Attachment, trauma and neuroscience.

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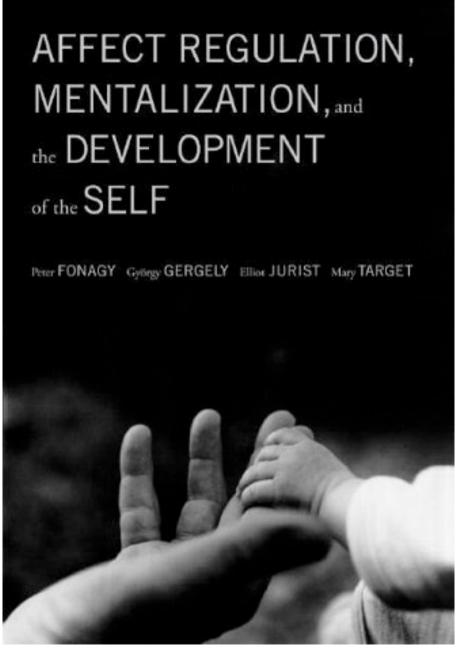
Acknowledgments

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Structure of the Talk

- The phenomenology of attachment trauma
- Neuroscience and attachment theory
- Clinical implications



Quite a boring and long book.

Frankly, you are far better off listening to the talk!!!

OR get the text by e-mailing:

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JAMES:

"he put the gas cooker on, right, and um – I will always remember this he put a hand on top of the gas cooker, and roasted our hands (your hand) yeah, my hand, and the next day I went to school with gloves on, because they really, really bad ...".

JAMES:

"I used to have a drink and sleep and when I wake up I was a different person".

JAMES:

"When I was young I never really got upset because I had everything I wanted really and when you get everything that you want you don't really get upset."

JAMES:

"I cannot explain, I can't, it's not even up there [points to head] for me to explain."

STUART:

"He tied me to the bed...and he got a screwdriver, and he was stabbing me in the hands with it, because they were what stole... and I was just laughing at him, 'cause I was ...I don't know..."

STUART:

"... And then he went downstairs, and he got a hammer and nails, and he nailed one of my hands to the board of the bed, like. Just stuck a nail straight through my hand, like. Like, so I was howling, I couldn't move, and the blood was ... and I was screaming then. I had to cry then, I couldn't handle it...."

STUART:

"... And after they had done it, my hands went numb, so I couldn't feel it. And I looked at my hands, and I started laughing at myself. and I felt I was going mad, like, cause I was going 'Ha ha,' you know, and I was thinking, 'I had done that!"

STUART:

"The amount of times I've broken my hands, my arms, you know. Five times, in six months. Different arms."

STUART:

"...she starts screaming in the court. And then I went, I flipped my lid there, I jumped out of the dock, I grabbed a hold of her by the hair, like and I was banging her head off, ...the police had to get me off her"

STUART:

"I mean, I am not a danger to anyone but I am a danger to myself, not other people."

A psychoanalytic developmental phenomenology of the response to attachment trauma

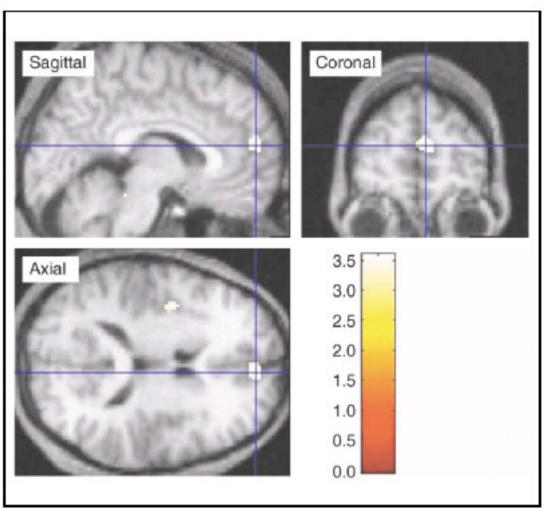
Trauma related loss of the capacity to conceive of mental states

MENTALIZATION: preconscious imaginative mental activity that entails interpreting people's actions in terms of 'intentional' mental states.

Brain structures directly relevant to mentalizing: Reasoning about false beliefs

- Making judgments about someone's knowledge or ignorance about a topic increases brain activity in the
 - temporal poles bilaterally
 - >anterior superior temporal sulcus
 - bilateral temporo-parietal junction extending into posterior temporal sulcus
 - medial prefrontal cortex (anterior to the ACC)

Region of maximum activity in the region of the anterior paracingulate cortex elicited when subjects adopted an 'intentional stance'*



Group data mapped on to a template brain

*Gallagher & Frith Trends in Cognitive Sciences 7: 77-83, 2003

Brain structures directly relevant to mentalizing: attributions of desires & goals

- Moderately enhanced activity in regions linked to belief attributions including:
 - > the medial prefrontal cortex
 - posterior superior temporal sulcus

Brain structures directly relevant to mentalizing: Inhibitory controls

- Inhibitory controls necessary
 - ➤ to suppress the pre-potent assumption that everyone knows and believes the same as the child
 - >allow for the existence of separate minds
- Resolving response conflict associated with the activation of
 - ➤ the anterior cingulate cortex (ACC)
 - the dorsolateral prefrontal cortex and superior parietal lobe

Brain structures directly relevant to mentalizing: Understanding affect

- Structures responsible for understanding affect in others is independent from systems that mediate belief attribution
- Neural systems associated with the perception, experience and function of emotions
 - > the extrastriate cortex
 - ➤ right parietal cortex
 - right fusiform gyrus,
 - > orbitofrontal cortices
 - >amygdala, insula and basal ganglia

Brain structures directly relevant to mentalizing: The mirror neuron system (Gallese, et al., 2004; Rizzolatti et al., 2004)

- A shared sub-personal neural mapping between what is acted and what is perceived that can be used to predict the actions of others (Goldman, 2005; Gallese, 2003)
- Establishing link between agent and observer via the activation of parietal and premotor cortical networks
- Constitutes a basic immediate level of experiential understanding that does not entail the explicit use of any theory or declarative representation.

Trauma related loss of the capacity to conceive of mental states

- MENTALIZATION: preconscious imaginative mental activity that entails interpreting people's actions in terms of 'intentional' mental states.
- Traumatised patients can loose the capacity to mentalize, to understand themselves and others in mental state terms

Trauma related loss of the capacity to conceive of mental states

JAMES:

"I keep doing these crazy things. Why am I doing these things? I was confused. I used to just sit down for hours sometimes and drive myself mad, thinking. And I just didn't get anywhere. It used to wind me up."



Examples from the Reading the Mind in the Eyes (Baron-Cohen et al., 2001)

surprised

sure about something



joking

happy

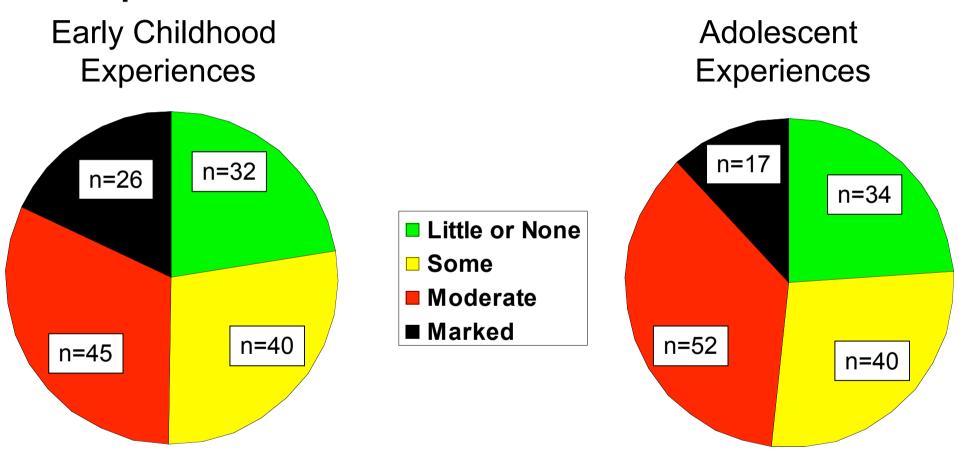
Examples from the Reading the Mind in the Eyes (Baron-Cohen et al., 2001)

friendly sad



surprised worried

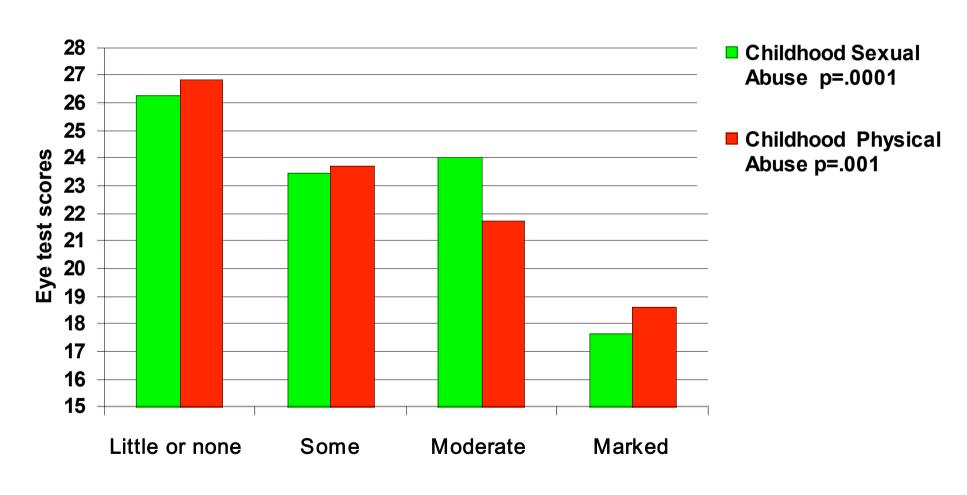
Participant's (N=143) Childhood Experiences of Care and Abuse



(Fonagy & Stein, 2005)

Agreement with contemporary Court or SRS records: Kendal's tau-b = .47, t = 5.81, p =.00001

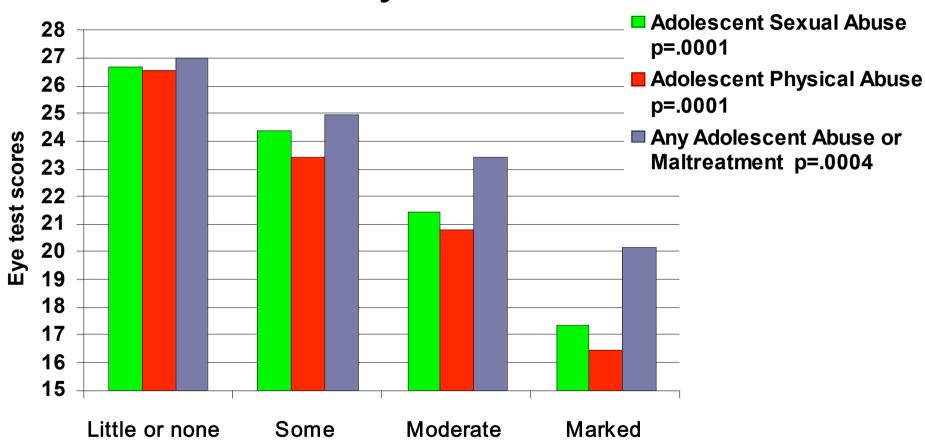
Performance on Eyes Test and Early Physical and Sexual Abuse



(Fonagy & Stein, 2005)

 R^2 (all CECA subscales)= .35, p<.005

Performance on Eyes Test and Adolescent Physical and Sexual Abuse



(Fonagy & Stein, 2005)

 R^2 (all CECA subscales)= .43, p<.005



The equation of inner and outer: PSYCHIC EQUIVALENCE

- In traumatised patients modes of representing the internal world re-emerge that developmentally precede an awareness that thoughts, feelings and wishes are part of the mind.
- The 2-3 year old assumes that what he thinks also exists in the physical world.
- This generates a lack of flexibility which we have termed <u>psychic equivalence</u>: mental states are equated with physical reality



The equation of inner and outer: PSYCHIC EQUIVALENCE

- An omnipotence of subjectivity ('I know what is right')
- Everything that is out there is felt to be known ('you can't tell me anything'). → No room for alternative perspectives.
- Post-traumatic subjective experience is invariably compelling → thinking about = reliving

The equation of inner and outer

JAMES:

"When you write to someone, it's like, you're going in that letter, you put your hand in the letter, or your whole body's in the letter. And when they open the letter, the words, you are the words so you know, it's like you're outside, but you're still in, still in prison."



Separation from reality: PRETEND

- The small child's fantasies are dramatically divided off from the external world
- Following trauma and the constriction of mentalisation we see the intrusion of the <u>pretend mode</u> particularly in dissociative experiences.
- Fantasy is cut off from the real world, is extended so that nothing has implications
- A compulsive search for meaning (hyperactive mentalization)



'I believe it when I see it':TELEOLOGY

- The re-emergence of a teleological mode of thought attributing 'goals' to objects that seem to behave purposefully which are not yet truly mental, they are tied to what is observable
- Following trauma, interacting with others at a mental level is replaced by attempts at altering thoughts and feelings through action: <u>the</u> <u>teleological mode</u>.
- The mind of another can only be altered in this same mode, through a physical act, threat or seduction

'I believe it when I see it'

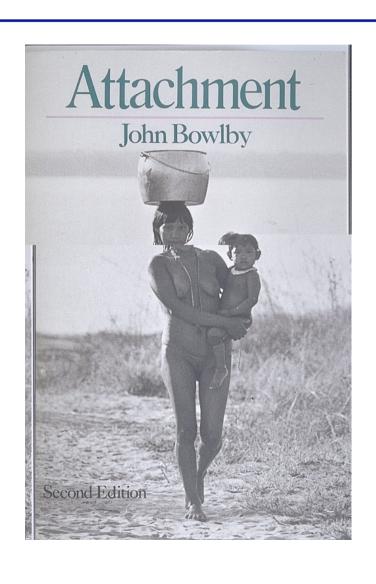
■Stuart:

"I tried to make them understand that I was upset so I was throwing things quite a lot, I threw my bed out of the window, I broke all the windows in the room. The only way I could make them understand that I did not like it."

A neuroscientific-attachment theory interpretation of the loss of mentalisation associated with trauma



Attachment theory and trauma



- Trauma triggers the attachment system
- Trauma may reactivate templates of early (infant-parent) relationships
- Classical attachment theory ignores the impact of the actualization of unconscious fantasies through the inhumanity of acts of abuse



The evolution of the social brain

- Richard Alexander: Our exceptional intelligence evolved not to deal with the hostile forces of nature but rather to deal with competition from other people
- An 'evolutionary arms race' among ever more effective social groups
- As the intelligence of the opposition increased so did the requirement for ever greater ability for understanding others (mentalization) and thus for:
 - > communication,
 - imaginative social and emotional understanding,
 - the anticipation of counter-strategies —
 - capacities finely honed in most psychoanalysts!



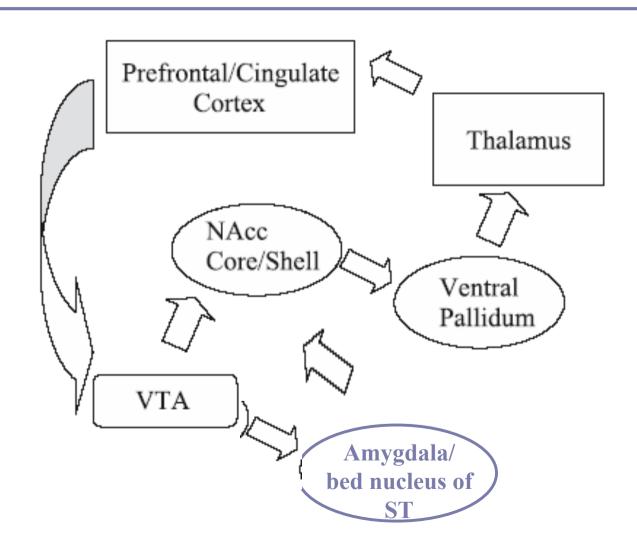
Self and other awareness and the brain

- Changes in social intelligence were changes in human brain structure.
 - > expansion in parts of the prefrontal cortex
 - large and clustered spindle cells unique to humans in the anterior cingulate cortex
 - disproportionate expansion of the right prefrontal cortex and the frontal pole
- Areas of the brain have been shown by imaging studies to be involved in self-awareness,
 - ➤ the ability to remember personal experiences, and to project oneself into the future
 - The right prefrontal cortex may be there 'to allow us to see ourselves as others see us so that we may cause competitive others to see us as we wish them to'

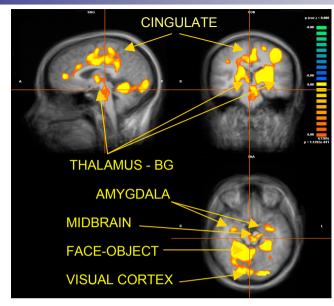
Attachment and the evolutionary 'arms-race of mentalisation'

- Increased sophistication in social cognition evolved hand in hand with apparently unrelated aspects of development,
 - helplessness in infancy,
 - > the prolongation of childhood,
 - > the emergence of intensive parenting
- The capacity to represent mental states symbolically
 - assumed by psychoanalysts to be acquired within the primary object relationship
 - Bion, Fairbairn, Winnicott, Kohut and S. Mitchell
 - brains have evolved to nurture this capacity within the parent-infant relationship

The mesocorticolimbic dopaminergic reward circuit in attachment & addiction processes

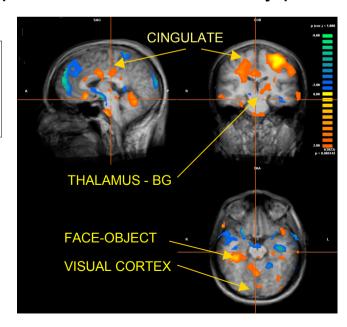


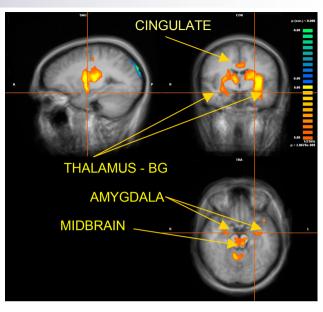
HEALTHY
MOTHERS OF
FIRST INFANTS
N=13



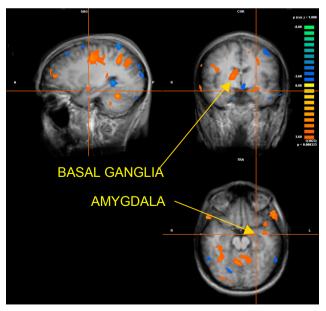
own baby pictures minus other baby pictures

HEALTHY
FATHERS OF
FIRST INFANTS
N=8



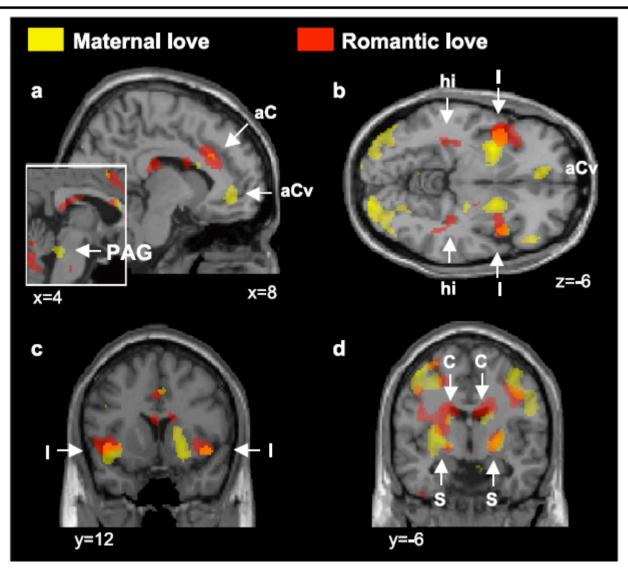


own baby pictures minus houses

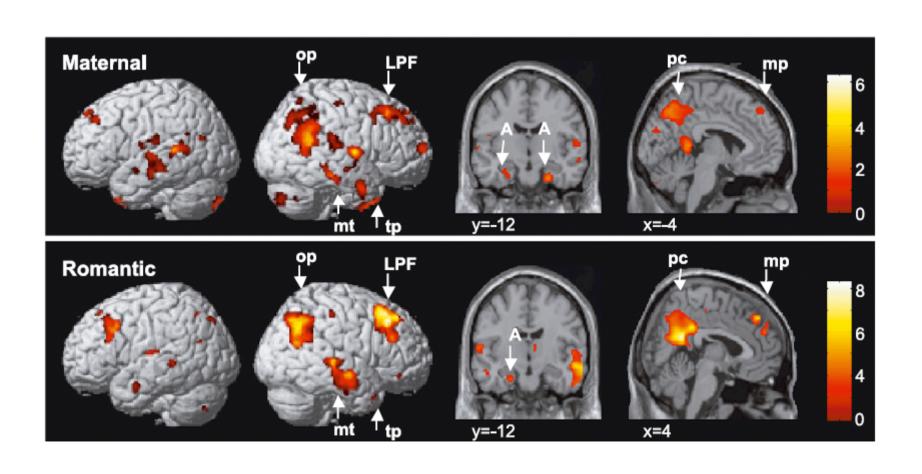


Swain et al., in preparation

The Bartels & Zeki (2004) study of overlap implying neural correlates of attachment



Common regions of <u>deactivation</u> with maternal and romantic love (Bartels & Zeki, 2004)



The neurobiology of attachment

- Attachment inhibits mentalisation because to be attached to someone is to trust them implicitly, to assume that their motivation is known and benign
 - ➤ "love is blind"
 - attachment figures will perhaps always remain somewhat enigmatic
- Missing out on early attachment experience creates a long term vulnerability
- Trauma, by activating attachment will often decouple the capacity for mentalization
 - Exacerbated when the trauma is attachment trauma

Clinical Complications

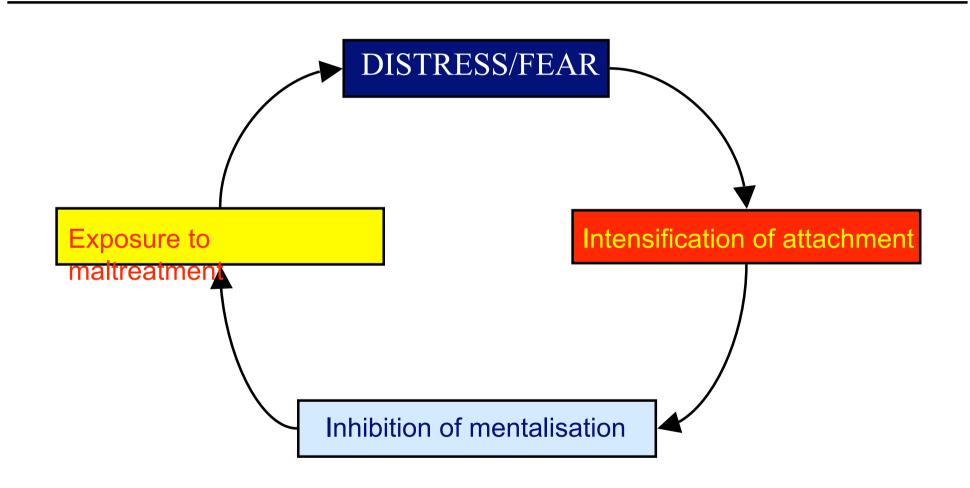
- ■The hyperactivation of attachment
- The biology of arousal
- Pathological projective identification

The impact of attachment trauma on mentalisation: the hyperactivation of attachment

- Attachment is normally the ideal 'training ground' for mentalization because it is safe and noncompetitive.
- Attachment trauma hyperactivates the attachment system because the person to whom the child looks for reassurance and protection is the one causing fear
- The devastating psychic impact of attachment trauma is the combined result of
 - > the inhibition of mentalization by attachment
 - ➤ the hyperactivation of the attachment system by trauma.

NA.

The Vicious Cycle of Maltreatment

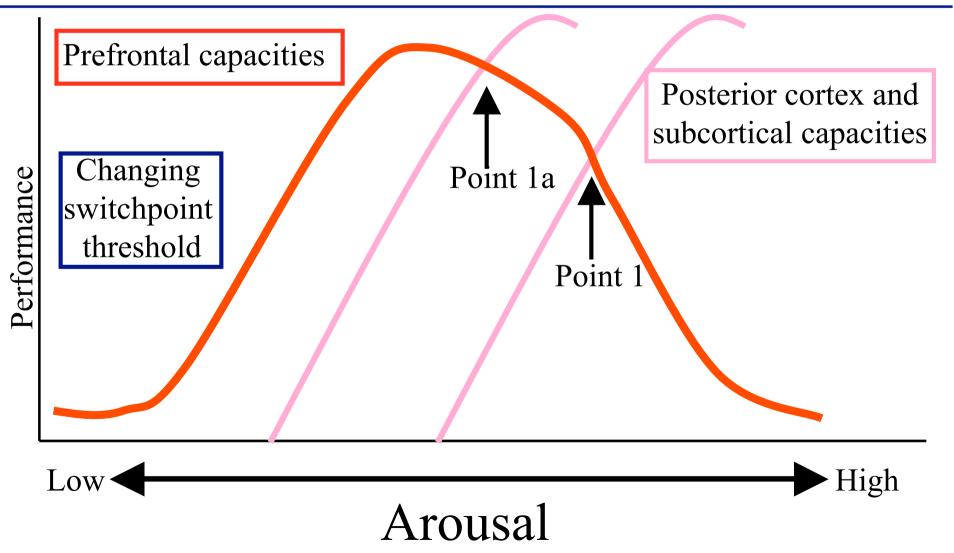


The 'hyperactivation' of the attachment system

The hyperactivation of attachment

- The child with attachment trauma often phobically avoids the mind of the parent →
 - → cannot use the model of the other to understand the self →
 - diffusion of identity and dissociation often follows
- Psychic reality comes to be experienced through incorporating the other
 - > as a phenomenological part of the self
 - >identification with the aggressor

The impact of attachment trauma on mentalisation: the biology of being frazzled



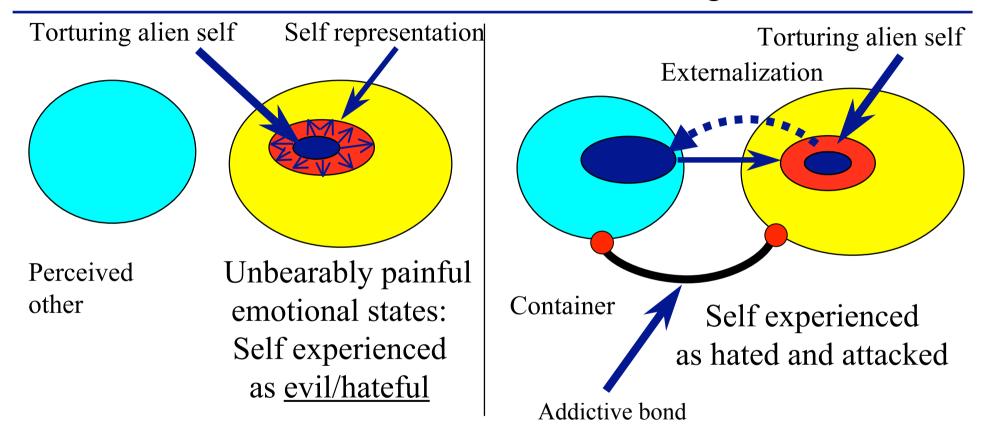
The impact of attachment trauma on mentalisation: the biology of being frazzled

- As arousal increases, in part in response to interpretative work, traumatised patients cannot process talk about their minds.
- Interpretations of the transference at these times, however accurate they might be, are likely to be way beyond the capacity of the patient to hear.
- The clinical priority has to be work to reduce arousal so that the patient can again think of other perspectives (mentalise).

The impact of attachment trauma on mentalisation: projective identification as a matter of life and death

- The first element in Bion's (1963) elements of psychoanalysis: "the essential feature of Melanie Klein's conception of projective identification...the dynamic relationship between container and contained"
- The infant is forced to internalise the other not as an internal object but as a core part of his self.
- In traumatized individuals internalizations are coloured by the traumatic context in which they occur → internalised as part of the self is a caregiver with terrifying intentions

Theory: Self-destructiveness and Externalisation Following Trauma



Projective identification is used to reduce the experience of unbearably painful emotional state of attack from within – externalisation becomes a matter of life and death and addicitve bond to abuser develops

The impact of attachment trauma on mentalisation: projective identification as a matter of life and death

Jake:

"The more you experience, the more immune you become to anything. If you get lured into a gang of queers and then, you're abused, you don't fear queers no more. You just probably revenge against them. 'Cause you can turn your mind, into their activity and use it against them. I'm not getting into fights or anything like that, but I do happen to get into people's heads and hurt them, do you know what I mean?"

The Clinical Approach

The object of mentalisation focused analysis

- Devastation of psychic function that attachment trauma leaves in its wake impairs capacity to cope with ALL the 'ordinary' vicissitudes of mental life
 - > unconscious conflicts over aggression,
 - > oedipal desires and defences mounted against them,
 - narcissistic vulnerabilities,
 - conflicts in relation to ambivalently cathected objects
- All the inescapable pains of the human condition are experienced with the immediacy of the open wound unprotected by the skin provided by mentalization.

The object of mentalisation focused analysis

- The intensity of the associated feelings should not mislead the analyst into thinking that these later conflicts are the underlying cause of the patient's mental anguish
- Aim of therapy is the establishment of a mentalising self to mentalize trauma, conflict and develop more secure relationships
- Enhancing mentalization bridges the gap between affects and their representation, especially with current mental states

Recovering memories of trauma

- Early trauma interferes with autobiographical memory through hippocampal damage
- The hyperactivation of the attachment system in individuals with trauma and the likely associated inhibition of mentalising may compromise knowing where an image comes from
- The therapist must be aware that the cognitive functions normally available, to prevent confusion between fantasy and memory, will be specifically compromised in traumatised individuals.

Canalu

Conclusions

- Consequence of trauma entail a decoupling of mentalization and re-emergence of nonmentalizing modes of psychic reality
- Non-mentalizing modes of experiencing subjectivity have potential to re-traumatise leading to further de-mentalization
- Trauma in attachment context is damaging because attachment assumes trust and therefore biologically suppresses mentalization



Conclusions

- Trauma in any case activates the attachment system and this limits mentalization but attachment trauma limits it even further through hypractivation of attachment system when bonding is to agent of trauma
- Unmentalized trauma endures as it undermines healing relationships through pathological projective identifications drawing patient closer to retraumatization
- To escape from grip of trauma the individual needs to recover mentalization through remembering or other routes

Thank you for listening!

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