Mechanisms of Change in the Psychotherapeutic Treatments of Bodily Distress

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Mechanisms of Change in the Psychotherapeutic Treatments of Bodily Distress

- Two fundamental problems arise from early adversity
  - dysregulated emotion processing
  - dysfunctional attachment processes
- Impaired mentalization / emotional awareness
  - can account for heightened focus on physical pain
  - treatment goal: promote transition from implicit to explicit emotion processing
- Dysfunctional attachment processes; treatment involves
  - Reconsolidation of emotional memories
  - Corrective emotional experiences
Pain is a psychological, experiential phenomenon requiring participation of higher nervous centers.

- Pain may occur without sensory input.
- Pain often seems to serve as a kind of psychic regulator.
  - When a strong aggressive drive is not fulfilled, pain may be experienced instead.
  - When guilt is present, pain seems to serve as a kind of atonement.
  - When a relationship is threatened or lost, pain serves as a replacement.

- In certain pain prone patients, pain seems to substitute for the experience of other more painful emotions.

Number of bodily symptoms - childhood adversity and anx/dep as risk factors

Fiddler et al Gen Hosp Psych 2004

p=0.002
<0.0005

(medically unexplained symptoms)
Emotional and Cognitive Consequences of Trauma

- Trauma - overwhelming, exceeding coping capacity
- Experiences often not shared with others
- “Double whammy” if parent is the perpetrator (abuse + lack of support)
- Talking about or even attending to one’s own emotions was dangerous
- Adaptations were made to reduce emotional distress (e.g. becoming perfectionistic, pessimistic)
- These adjustments were adaptive in the original context but are maladaptive later in life
Children from Romanian orphanages who immigrated to the UK by age 43 months had impaired Theory of Mind and Executive Function relative to other Romanian or British adoptees tested at age 11.

The longer they were in the orphanages the more impaired they were: 2 yrs > 6-12 mos > 6 mos.
Early Adversity is Associated With *Attenuated* Stress Responses


Bill Lovallo
65th APS President
2007-2008
Early Adversity Associated with Abuse-Specific Changes in Brain Structure and Connectivity

Automatic Physiologic Adaptations to Early Adversity

Automatic adaptation to repeated, unavoidable emotional distress in childhood

• ↓ Stress Responses
• ↓ Emotional Awareness
• ↓ Volume Sensory Cortex
How Might Early Adversity Amplify Pain?

• In childhood emotions are interpersonally regulated
• In the context of abuse and neglect, this type of regulation does not occur or is limited when it is needed most
• A common solution is to tune out internal emotional distress and become vigilant for external threats
• Abused children also do not receive the empathic attunement and mirroring from others that would enable them to know what they are feeling
• This impairment in mental representation is associated with impaired MPFC activation and impaired top-down modulation of subcortical generators of affect
How Might Early Adversity Amplify Pain?

- Impaired mental representation of emotion is linked to
  - Decreased mentalization ability
  - Decreased capacity to identify stressors
  - Impaired capacity for attachment
- Unmodulated subcortically-generated implicit affect
  - Decreased vagal tone
  - Enhanced inflammation
- Inflammation promotes allodynia (benign stimuli painful)
- If early adversity involved physical pain, pain is a likely interpretation of ambiguous physical sensations arising from undifferentiated emotional distress
Role of Attention in Promoting Physical Pain Experience in the Context of Emotional Distress

- In the context of early adversity, unpleasant bodily sensations may be interpreted either as emotional distress or physical pain.
- If physical pain is “selected” and attended to, that will amplify the experience of physical pain and decrease the experience of emotional distress.
- The decrease in distress will be experienced as rewarding, reinforcing this cognitive bias.
- As such, pain can serve as a “psychic regulator.”
Reduction of Tension and Stress By Experimental Incisional Pain in Borderline PD

Affective Agnosia: An Impairment in the Ability to Explicitly Mentally Represent One’s Own Emotions

- A new type of agnosia that is supramodal involving a deficit in the recognition of one’s own emotional states
- A failure of subcortical transmission to the medial frontal lobe

Medial Prefrontal Cortex Participates in Regulating Vagal Tone (HRV)
Meta-Analysis of 12 studies

The Anti-Inflammatory Reflex

Activation of the Vagus Nerve Is Anti-Inflammatory

Fig. 1. The inflammatory reflex. Immune responses are regulated by neural reflex circuits that sense peripheral inflammation and provide regulatory feedback through specific nervous signals and humoral factors. Sensory vagus fibers innervate a multitude of organs, for example the intestine and glomus caroticum. They are activated by cytokines induced by tissue damage or PAMPs in the periphery and transmit signals to the nucleus tractus solitarius (NTS) in the brainstem. Polysynaptic relays connect to the vagal motor neurons in the dorsal vagal motor nucleus and nucleus ambiguous and sympathoexcitatory neurons in the rostral ventrolateral medulla. Efferent vagus nerve signals travel to the celiac plexus and also directly to target organs and suppress innate immune responses. Activation of afferent vagus signals also triggers a ‘sickness response’ and activates the hypothalamic-pituitary-adrenal (HPA) axis, which promotes glucocorticoid release from the adrenal glands.
Working with Trauma in Psychotherapy

• Victims know what happened but not how it affected them emotionally
• Emotional experiences need to be formulated for the first time – titrated to what is tolerable
• Discussion of past experiences incorporates new information – safety, empathy, support
• New context permits the experience of new emotions, experiencing feelings (anger, guilt, longing) for the first time that had previously been intolerable and unformulated
Mentalization-Based Therapy Helps in the Treatment of Functional Pain

A mentalization-based approach to the understanding and treatment of functional somatic disorders

Patrick Luyten\textsuperscript{a,b,*}, Boudewijn Van Houdenhove\textsuperscript{a}, Alessandra Lemma\textsuperscript{c}, Mary Target\textsuperscript{b} and Peter Fonagy\textsuperscript{b}

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The PAST-FM (Pain and Stress Treatment for Fibromyalgia) Trial: Effects of Emotional Awareness and Expression and Cognitive Behavioral Therapies

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Lumley et al. Pain 2017
Transformation

From Implicit to Explicit
Implicit aspects of emotion consist of the automatic **motor** expressions of emotion, including **visceromotor** {autonomic, neuroendocrine} and **somatomotor** {gestures, facial expressions, action tendencies, procedures} responses, i.e. peripheral physiology and behavior, and their **sensory** consequences {bodily sensations}. 

**Implicit (Non-Mentalized) Emotion: Behavior and Physiology Without Feeling**
Multi-Modal Treatment of Functional Pain

**Somatic**
- Exercise
- Meditation / Paced Breathing
- Massage / acupuncture
- Psychotropic medication

**Psychological – (cognitive/affective)**
- Non-verbal expressive therapies (art/dance)
- CBT
- Individual exploratory psychotherapy (if tolerated)
- Group therapy
Memory reconsolidation, emotional arousal, and the process of change in psychotherapy: New insights from brain science
NEUROSCIENCE OF ENDURING CHANGE:
Applications to Psychotherapy

September 15-16, 2017 · Tucson, Arizona

The purposes of this two-day conference for researchers and clinicians are: (1) to define a research agenda for the neuroscience of enduring change, (2) acquaint researchers and clinicians with recent basic research findings and their clinical implications, and (3) discuss the mechanisms of enduring change in psychotherapy from the perspective of the major psychotherapy modalities.

FRIDAY, SEPTEMBER 15: BASIC SCIENCE
- Lynn Nadel, PhD, University of Arizona: Memory Systems and Dynamics
- Ryan Smith, PhD, University of Arizona: Implicit and Explicit Emotion
- Ajay B. Satpute, PhD, Pomona College: Construction of Emotional Experience
- Marei Kindt, PhD, University of Amsterdam: Emotion-Memory Interactions
- Jessica Andrews-Hanna, PhD, University of Arizona: Arousal and the Frontal Lobes
- Jessica Payne, PhD, University of Notre Dame: Sleep and Memory Dynamics
- Lee Ryan, PhD, University of Arizona: Memory and the Self
- Jacek Debrec, MD, PhD, DPHIL, MPh, University of Michigan: Early Life Trauma

SATURDAY, SEPTEMBER 16: APPLICATIONS TO PSYchoTHERAPY
- Les Greenberg, PhD, York University: Emotion Focused Therapy
- Edna B. Foa, PhD, University of Pennsylvania: Behavioral Therapy
- Michelle G. Craske, PhD, University of California, Los Angeles: Cognitive Behavioral Therapy
- Hanna Leveroni, PhD, Wright Institute: Psychodynamic Psychotherapy
- Rhonda Goldman, PhD, Illinois School of Professional Psychology: Integrative Therapies
- Richard D. Lane, MD, PhD, University of Arizona: Synthesis

For more details and to register online visit www.psychology.arizona.edu/NPC2017
Proposed Essential Ingredients For Change in Psychotherapy

• Activate old memories and old feelings (with or without awareness of their connection to the past)
• Concurrently engage new emotional experiences that change old memories through reconsolidation
• Reinforce the strength of new memories and their semantic structures by practicing new ways of behaving and experiencing the world in a variety of contexts
Major Psychotherapy Modalities Differ in Their Points of Entry

Behavior Therapy (Implicit > Explicit)
Psychodynamic Psychotherapy

Emotional Responses

Episodic Memories
Semantic Structures

Emotion-Focused Therapy (Explicit > Implicit)
Cognitive-Behavioral Therapy

• Previously unformulated adaptive emotional responses (e.g. anger) can be experienced for the first time and put into words.
• These emotions are experienced in relation to problematic situations from the past and become added to an expanded narrative of the problematic situation.
• Memories of these old problematic contexts that incorporate these new adaptive emotional responses can be reconsolidated.
• Putting new emotions into words and new scripts into action enables them to be understood and rehearsed until they become automatic (i.e. implicit $\rightarrow$ explicit $\rightarrow$ implicit).
Working Through: Making the Transition from Episodic Memories to Semantic Structures

Relevant features of recurring situations are extracted including who is involved, what transpires, how it feels, how to respond and how others respond to you.
Updating Memories: Time Course of Change

- Episodic — easiest to update
- Semantic — harder to update
- Procedural / Habit — hardest to update
Implications for Psychodynamic Psychotherapy

• Active recall of past experiences, promotion of intense emotional experiences including new experiences in the transference, and the emphasis on working through in a variety of contexts is highly consistent with this model
• Perhaps the process of creating trust, establishing the working alliance and enabling transference constitutes critical implicit learning that paves the way for new explicit corrective experiences
Conclusions

- Early adversity predisposes to unexplainable pain by compromising emotional awareness and attachment processes.
- In this context, a focus on pain may serve as a psychic regulator, preventing the experience of even more intolerable undifferentiated emotional distress.
- Emotional awareness may be promoted by transforming implicit to explicit emotional processes.
- Attachment schemas may be revised by having corrective emotional experiences and reconsolidating associated emotional memories.
- The end result is a decrease in preoccupation with bodily distress and a better ability to deal with current stressors.