences in the brain

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Correspondence should be addressed to Yoshiaki Kikuchi, Department of Frontier Health Science, Division of Human Health Sciences, Graduate School of Tokyo Metropolitan University, 7-2-10 Higashi-Ogu, Arakawa-Ku, Tokyo 116-8551, Japan. E-mail: ykikuchi@tmu.ac.jp

Abstract

People sometimes experience an emotional state known as 'nostalgia', which involves experiencing predominantly positive emotions while remembering autobiographical events. Nostalgia is thought to play an important role in psychological resilience. Previous neuroimaging studies have shown involvement of memory and reward systems in such experiences. However, it remains unclear how these two systems are collaboratively involved with nostalgia experiences. Here, we conducted a functional magnetic resonance imaging study of healthy females to investigate the relationship between memory-reward co-activation and nostalgia, using childhood-related visual stimuli. Moreover, we examined the factors constituting nostalgia and their neural correlates. We confirmed the presence of nostalgia-related activity in both memory and reward systems, including the hippocampus (HPC), substantia nigra/ventral tegmental area (SN/VTA), and ventral striatum (VS). We also found significant HPC-VS co-activation, with its strength correlating with individual 'nostalgia tendencies'. Factor analyses showed that two dimensions underlie nostalgia: emotional and personal significance and chronological remoteness, with the former correlating with caudal SN/VTA and left anterior HPC activity, and the latter correlating with rostral SN/VTA activity. These findings demonstrate the cooperative activity of memory and reward systems, where each system has a specific role in the construction of the factors that underlie the experience of nostalgia.

https://academic.oup.com/scan/article/11/7/1069/1753389

Abstract

People sometimes experience an emotional state known as 'nostalgia', which involves experiencing predominantly positive emotions while remembering autobiographical events. Nostalgia is thought to play an important role in psychological resilience. Previous neuroimaging studies have shown involvement of memory and reward systems in such experiences. However, it remains unclear how these two systems are collaboratively involved with nostalgia experiences. Here, we conducted an fMRI study of healthy females to investigate the relationship between memory reward co-activation and nostalgia, using childhood-related visual stimuli. Moreover, we examined the factors constituting nostalgia and their neural correlates. We confirmed the presence of nostalgia-related activity in both memory and reward systems, including the hippocampus (HPC), substantia nigra/ventral tegmental area (SN/VTA), and ventral striatum (VS). We also found significant HPC-VS co-activation, with its strength correlating with individual 'nostalgia tendencies'. Factor analyses showed that two dimensions underlie nostalgia: emotional and personal significance and chronological remoteness, with the former correlating with caudal SN/VTA and left anterior HPC activity, and the latter correlating with rostral SN/VTA activity. These findings demonstrate the cooperative activity of memory and reward systems, where each system has a specific role in the construction of the factors that underlie the experience of nostalgia.

Available online at www.sciencedirect.com

ScienceDirect

Current Opinion in Psychology

Review

Remembering our first date brings back those fuzzy feelings: The role of romantic nostalgia in relationship functioning

Adam K. Fetterman[1] and Nicholas D. Evans[2]

Abstract

People often reflect nostalgicallyon the momentous occasions of their relationships. Experiencing romantic nostalgia–nostalgia for shared experiences with one's current romantic partner—likely confers relationship-specific benefits. Indeed, prior research indirectly hints at this assumed outcome by looking at relationship narratives. More recent work provides direct evidence that romantic nostalgia is both positively correlated with and causally enhances relationship-specific

Nostalgia is defined as a "sentimental longing or wistful affection for the past" [2]. The last two decades have seen the proliferation of the science of nostalgia (see Sedikides et al. [3] and this special issue for a thorough reviews of this area). Nostalgia confers numerous psychological benefits, including meaning in life [4], optimism [5], self-continuity [6], self-esteem [7], and social connectedness [8]. Overall, while nostalgia's longing component can make the feeling bittersweet [9], it is

Fetterman, A. K., & Evans, N. D. (2023). Remembering our first date brings back those fuzzy feelings: The role of romantic nostalgia in relationship functioning. *Current Opinion in Psychology, 49,* 1-5.

nature human behaviour

ARTICLES

PUBLISHED: 24 APRIL 2017 | VOLUME: 1 | ARTICLE NUMBER: 0093

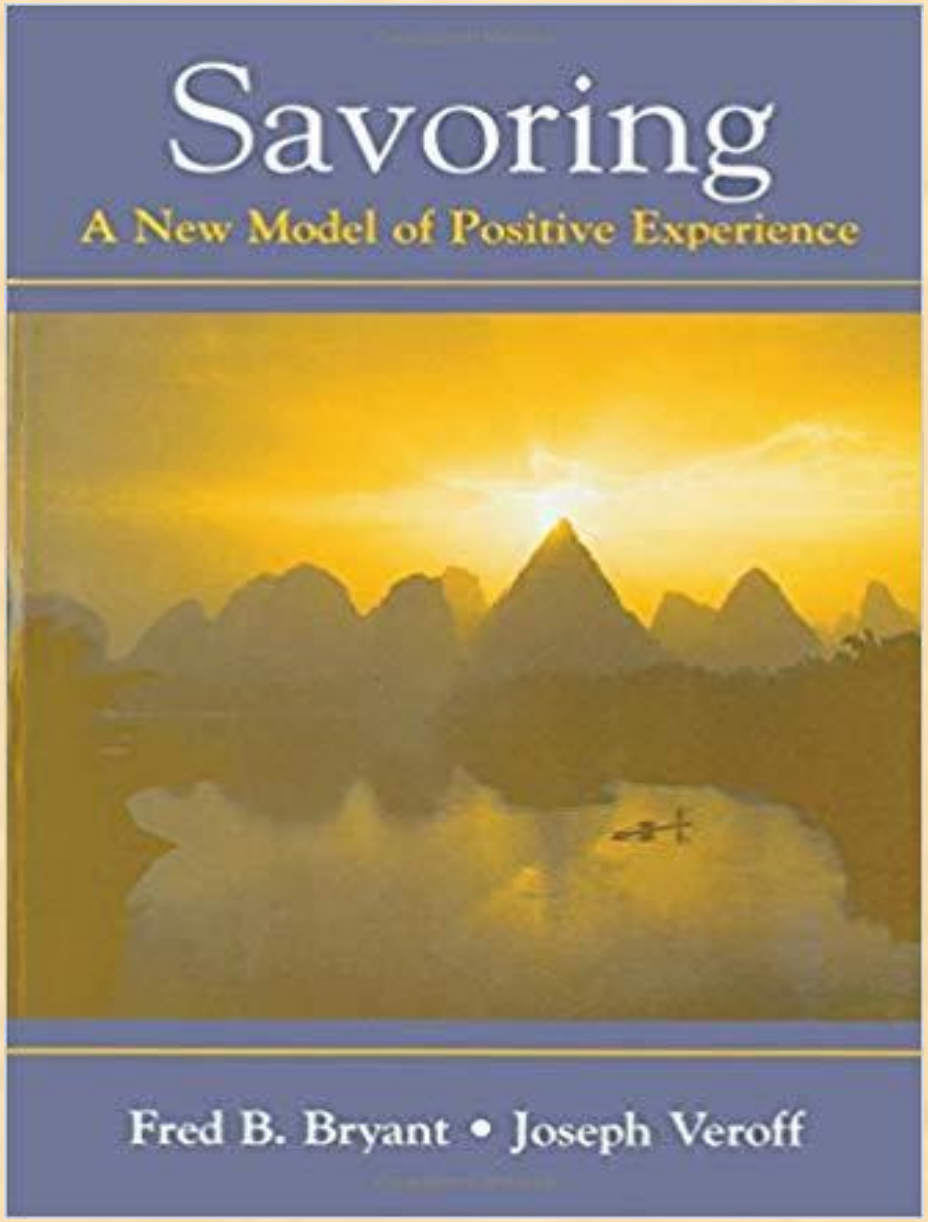
Reminiscing about positive memories buffers acute stress responses

Megan E. Speer and Mauricio R. Delgado

Recalling happy memories elicits positive feelings and enhances one's wellbeing, suggesting a potential adaptive function in using this strategy for coping with stress. In two studies, we explored whether recalling autobiographical memories that have a positive content—that is, remembering the good times—can dampen the hypothalamic-pituitary-adrenal axis stress response. Participants underwent an acute stressor or control task followed by autobiographical memory recollection (of only positive or neutral valence). Across both studies, recalling positive, but not neutral, memories resulted in a dampened cortisol rise and reduced negative affect. Further, individuals with greater self-reported resiliency showed enhanced mood, despite stress exposure. During positive reminiscence, we observed engagement of corticostriatal circuits previously implicated in reward processing and emotion regulation, and stronger connectivity between ventrolateral and dorsolateral prefrontal cortices as a function of positivity. These findings highlight the restorative and protective function of self-generated positive emotions via memory recall in the face of stress.

Acute stress can leave us feeling anxious and distressed, with detrimental consequences for our physical and mental health[1]. We often use cognitive regulation strategies to suppress these unpleasant feelings altogether (for example, suppression) or to reinterpret the negative situation as something less

stimuli[18], are often rendered ineffective after exposure to stress[3], highlighting a need for alternative ways to combat stress. The present study investigates one potential mechanism: remembering the good times. That is, can simply reminiscing about our own positive memories help diminish the physiological and emotional con-



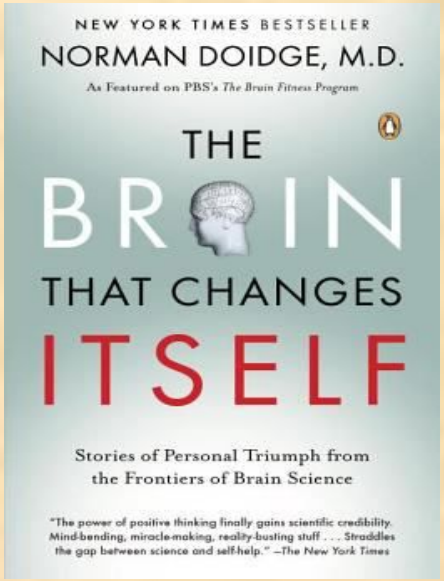
This book is about savoring life—the capacity to attend to the joys, pleasures, and other positive feelings that we experience in our lives. The authors enhance our understanding of what savoring is and the conditions under which it occurs. Savoring provides a new theoretical model for conceptualizing and understanding the psychology of enjoyment and the processes through which people manage positive emotions. The authors review their quantitative research on savoring, as well as the research of others, and provide measurement instruments with scoring instructions for assessing and studying savoring.

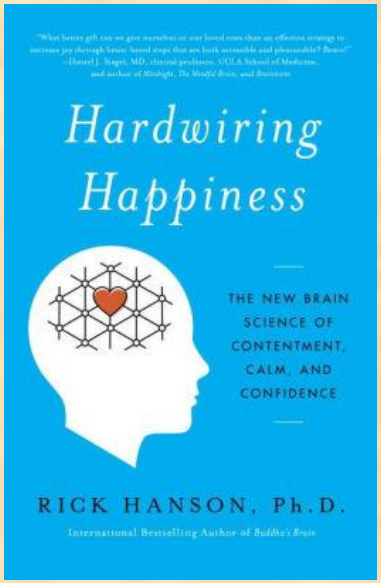
Foundations: Repetition

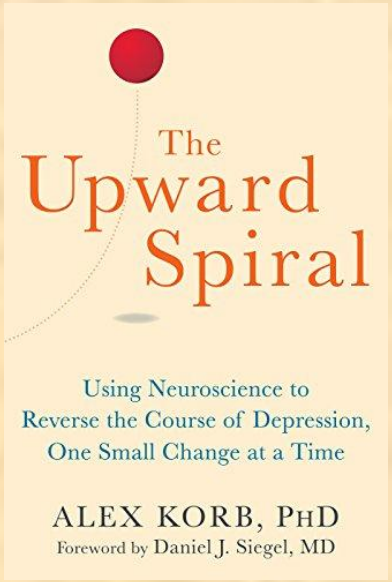
To create new neural path-ways in the brain these new interactional patterns must be practiced and practiced, over and over again.

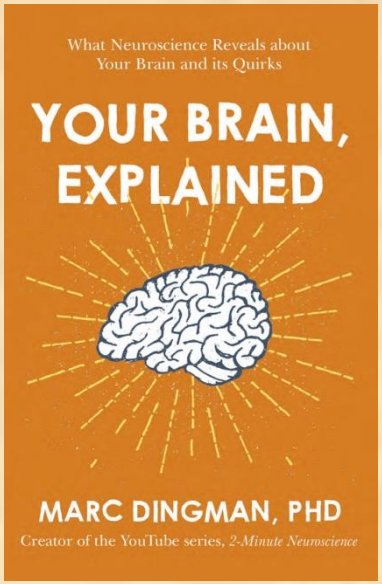
Atkinson, B.J. (2005). *Emotional Intelligence in Couples Therapy: Advances from Neurobiology and the Science of Intimate Relationships.* NY; Norton.

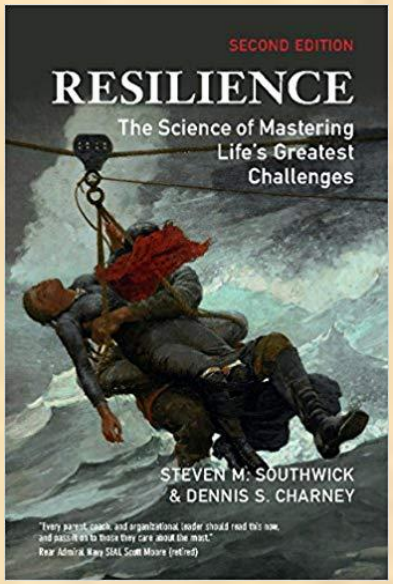
Suggested Client Reading

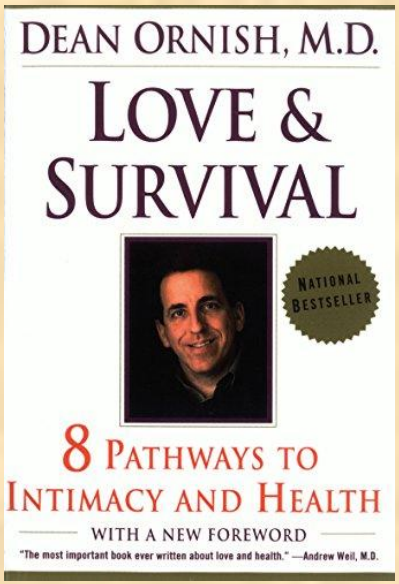












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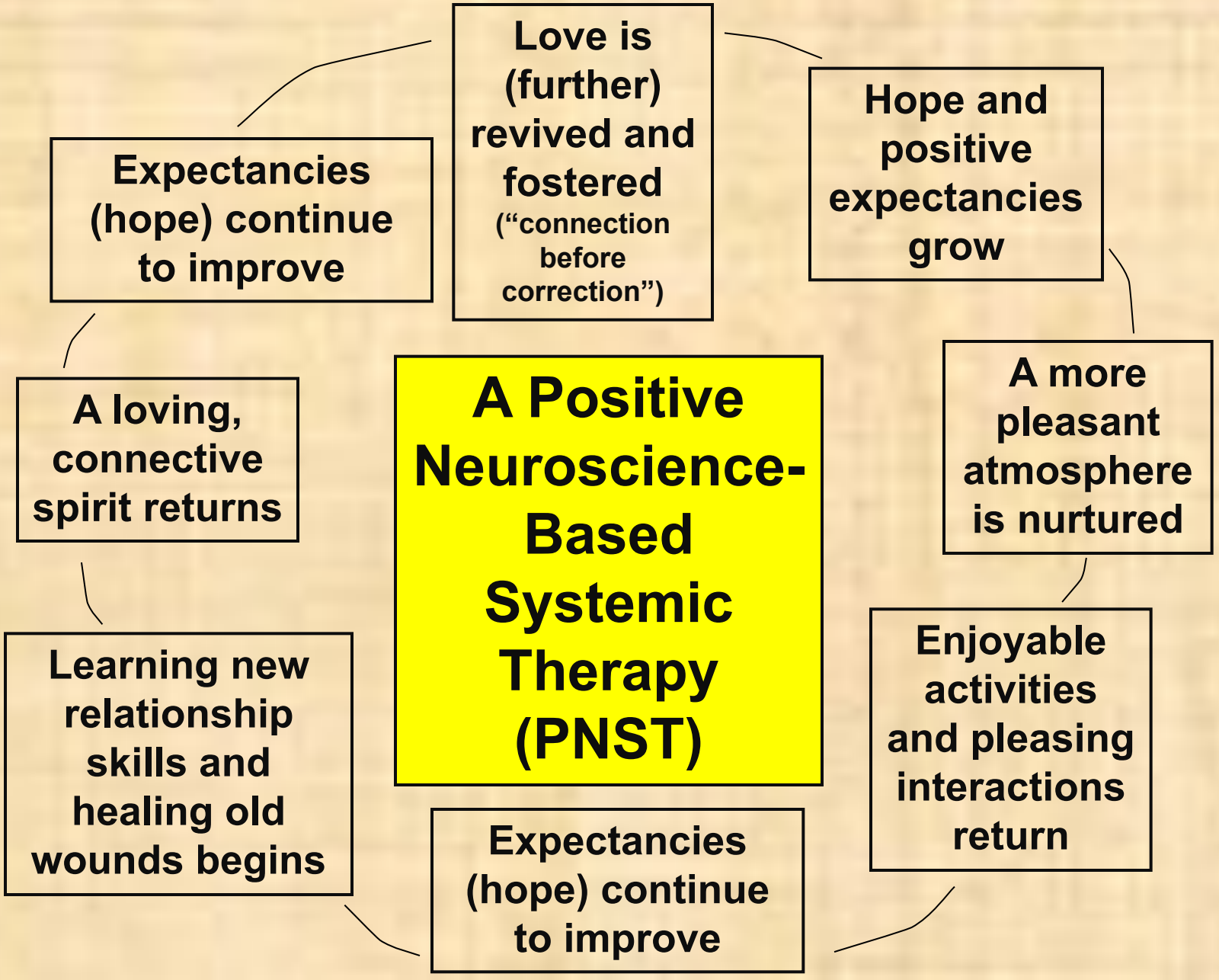
Foundations of Model

Putting the components together:

- Fostering love
- Creating positive expectancies
- Relational neuroscience/ neuroplasticity
- Positive psychology-based systemic interventions
- Savoring

…. into a theory of change

Theory of Change



Part 2

Therapeutic Strategies

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Key Takeaways

Describe interventions. A variety of novel systemic interventions will be presented emanating from a model based on neurobiology and positive psychology research, along with systems theory. These strategies are meant to assist couples and families regulate their emotions, more readily and constructively manage disagreement, and develop more constructive communication patterns.

continued...

Key Takeaways

Prolong happiness. These therapeutic strategies are designed to prolong pleasant moments, and associate enjoyment and deeper connection with intimate partners and family members.

Relationship strengths foster healing. These interventions utilize partner and family member strengths, virtues, the experiential expression of loving and feeling loved, an emphasis on savoring pleasant and connective emotions, and construing all of this through a systemic lens, i.e., co-creating relationships that are strengthening and healing.

Foundations of Model

- Brain science
- Positive expectancies, inner efficacy, and positive psychology
- Systems theory

Two Basic Family Systems Concepts

Two Basic Systems Concepts

- Positive feedback loops, circular causality, circular dynamics
- The “client” is the pattern of interactions that defines the relationship

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The core systemic concept

Positive Feedback Loops

(aka Circular Dynamics)

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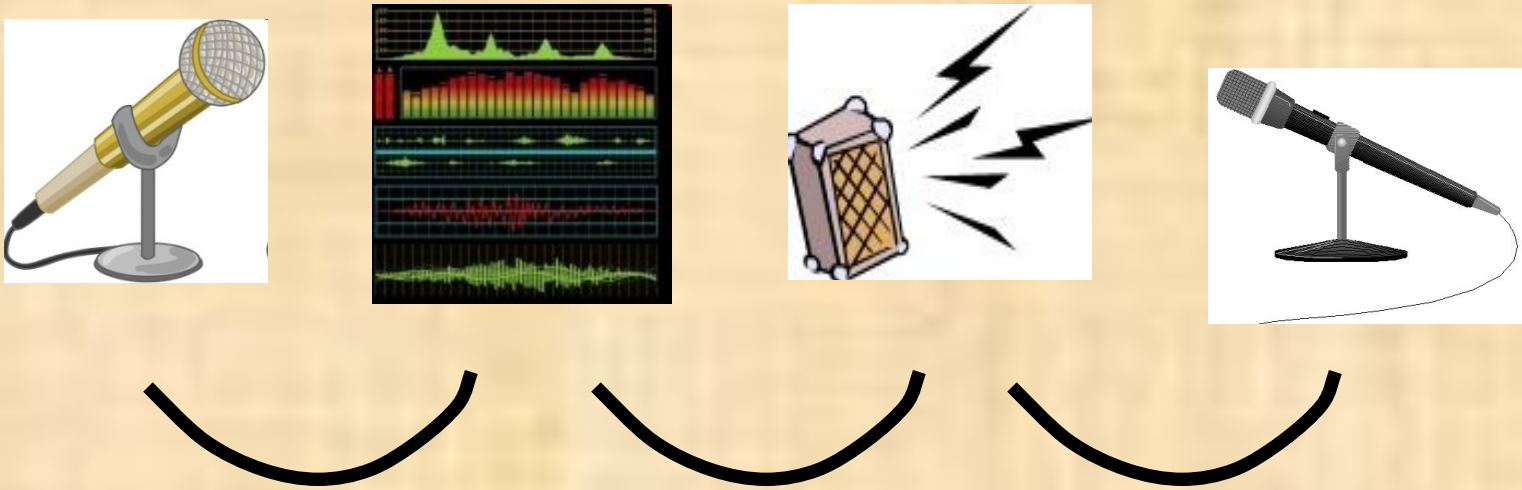
Example of a Positive Feedback Loop

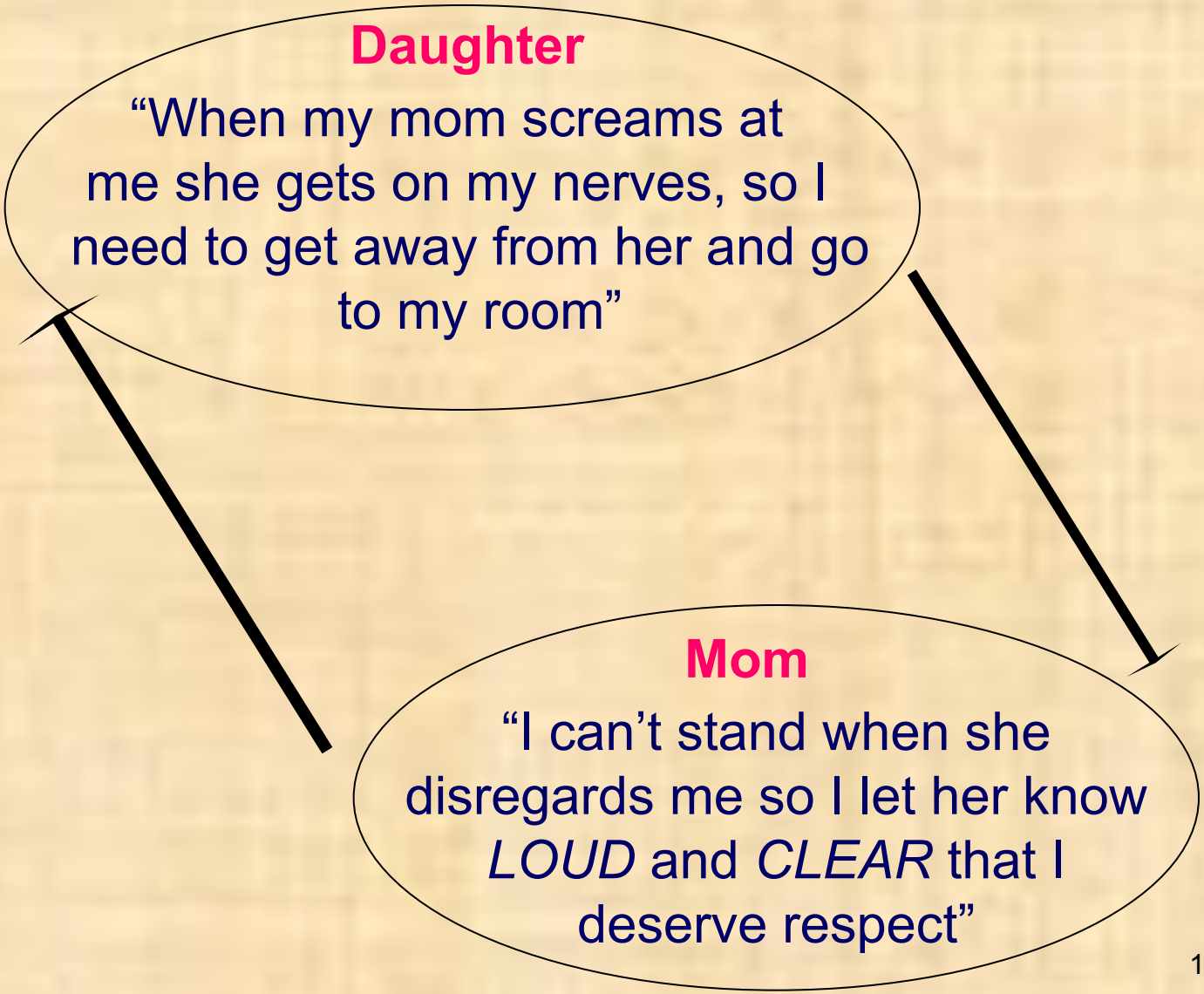
Microphone, amplifier and speaker

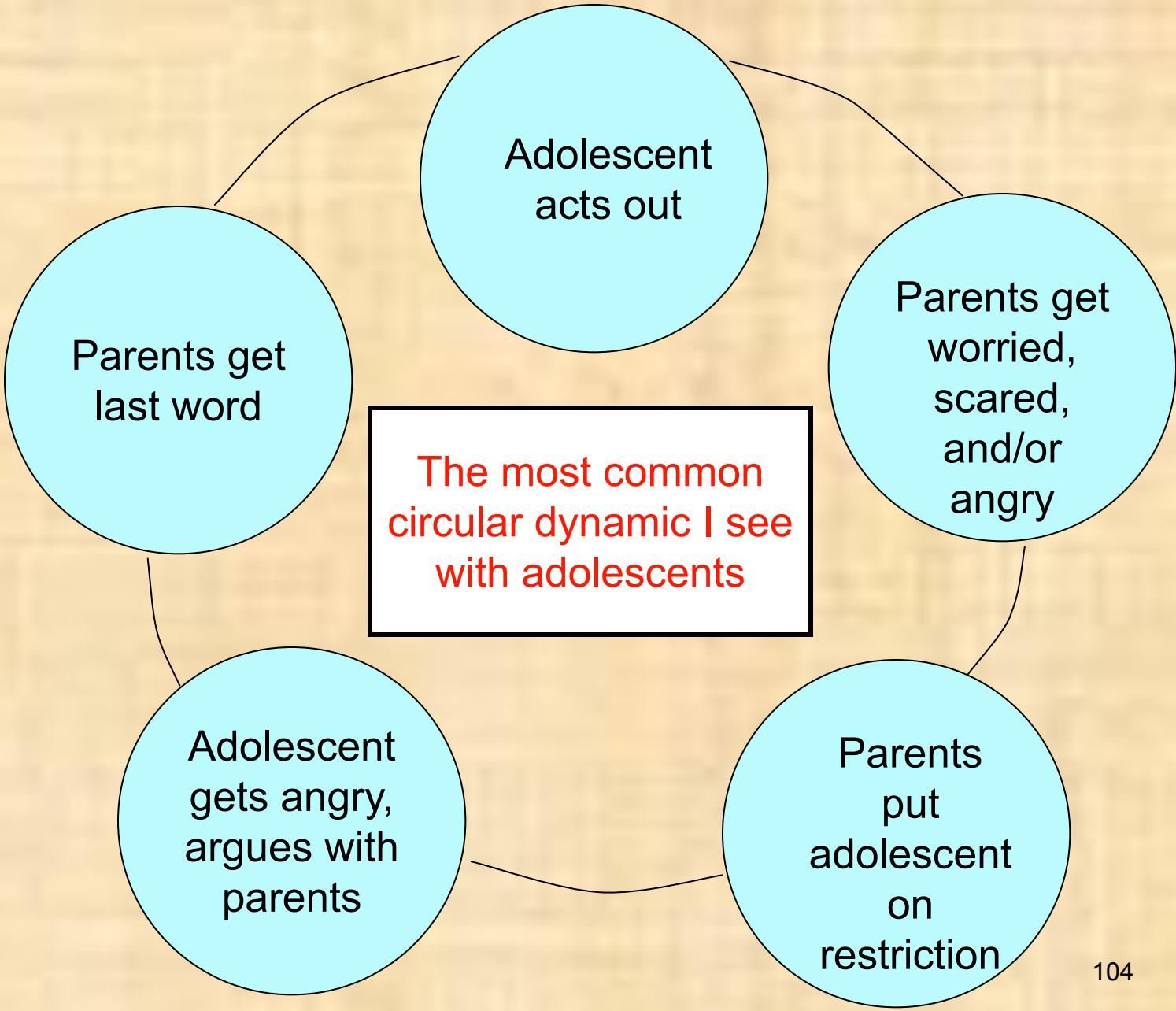


Positive Feedback Loops are called positive because they

PROMOTE CHANGE

A Common Circular Dynamic





The Result….

Systemic Foundations of the Model

- The client is the relationship. The relationship is the client
- Focus is on problem resolution not on determining who/what is the problem
- Time frame is more present and future than past
- Therapist is NOT neutral
- Foster hope and a hopeful attitude (replacing pessimistic expectancies with positive expectancies and inner efficacy
- And most important, the agent of healing is the relationship itself and thus an emphasis on directing family members to talk to each other in session, rather than to the therapist

Clinical Interventions

We'll talk about five of them

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Clinical Interventions

1. Lead with love
2. Bringing “the client” into the room via Approach Motivation & Circular Questions
3. Activating the PFC during conflict
4. Savoring
5. Fostering deeper relationships via more intimate conversations: Vulnerability ↔ Compassion

Lead with Love
(Therapist)

- Showing warmth, kindness
- Very attentive listening
- Authentically showing the couple/family interest in and curiosity about their welfare and happiness

Lead with Love
(Couple or family)

Important to ask family members in first session:

- **Do you love (the person they have been critical of)?**
- **Go ahead and look at (person's name) and tell her/him/them.**
- **(To other person) What is like to feel loved?**
- **Are you willing to make changes that will make your relationships stronger and healthier?**

Lead with Love

April, Andrea & Art

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Clinical Interventions

Bringing "the client" into the room

Clinical Interventions

Bringing "the client" into the room

Couple interaction vs. therapist engagement with one of the partners

(aka "enactment")

Bringing “the client” into the room

Important to notice and drive attention and energy between the two partners or family members

Because THAT is your client

Exception: Early in conflict management we do the opposite

Clinical Interventions

Engaging the relationship:

Approach vs. Avoidance Motivation

Clinical Interventions

Approach motivation energizes behavior and behavioral change by directing clients toward desirable activities, processes, and outcomes--i.e., a more beneficial goal. It encourages new behavior by focusing attention on *rewarding* outcomes of this new approach, rather than focusing on the *negative* aspects of the existing situation. It promotes DOING something, rather than STOPPING something.

Clinical Interventions

It is very easy for us to unintentionally keep the focus of a session on what people *want to avoid* rather than what they want.

Individually-trained therapists are particularly prone to this, as we are trained to listen supportively as our clients need to cathart.

But when our client is the relationship we may be hurting our client if we let this go on for very long

Avoidance motivation

Establishes or maintains hostility by focusing on (negative aspects of) a problematic dynamic.

"I wish my husband would put away his damn phone and quit looking at his Instagram at the dinner table because it really p*es me off"***

Approach motivation

Encourages a more pleasant, constructive atmosphere by focusing on (rewarding aspects) of whatever is the opposite behavior from the problem.

"So, you'd like it better if you and your husband could have respectful, engaged conversations at dinner"

"OK, let's look at how you two might be able to make that happen"

"Yes, I suppose"

Approach motivation

Here's another one:

Husband:

"My wife is always so critical. I can never do anything right"

Therapist:

"So, you'd enjoy your relationship more if she was more complimentary?"

"OK, let's figure out if there's a way you can both work toward that goal."

Clinical Interventions

An easy way to shift away from avoidance motivation to approach motivation is simply to ask the person who is complaining, "what would you prefer?"

And specifically ask if they can put it in affirmative language, not what they want to partner to stop doing

For more on Elliot's Research on Approach and Avoidance Motivation

- Elliot, A.J. (2023). Energization and direction are both essential parts of motivation. In J. Reeve et al., (Eds.), *Motivation science: Controversies and insights* (pp. 10–14). Oxford University Press.
- Elliott, A.J. et al, (2013). Approach–avoidance motivation and emotion: Convergence and divergence. *Emotion Review, 5,* 308–311.
- Elliott, A.J. (Ed.). (2008). *Handbook of approach and avoidance motivation.* NY: Psychology Press
- Elliot, A.J. (2006). The hierarchical model of approach-avoidance motivation. *Motivation and Emotion, 2006, 30,* 111-116

Circular Questions

Milan Associates (Selvini Palazzoli et al), 1980

Karl Tomm, 1988

Cecchin, 1987

Circular Questions:

Circular Questions are used to do both:

- **Identify circular patterns that may range from unfulfilling to destructive**
- **Work through the circular process-- i.e., patterns of activity and reactivity-- to foster relational change and activate more satisfying and pleasant interactions that become mutually reinforcing**

Circular Questions:

- imply an interaction
- invites clients to reflect on relational impact
- shift the perspective from the individual to the relationship
- can invite change

Types of Circular Questions

- Relational Impact
- Operational
- Reciprocal

Scenario: Wife has been ill and was hospitalized several times, creating considerable financial strain on the family.

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Husband: *"It makes me depressed just thinking about how I'm going to pay all of our bills"*

****

Scenario: Wife has been ill and was hospitalized several times, creating considerable financial strain on the family.

Husband: *"It makes me depressed just thinking about how I'm going to pay all of our bills"*

****

Linear therapist question

To husband: *"How long does this kind of mood typically last?"*

Scenario: Wife has been ill and was hospitalized several times, creating considerable financial strain on the family.

Husband: *"It makes me depressed just thinking about how I'm going to pay all of our bills"*

****

Linear therapist question

To husband: *"How long does this kind of mood typically last?"*

Relational Impact Circular question

To wife: *"What does your husband's worrying about the bills do to you inside?"*

Wife: "I can't believe how inconsiderate you were tonight when we were out with my parents at dinner"

****

Linear therapist question

To wife: "What kind of thoughts or feelings are driving that statement?"

Relational Impact Circular question

To husband: "When your wife says something like that, or in that way, what does it do to you inside?"

Husband: "It just makes me just want to ignore her and get away from her" *(continued….)*

Wife: "I can't believe how inconsiderate you were when we were out tonight with my parents"

****

Some follow up questions

***To husband**: "If your wife would like to engage in a constructive conversation with you about the dinner, how could she communicate with you in a way that would not only be more likely to get through to you, but that you would find pleasant and engaging?"*

-Husband responds with a few good ideas

***To husband**: "OK. Great. Now, would you be willing to smile, look kindly at her, and express that idea to her right now in a way that you believe **she** would find pleasant and inviting?"*

-Husband says he's OK with that

***To husband**: "Great. Go ahead and try it and let's see what happens"*

Operational Questions

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Operational Questions:

- Questions that call attention to the specific, visible behaviors or processes (operations) that are set in motion by the subject being discussed.
- For example, “Mary, you said it makes you angry when your husband ignores you when he gets home. How does your anger show?” Or
- “How would anyone know you are angry at that moment?”

Rela Impact + Operational Questions

Putting relational impact and operational questions together allows the circular dynamic to appear, and thus brings "the client" (i.e., the relational dynamic) into the room for the couple to see and reflect on.

Rela Impact + Operational Questions

Example

Mary: "When John comes home from work he acts like I'm not even there. He just goes into the other room and sits down at his computer"

Therapist: "So Mary, when John walks into the other room without saying hello, what happens inside of you?"

Mary: "Well, I feel ignored and I get mad that he doesn't even notice me"

Therapist: "And when you feel ignored and mad about John not noticing you, how does your anger show?"

Mary: "Well, I guess I yell something sarcastic, like 'I wish you'd recognize that I even exist'"

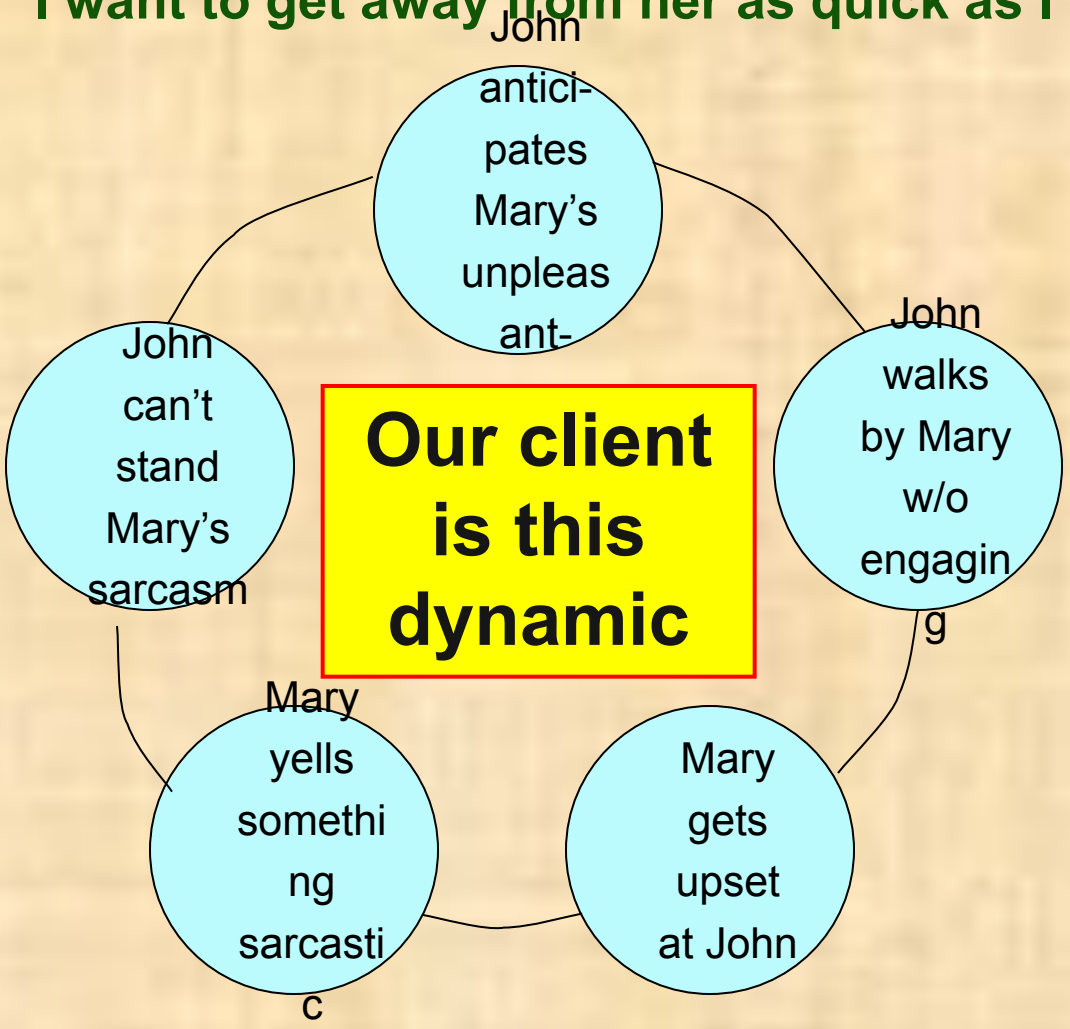
Therapist: "So John, when Mary yells something sarcastic like that, what does that do to you?"

John: "I can't stand it"

Rela Impact + Operational Questions

Therapist: "And when you can't stand something that Mary does or says, what do you do?"

John: "I want to get away from her as quick as I can"



After eliciting the circular dynamic, determine what kind of interactional patterns the couple or family would prefer (i.e. using approach motivation).

Good way to do this is through the use of reciprocal questions.

Reciprocal Questions

(leading to a positivity-based homework assignment)

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Reciprocal Questioning

- Like relational impact and operational questions, based on systemic thinking and recursive dynamics.
- Each partner is posed successive questions pertaining to what each can do to induce the desired behavior from the other partner.

Reciprocal Questioning

Example: (After Mary has complained that when John comes home from work he acts like she isn't there, and goes into another room and sits down at his computer)

Therapist: "So Mary, *what would you prefer* in terms of the way John greets you when he walks in the door?"

Mary: "Well, I wish he'd walk over to me, say 'hi!' and show that he's glad to see me".

Therapist: "John, is that OK with you? *What can Mary do* that would make it likely that you'd greet her warmly when you come home, like she requested?"

John: "Well, when I come in the door, she could look away from her TV show, look at me instead, smile at me, and look like she's happy to see me… maybe even, as I'm walking closer, stand up and look like she's going to give me a hug when I get next to her".

Reciprocal Questioning

Therapist: "Mary, what do you say about that? Would you be willing to do that?"

Mary: "Sure! Sounds great!!"

Therapist: "OK! So let me be sure I understand. John, as soon as you get home and walk in the door, you're going to look at Mary, smile at her, start walking over to her, and inquire about her day; and at the same time, Mary, you're going to smile at John, show him how pleased you are to see him, and as he approaches you, you're going to stand up and open up your body to a hug?"

Both: "Yes!! Sounds great!!"

Therapist: "OK! Let's try that this week. And let me ask you to both pay attention to the emotional climate in your relationship for the rest of the night when you begin the evening like this, and contrast it to how it's been the last few weeks, and see which you like better."

Some Positivity-Based Homework Assignments

1. Daily walks with no sarcasm, criticism, blaming, complaining, or any negativity whatsoever
2. Nightly dinners, again carefully guarding against any negativity
3. Date night (when you were dating what were some of your favorite activities?)
4. Bike ride around neighborhood together noticing pretty landscaping or wildlife
5. Watching TV together after dinner, sitting on the couch holding hands or snuggling

Some other uses of circular questions

Circular questions can also be used to pose hypotheses or make therapeutic suggestions that can cut through defensiveness.

Here are some examples

Circular Questions: Some examples

“How do you think your son would react differently if instead of lecturing and punishing him when he cuts school, you expressed understanding and sympathy about his anxiety and difficulty learning?”

Circular Questions: Some examples

“If you apologized to your parents and offered to do the dishes and mow the lawn as things you could do to show that you were sorry for what you did, how do you think your parents would respond differently?”

Circular Questions: Some examples

“Who’d be the most surprised if you went straight to your Dad and told him how scared you are when he drives drunk, instead of picking a fight with your sister?”

Circular Questions: Some examples

"How would Mom react to Dad differently if she realized that his temper problem with you was the only way he ever learned how to deal with the heartbreak of losing his Dad when he was 15?"

Clinical Interventions

Activating the PFC during conflict

Some people inherit overactive amygdalae and underactive PFCs and consequently, throughout their lives, are easily agitated, prone to chronic anxiety, and/or frequent loss of temper (Arnsten, 2009).

REVIEWS

Stress signalling pathways that impair prefrontal cortex structure and function

Amy F. T. Arnsten

Abstract | The prefrontal cortex (PFC) — the most evolved brain region — subserves our highest-order cognitive abilities. However, it is also the brain region that is most sensitive to the detrimental effects of stress exposure. Even quite mild acute uncontrollable stress can cause a rapid and dramatic loss of prefrontal cognitive abilities, and more prolonged stress exposure causes architectural changes in prefrontal dendrites. Recent research has begun to reveal the intracellular signalling pathways that mediate the effects of stress on the PFC. This research has provided clues as to why genetic or environmental insults that disinhibit stress signalling pathways can lead to symptoms of profound prefrontal cortical dysfunction in mental illness.

Attentional set
A predisposition to attend to one dimension of a stimulus while inhibiting other

The prefrontal cortex (PFC) intelligently regulates our thoughts, actions and emotions through extensive connections with other brain regions (BOX 1). It cre-

memory are the best characterized of this brain region. The Review first describes how exposure to even mild uncontrollable stress can rapidly impair PFC functions

Research Article

Putting Feelings Into Words

Affect Labeling Disrupts Amygdala Activity in Response to Affective Stimuli

Matthew D. Lieberman, Naomi I. Eisenberger, Molly J. Crockett, Sabrina M. Tom, Jennifer H. Pfeifer, and Baldwin M. Way

University of California, Los Angeles

ABSTRACT—*Putting feelings into words (affect labeling) has long been thought to help manage negative emotional experiences; however, the mechanisms by which affect labeling produces this benefit remain largely unknown. Recent neuroimaging studies suggest a possible neurocognitive pathway for this process, but methodological limitations of previous studies have prevented strong inferences from being drawn. A functional magnetic resonance imaging study of affect labeling was conducted to remedy these limitations. The results indicated that affect labeling, relative to other forms of encoding, diminished the response of the amygdala and other limbic regions to negative emotional images. Additionally, affect labeling produced increased activity in a single brain region, right ventrolateral prefrontal cortex (RVLPFC). Finally, RVLPFC and amygdala activity during affect labeling were inversely correlated, a relationship that was mediated by activity in medial prefrontal cortex (MPFC). These results suggest that affect labeling may diminish emotional reactivity along a pathway from RVLPFC to MPFC to the amygdala.*

physical health (Hemenover, 2003; Pennebaker, 1997). Although conventional wisdom and scientific evidence indicate that putting one's feelings into words can attenuate negative emotional experiences (Wilson & Schooler, 1991), the mechanisms by which these benefits arise remain largely unknown.

Recent neuroimaging research has begun to offer insight into a possible neurocognitive mechanism by which putting feelings into words may alleviate negative emotional responses. A number of studies of *affect labeling* have demonstrated that linguistic processing of the emotional aspects of an emotional image produces less amygdala activity than perceptual processing of the emotional aspects of the same image (Hariri, Bookheimer, & Mazziotta, 2000; Lieberman, Hariri, Jarcho, Eisenberger, & Bookheimer, 2005). Additionally, these studies have demonstrated greater activity during linguistic processing than during nonlinguistic processing of emotion in right ventrolateral prefrontal cortex (RVLPFC), a region associated with the symbolic processing of emotional information (Cunningham, Johnson, Gatenby, Gore, & Banaji, 2003; Nomura et al., 2003) and with top-down inhibitory processes (Aron, Robbins, & Poldrack, 2004). Finally, the magnitude of RVLPFC activity during affect labeling has been inversely correlated with the magnitude of amygdala activity during affect labeling in these

Conflict Management: Stop the bickering (as it is hurting your client)

Some questions (engaging the PFC) you can ask to interrupt the arguing

- **(Slowly, with concern) "Maybe I'm mistaken, but…" (long pause, and stated thoughtfully and from curiosity, not critically, sarcastically, or with condescension) "when you first came in, I thought you both stated you were here to improve your relationship. How does communicating in this way do that?"**
- **(Slowly, <u>respectfully</u>, and with curiosity) "Is this how you'd like to spend your time here today?"**
- **"Are you finding this constructive? Would you like to learn how to communicate more effectively?"**

Conflict Management: Activating the PFC

More questions you can ask

- **(engaging PFC) "What's the impact on you (other partner) when your partner addresses you like this? (to first partner) "Hearing this, would you like to respond differently?"**
- **(approach motivation) "How would you prefer to discuss this issue?" "What can (your partner's name) do to contribute to more constructive discussion?" (to other partner) "What can (other partner) do to make it easier for you to comply with what s/he just requested?"**

Conflict Management: Activating the PFC

Use certain thought-tinged words to try to move a couple or family away from reflexive amygdala-driven reactivity and defensiveness to energizing the PFC. Then move their consciousness along to energize the connection between the PFC and pleasure centers.

For instance, in the midst of an argument in session…

Conflict Management: Activating the PFC

"Just think, folks. Just think. You have choices right now. Please try to reflect on and consider your options here– you can either continue with raised voices, not paying attention to what the other is saying, and readying your next comment, or you can put your relationship ahead of your individual need to prevail right now, and choose to think more deeply about what you can do to discover some common ground amidst what you're fighting about. Then you can consider whether a compromise could work."

"Please think about which would make you happier right now; which would make your partner happier; which would make your relationship stronger. Which choice is more consistent with what you both stated in that first session– that you love each other deeply and are willing to work hard to change your reactions to make your relationship healthier? Please just think.

Savoring

Bryant, F. B. (2021). Current progress and future directions for theory and research on savoring. *Frontiers in psychology*, *12*, 1-17. doi: 10.3389/fpsyg.2021.771698

Savoring

Based on neuroscience of emotion, memory storage and retrieval, and strengthening PFC – reward centers:

- Notice the pleasant interaction or activity
- Carefully attend to the associated pleasant emotion
- Attribute the activity and the pleasure to the relationship, particularly that the relationship is improving

Savoring

Strengthening the neural connection between the PFC and reward centers– striatum, nucleus accumbens, ventral tegmental area (VTA)

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Savoring

Three Components

- Pay close attention to what is happening
- Notice the pleasant emotion
- Deliberately name this experience--Create a label of meaning based on the essence of what this represents or could portend for the future

Clinical Interventions

Fostering deeper relationships via more intimate conversations:

Vulnerability ↔ Compassion

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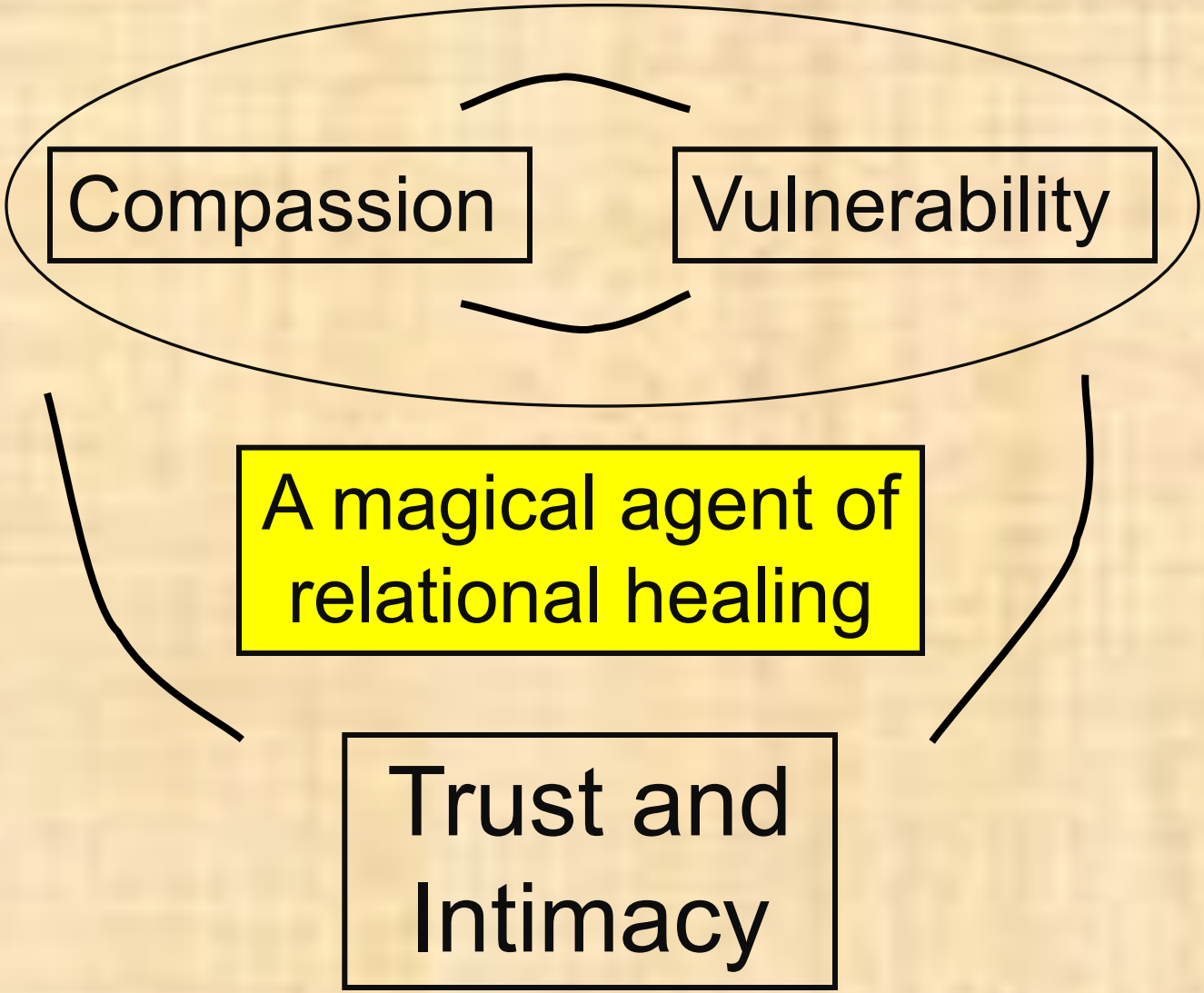

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A great book about how professional helpers can use compassion in their work…

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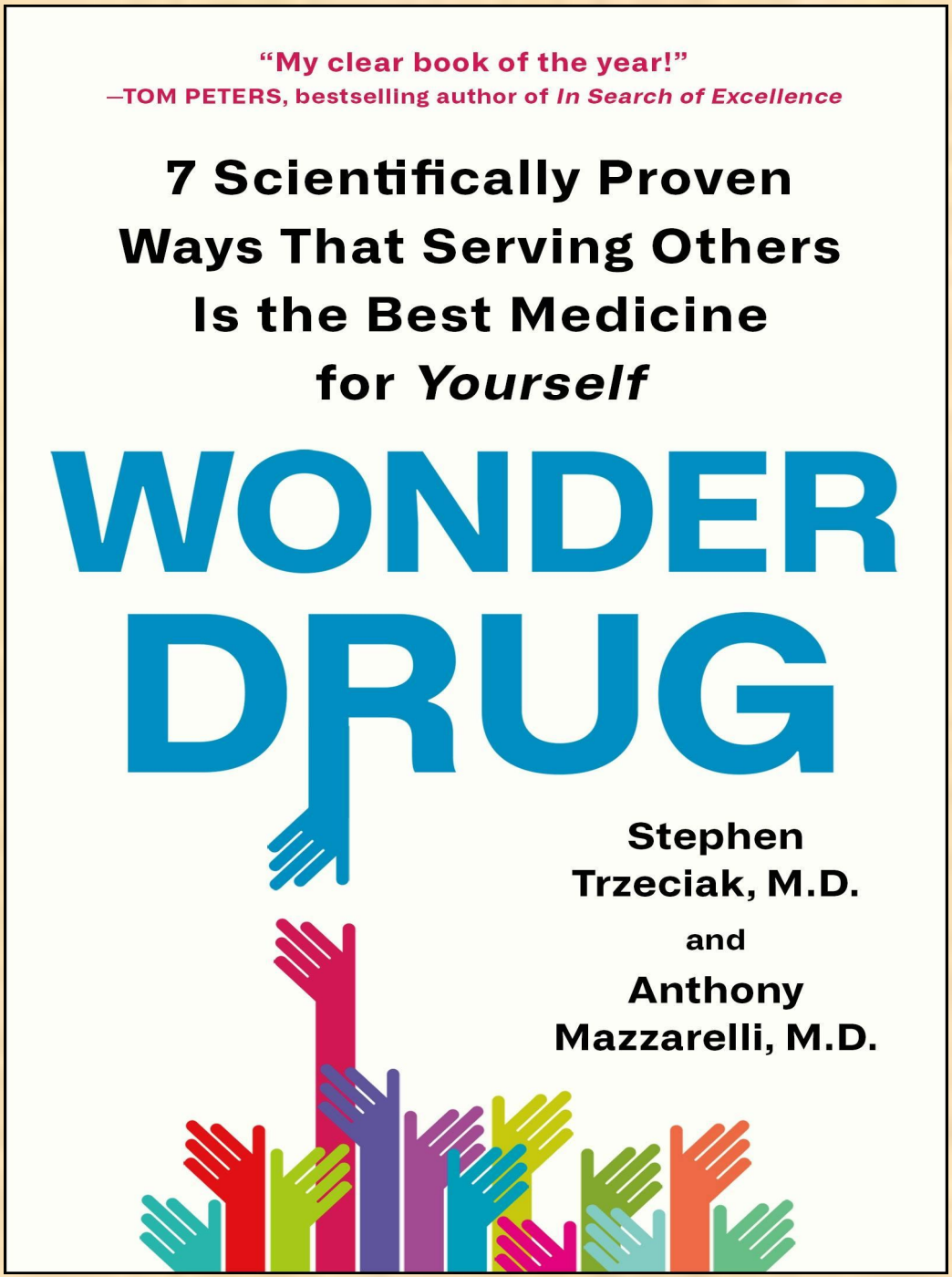

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Cultural Considerations

Development and Psychopathology (2019), **31**, 1053–1066
doi:10.1017/S0954579419000592

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Special Issue Article

Resting state coupling between the amygdala and ventromedial prefrontal cortex is related to household income in childhood and indexes future psychological vulnerability to stress

Jamie L. Hanson[1,2], W. Dustin Albert[3], Ann T. Skinner[4], Shutian H. Shen[2], Kenneth A. Dodge[4,5] and Jennifer E. Lansford[4]

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Abstract

While child poverty is a significant risk factor for poor mental health, the developmental pathways involved with these associations are poorly understood. To advance knowledge about these important linkages, the present study examined the developmental sequelae of childhood exposure to poverty in a multiyear longitudinal study. Here, we focused on exposure to poverty, neurobiological circuitry connected to emotion dysregulation, later exposure to stressful life events, and symptoms of psychopathology. We grounded our work in a biopsychosocial perspective, with a specific interest in "stress sensitization" and emotion dysregulation. Motivated by past work, we first tested whether exposure to poverty was related to changes in the resting-state coupling between two brain structures centrally involved with emotion processing and regulation (the amygdala and the ventromedial prefrontal cortex; vmPFC). As predicted, we found lower household income at age 10 was related to lower resting-state coupling between these areas at age 15. We then tested if variations in amygdala–vmPFC connectivity interacted with more contemporaneous stressors to predict challenges with mental health at age 16. In line with past reports showing risk for poor mental health is greatest in those exposed to early and then later, more contemporaneous stress, we predicted and found that lower vmPFC–amygdala coupling in the context of greater contemporaneous stress was related to higher levels of internalizing and externalizing symptoms. We believe these important interactions between neurobiology and life history are an additional vantage point for understanding risk and resiliency, and suggest avenues for prediction of psychopathology related to early life challenge.

Keywords: amygdala, brain, poverty, psychopathology, stress

Cultural Considerations

The therapy itself does not differ when the couple/family is from a marginalized group. Just like anyone else, these folks benefit from learning:

- **How each triggers the other & how to stop, i.e., their circular dynamics**
- **Adaptive relationship skills**
- **How to revive love**
- **Conflict management**
- **Savoring, and other skills from Positive Psychology we've discussed**
- **How to have intimate conversations**

Cultural Considerations

On the other hand, when working with ANY cultural group that differs from one's own, it's important for therapist to more closely examine one's own beliefs about race, poverty, injustice, inequality, etc.

In addition it is important to understand the unique social, historical, and cultural factors that are likely to affect folks from this particular group.

Cultural Considerations

So for instance, therapists working with same sex couples need to know about issues like:

- **The developmental challenges of coming out**
- **The implications of treating couples who are at different stages in the coming out process**
- **The implications of treating couples who differ in their willingness to be out with their families-of-origin and in their workplace.**
- **When for some people it's NOT that they're not ready to come out, it's that they CAN'T. E.g., because of their family, religion, community, work, coming out would be dangerous or mean lifetime cut-off, etc.**
- **The impact of legal issues (adoption, health benefits, guardianship, power of attorney, hospital visitation, probate/inheritance issues upon death of a partner, etc.)**
- **The implications of living in small LGBTQ+ communities (limited places to hang out, former partners still being friends, or seeing them in social settings, etc.)**
- **Cultural heterosexism (when/where it's safe to hold hands, hug, kiss, stay together in a motel, etc.)**

Cultural Considerations

Any marginalized group will have a steeper hill to climb; more institutional and historical oppression and (often subtle) discrimination, and micro-aggressions

I believe, when appropriate, a therapist should bring discrimination into therapy, i.e., if a parent feels voiceless or powerless at work, consider the circular question of how is this impacting the parent's interactions with the family at home

Cultural Considerations

Important to ascertain whether and how discrimination in forms such as these affect a couple/family. So with a same-sex couple…

"May I ask you a tough question?"

"Has societal discrimination or any prior hostile and aggressive interpersonal confrontations (like bullying or intimidation) affected either of you personally? Or affected your relationship?"

"If so, in what ways has it impacted important aspects of your lives together?"

"Would you say that discrimination has brought you closer or pushed you farther apart? In what ways?"

Cultural Considerations

Or with an African-American or Hispanic couple:

"I've been thinking about you lately with everything that has been going on (around racism and discrimination) and the racial or culturally-based trauma you might be experiencing. Would you like some space to process this today?" **Or,**

We don't usually talk about race in our sessions, but I've been wondering how what's been going on in the news has been impacting you lately, and how it may be affecting your relationship."

And then, validate, validate, validate. Show compassion, compassion, compassion.

McCorvey, E. (2020)

And finally….

"No other factor in medicine-- not diet, not smoking, not exercise, not stress, not genetics, not drugs, not surgery-- affects our health, and quality and length of life more than feeling loved and cared for… The best medicine for the heart is love… If you find its not working, just increase the dose." (p. 3)

Dr. Dean Ornish
Clinical Professor of Medicine
UCSF

Love and Survival: The Scientific Basis for the Healing Power of Intimacy
NY: HarperCollins

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Thank you!!

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Q & A

“I always like my comments to begin or further conversations, not to end them”

-Paul Farmer, MD

Mountains Beyond Mountains
(Kidder, 2003)

References

References

Algoe, S. B. (2019). Positive interpersonal processes. *Current directions in psychological science*, *28*(2), 183-188. https://doi.org/10.1177/0963721419827272

Andrewes, D. G., & Jenkins, L. M. (2019). The role of the amygdala and the ventromedial prefrontal cortex in emotional regulation: implications for post-traumatic stress disorder. *Neuropsychology review*, *29*, 220-243. https://doi.org/10.1007/s11065-019-09398-4

Arnsten, A. F. (2009). Stress signalling pathways that impair prefrontal cortex structure and function. *Nature reviews neuroscience*, *10*(6), 410-422. doi:10.1038/nrn2648

Atkinson, B.J. (2005). *Emotional Intelligence in Couples Therapy: Advances from Neurobiology and the Science of Intimate Relationships.* NY: Norton.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215. https://psycnet.apa.org/doi/10.1037/0033-295X.84.2.191

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References

Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, *37*(2), 122-147. https://psycnet.apa.org/doi/10.1037/0003-066X.37.2.122

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. *Journal of Social and Clinical Psychology*, *4*(3), 359-373. http://dx.doi.org/10.1521/jscp.1986.4.3.359

Bandura, A. (1997). *Self-efficacy: The exercise of control*. NY: W.H. Freeman & Company.

Banks, S. J., Eddy, K. T., Angstadt, M., Nathan, P. J., & Phan, K. L. (2007). Amygdala–frontal connectivity during emotion regulation. *Social cognitive and affective neuroscience*, *2*(4), 303-312. https://doi.org/10.1093/scan/nsm029

Berridge, K. C. (2003). Pleasures of the brain. *Brain and cognition, 52*(1), 106-128.

References

Berridge, K.C., and Robinson, T.E. (2016). Liking, wanting, and the incentive-sensitization theory of addiction. *American Psychologist, 71,* 670–679.

Brugnera, A., et al., (2024). Patient and therapist change process expectations: Independent and dyadic associations with psychotherapy outcomes. *Psychotherapy Research*, 1-10. https://doi.org/10.1080/10503307.2024.2328302

Bryant, F. B. (2021). Current progress and future directions for theory and research on savoring. *Frontiers in Psychology, 12*, 771698, 1-17. doi: 10.3389/fpsyg.2021.771698

Bryant, F. B., and Veroff, J. (2007). *Savoring: A new model of positive experience.* Mahwah, NJ: Lawrence Erlbaum Associates.

References

Carr, A., Cullen, K., Keeney, C., Canning, C., Mooney, O., Chinseallaigh, E., & O'Dowd, A. (2021). Effectiveness of positive psychology interventions: a systematic review and meta-analysis. *The Journal of Positive Psychology, 16*(6), 749-769. https://doi.org/10.1080/17439760.2020.1818807

Cheavens, J. S., & Whitted, W. M. (2023). Hope therapy. *Current opinion in psychology*, *49*, 101509. 1-6. https://doi.org/10.1016/j.copsyc.2022.101509

Chen, Y., Hu, N., Yang, J., & Gao, T. (2022). Prefrontal cortical circuits in anxiety and fear: an overview. *Frontiers of Medicine*, *16*(4), 518-539. https://doi.org/10.1007/s11684-022-0941-2

Clark, D. A. & Beck, A. T. (2010). Cognitive theory and therapy of anxiety and depression: Convergence with neurobiological findings. *Trends in cognitive sciences, 14* (9), 418-424. doi:10.1016/j.tics.2010.06.007

References

Conoley, C. W., & Conoley, J. C. (2009). *Positive psychology and family therapy: Creative techniques and practical tools for guiding change and enhancing growth.* NY: John Wiley & Sons.

Conoley, C. W., & Conoley, J. C. & Pontrelli, M. E. (2014). Positive family therapy interventions. In A. C. Parks & S. M. Schueller (Eds.). *The Wiley Blackwell handbook of positive psychological interventions, first edition*. (pp. 233-254). NY: John Wiley and sons.

Conoley, C. W. et al., (2015). Integrating positive psychology into family therapy: Positive family therapy. *The Counseling Psychologist, 43(5),* 703-733. https://doi.org/10.1177/0011000015575392

Conoley, C. W., & Scheel, M. J. (2018). *Goal focused positive psychotherapy: A strengths-based approach*. NY: Oxford University Press.

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References

Constantino, M. J., Ametrano, R. M., & Greenberg, R. P. (2012). Clinician interventions and participant characteristics that foster adaptive patient expectations for psychotherapy and psychotherapeutic change. *Psychotherapy, 49(4),* 557–569. DOI: 10.1037/a0029440

Constantino, M. J., Glass, C. R., Arnkoff, D. B., Ametrano, R. M., & Smith, J. Z. (2011). Expectations. In J. C. Norcross (Ed.), *Psychotherapy relationships that work: Evidence-based responsiveness. 2nd ed.*, (pp. 354–376). New York, NY: Oxford University Press.

Constantino, M. J., Muir, H. J., Gaines, A. N., & Ouimette, K. (2023). Hope and expectancy factors. In S. D. Miller, D. Chow, S. Malins, & M. A. Hubble (Eds.), *The field guide to better results: Evidence-based exercises to improve therapeutic effectiveness* (pp. 131–153). American Psychological Association. https://doi.org/10.1037/0000358-007

References

Constantino, M. J., Vîslă, A., Coyne, A. E., & Boswell, J. F. (2018). A meta-analysis of the association between patients' early treatment outcome expectation and their posttreatment outcomes. *Psychotherapy, 55*(4), 473–485. http://dx.doi.org/10.1037/pst0000169

Constantino, M. J., Vîslă, A., Coyne, A. E. & Boswell, J. F. (2019). Cultivating positive outcome expectation. In J. C. Norcross & M. J. Lambert (Eds.), *Psychotherapy Relationships that Work: Volume 1: Evidence-Based Therapist Contributions, 3rd ed.,* (pp. 461-494). NY: Oxford Academic. https://doi.org/10.1093/med-psych/9780190843953.003.0013

Diener E. & Chan, M. Y. (2011). Happy people live longer: Subjective well-being contributes to health and longevity. *Applied Psychology: Health and Well-Being, 3*(1):1–43. https://doi.org/10.1111/j.1758-0854.2010.01045.x

References

Dweck, C. S. (2017). From needs to goals and representations: Foundations for a unified theory of motivation, personality, and development. *Psychological review*, *124*(6), 689-719. https://doi.org/10.1037/rev0000082

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist, 34*; 169–189.

Elliot, A. J. (2006). The hierarchical model of approach-avoidance motivation. *Motivation and Emotion, 30*, 111–116. DOI 10.1007/s11031-006-9028-7

Elliot, A. J. (2008). *Handbook of approach and avoidance motivation*. NY: Psychology Press. https://doi.org/10.4324/9780203888148

Elliot, A. J. & Covington, M. V. (2001). Approach and avoidance motivation. *Educational Psychology Review, 13,* 73-92.

References

Elliot, A. J., Gable, S. L. & Mapes, (2006). Approach and avoidance motivation in the social domain. *Personality & Social Psychology Bulletin, 32,* 378-391. https://doi.org/10.1177/0146167205282153

Elliot, A. J., & Mapes, R. R. (2005). Approach-avoidance motivation and self-concept evaluation. In A. Tesser, J. Wood, & D. Stapel (Eds.), *On building, defending, and regulating the self: A psychological perspective* (pp. 171–196). Washington, D.C.: Psychological Press.

Felix-Ortiz, A. C., & Tye, K. M. (2014). Amygdala inputs to the ventral hippocampus bidirectionally modulate social behavior. *Journal of Neuroscience*, *34*(2), 586-595. https://doi.org/10.1523/JNEUROSCI.4257-13.2014

Fetterman, A. K., & Evans, N. D. (2023). Remembering our first date brings back those fuzzy feelings: The role of romantic nostalgia in relationship functioning. *Current Opinion in Psychology, 49,* 1-5. https://doi.org/10.1016/j.copsyc.2022.101524

References

Gable, S. L. (2006). Approach and avoidance social motives and goals. *Journal of personality*, *74*(1), 175-222. http://dx.doi.org/10.1111/j.1467-6494.2005.00373.x

Haller, S. P., Linke, J. O., Grassie, H. L., Jones, E. L., Pagliaccio, D., Harrewijn, A., ... & Brotman, M. A. (2024). Normalization of fronto-parietal activation by cognitive-behavioral therapy in unmedicated pediatric patients with anxiety disorders. *American Journal of Psychiatry*, *181*(3), 201-212. https://doi.org/10.1176/appi.ajp.20220449

Hanson, J. L., Albert, W. D., Skinner, A. T., Shen, S. H., Dodge, K. A., & Lansford, J. E. (2019). Resting state coupling between the amygdala and ventromedial prefrontal cortex is related to household income in childhood and indexes future psychological vulnerability to stress. *Development and psychopathology*, *31*(3), 1053-1066. https://doi.org/10.1017/S0954579419000592

References

Hitchcock, E., Hassett, A. L., & Wager, T. D. (2019). Effects of positive emotion on pain.. In J. Gruber (Ed.). *The Oxford Handbook of Positive Emotion and Psychopathology*, (pp. 444-452). NY: Oxford University Press.

Ironson, G., Banerjee, N., Fitch, C., & Krause, N. (2018). Positive emotional well-being, health Behaviors, and inflammation measured by C-Reactive protein. *Social Science & Medicine*, *197*, 235-243. https://doi.org/10.1016/j.socscimed.2017.06.020

Jobst, A., Sabass, L., ... & Padberg, F. (2018). Oxytocin plasma levels predict the outcome of psychotherapy: A pilot study in chronic depression. *Journal of affective disorders*, *227*, 206-213.

Kensinger, E. A., & Ford, J. H. (2021). Guiding the emotion in emotional memories: The role of the dorsomedial prefrontal cortex. *Current Directions in Psychological Science*, *30*(2), 111-119. https://doi.org/10.1177/0963721421990081

Kringelbach, M.L., Berridge, K.C., (2017). The affective core of emotion: linking pleasure, subjective well-being, and optimal metastability in the brain. *Emotion Review, 9* (3), 191–199. https://doi.org/10.1177/1754073916684558

References

LaBar, K. S., & Cabeza, R. (2006). Cognitive neuroscience of emotional memory. *Nature Reviews Neuroscience*, *7*(1), 54-64. doi:10.1038/nrn1825

Lebrecht, S., & Badre, D. (2008). Emotional regulation, or: how I learned to stop worrying and love the nucleus accumbens. *Neuron*, *59*(6), 841-843. https://doi.org/10.1016/j.neuron.2008.09.007

Lieberman, D. Z. & Long, M. E. (2019). *The molecule of more.* Dallas, TX: BenBella Books

Lieberman, M.D., Eisenberger, N.I., Crockett, M.J., Tom, S.M., Pfeifer, J.H., Way, B.M., (2007). Putting feelings into words: affect labeling disrupts amygdala activity in response to affective stimuli. *Psychological Science, 18* (5), 421–428. https://doi.org/10.1111/j.1467-9280.2007.01916.x

Marusak, H. A., Thomason, M. E., Peters, C., Zundel, C., Elrahal, F., & Rabinak, C. (2016). You say 'prefrontal cortex'and I say 'anterior cingulate': Meta-analysis of spatial overlap in amygdala-to-prefrontal connectivity and internalizing symptomology. *Translational Psychiatry*, *6*(11), e944-e944. https://doi.org/10.1038%2Etp.2016.218

References

Mason, L., Peters, E., Williams, S. C., & Kumari, V. (2017). Brain connectivity changes occurring following cognitive behavioural therapy for psychosis predict long-term recovery. *Translational psychiatry, 7*(1), e1001-e1001. http://dx.doi.org/10.1038/tp.2016.263

Nguyen, D., Naffziger, E. E., & Berridge, K. C. (2021). Positive affect: Nature and brain bases of liking and wanting. *Current Opinion in Behavioral Sciences*, *39*, 72-78. https://doi.org/10.1016/j.cobeha.2021.02.013

Oba, K., Noriuchi, M., Atomi, T., Moriguchi, Y., & Kikuchi, Y. (2016). Memory and reward systems coproduce 'nostalgic'experiences in the brain. *Social cognitive and affective neuroscience, 11(7), 1069-1077.* https://doi.org/10.1093/scan/nsv073

Ornish, D. (2011). *Love and survival: The scientific basis for the healing power of intimacy*. Harper Collins.

Pascual-Leone, A., Amedi, A., Fregni, F., & Merabet, L. B. (2005). The plastic human brain cortex. *Annual Review of Neuroscience, 28*, 377-401. doi:

References

Pascual-Leone, A., Nguyet, D., Cohen, L. G., Brasil-Neto, J. P., Cammarota, A., & Hallett, M. (2009). The malleable brain: Neuroplasticity in the motor system. (pp. 19-32). In R. Roche & S. Commins (Eds.). *Pioneering Studies In Cognitive Neuroscience*, NY: McGraw-Hill.

Rouhani, N., Niv, Y., Frank, M. J., & Schwabe, L. (2023). Multiple routes to enhanced memory for emotionally relevant events. *Trends in Cognitive Sciences, 27*(9), 867-882. https://doi.org/10.1016/j.tics.2023.06.006

Rozanski, A., Bavishi, C., Kubzansky, L. D., & Cohen, R. (2019). Association of optimism with cardiovascular events and all-cause mortality: a systematic review and meta-analysis. *JAMA network open*, *2*(9), e1912200-e1912200. doi:10.1001/jamanetworkopen.2019.12200

Schutte, N. S., & Malouff, J. M. (2016). The relationship between perceived stress and telomere length: A meta-analysis. *Stress and Health*, *32*(4), 313–319. https://doi.org/10.1002/smi.2607

References

Schutte, N. & Malouff, J. M. (2022). The association between optimism and telomere length: A meta-analysis. *The Journal of Positive Psychology*, *17*(1), 82-88. https://doi.org/10.1080/17439760.2020.1832249

Schutte, N. S., Palanisamy, S. K., & McFarlane, J. R. (2016). The relationship between positive psychological characteristics and longer telomeres. *Psychology & Health*, *31*(12), 1466-1480. https://doi.org/10.1080/08870446.2016.1226308

Seligman, M. E. P. & Csikszentmihalyi, M. (2000). Positive psychology [Special issue]. *American Psychologist, 55(1)*, 5-14 DOI: 10.1037//0003-066X.55.1.5

Sherman, B. E., Turk-Browne, N. B., & Goldfarb, E. V. (2024). Multiple memory subsystems: reconsidering memory in the mind and brain. *Perspectives on Psychological Science, 19*(1), 103-125. https://doi.org/10.1177/17456916231179146

Snyder, C. R. (2002). Hope theory: Rainbows in the mind. *Psychological inquiry, 13(4)*, 249-275

References

Snyder, C. R. et al. (Eds.) (2021). *The Oxford Handbook of Positive Psychology, 3rd edition.* NY: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199396511.002.0004

Snyder, C. R., & Taylor, J. D. (2000). Hope as a common factor across psychotherapy approaches: A lesson from the dodo's verdict. In C.R. Snyder (Ed.). *Handbook of hope: Theory, measures and applications* (pp. 89-108). San Diego: Academic Press. https://doi.org/10.1016/B978-012654050-5/50007-5

Speer, M. E., Bhanji, J. P., & Delgado, M. R. (2014). Savoring the past: positive memories evoke value representations in the striatum. *Neuron, 84*(4), 847-856. http://dx.doi.org/10.1016/j.neuron.2014.09.028

Speer, M. E., & Delgado, M. R. (2017). Reminiscing about positive memories buffers acute stress responses. *Nature human behaviour*, *1*(5), 0093. 1-9. http://dx.doi.org/10.1038/s41562-017-0093

References

Wager, T. D., Davidson, M. L., Hughes, B. L., Lindquist, M. A., & Ochsner, K. N. (2008). Prefrontal-subcortical pathways mediating successful emotion regulation. *Neuron*, *59*(6), 1037-1050. https://doi.org/10.1016/j.neuron.2008.09.006

Zacharek, S. J., Gabrieli, J. D., & Hofmann, S. G. (2024). Brain plasticity and prediction of response to psychotherapy. In P. Steffen & D. Moss (Eds.). *Integrating Psychotherapy and Psychophysiology: Theory, Assessment, and Practice*, 101. DOI:10.1093/oso9780198888727.0030005

Zhang, W. H., Zhang, J. Y., Holmes, A., & Pan, B. X. (2021). Amygdala circuit substrates for stress adaptation and adversity. *Biological psychiatry*, *89*(9), 847-856. https://doi.org/10.1016/j.biopsych.2020.12.026

Zuccarella-Hackl, C., Princip, M., Auschra, B., Meister-Langraf, R. E., Barth, J., & von Känel, R. (2023). Association of positive psychological well-being with circulating inflammatory markers: A systematic review and meta-analysis. *Neuroscience & Biobehavioral Reviews*, *150*, 105186. https://doi.org/10.1016/j.neubiorev.2023.105186

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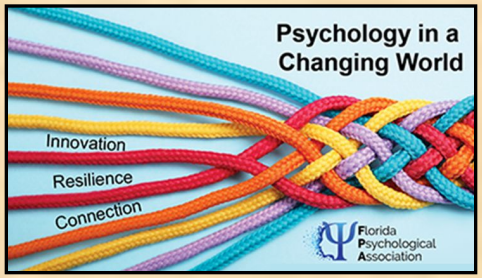

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