Infancy and Borderline Personality Disorder

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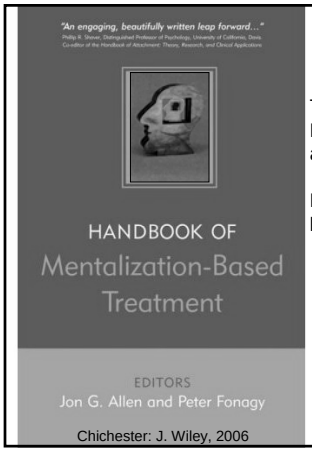

The talk is cribbed from this Book. But it is quite a boring and long book.

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

Or just send for the slides
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Borderline Personality Disorder

"a pervasive pattern of instability of mood, interpersonal relationships, self image and affects and marked impulsivity" (American Psychiatric Association, 1994)

Clinical Features of Borderline Personality Disorder (DSM-IV: 5 of 9)

- a pattern of unstable intense relationships,
- inapp**unstable relationships**
- frantic efforts to avoid abandonment
- affe**affective dysregulation**
- impulsive actions
- **impulsivity**
- recurrent self-harm & suicidality
- chron**psychotic symptoms**
- transient, stress-related paranoid thoughts
- identity disturbance: severe dissociative symptoms

A working definition of mentalization

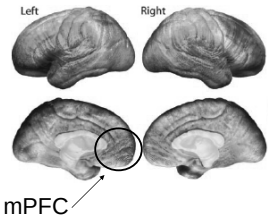
Mentalizing is a form of imaginative mental activity, namely, perceiving and interpreting human behaviour in terms of intentional mental states (e.g. needs, desires, feelings, beliefs, goals, purposes, and reasons).

Getting a handle on mentalisation

- Understanding others from the inside and oneself from the outside
- Having mind in mind
- Mindfulness of minds
- Understanding misunderstanding
- What empathy could be made of
- Alternative terms (reflective function, mind-mindedness, psychological mindedness, observing ego)

The social brain

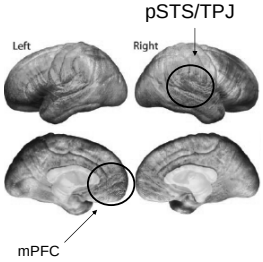
- 1. Medial prefrontal cortex
  - ➢ Mentalising proper
    - o Implicit ability to infer mental states such as beliefs, feelings and desires



Fletcher et al., 1995; Gallagher et al., 2000; Gilbert et al., 2006 (meta-analysis)

The social brain

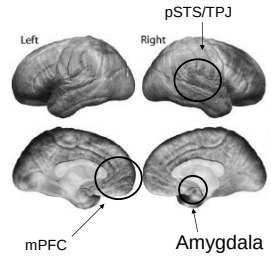
- 2. pSTS/TPJ
  - ➢ Prediction
    - o Biological motion, eye gaze
  - ➢ Perspective-taking
    - o Different physical points of view



Pelphrey et al., 2004a,b; Kawawaki et al., 2006 (review); Mitchell 2007

The social brain

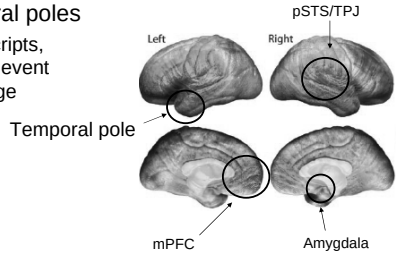
- 3. Amygdala
  - ➢ Attaching reward values to stimuli
    - o 'Approach' vs. 'avoid'
  - ➢ Facial expressions



Dolan 2002; LeDoux 2000; Winston et al., 2002; Phelps et al., 2000, 2003

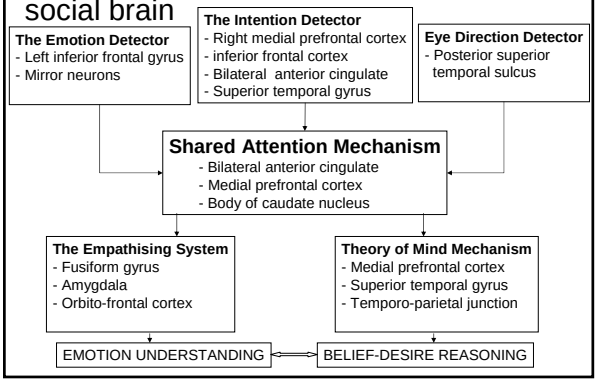
The social brain

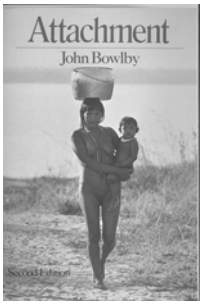
- 4. Temporal poles
  - ➢ Social scripts, complex event knowledge



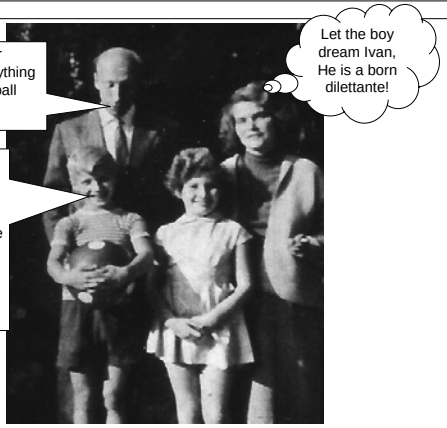
Funnell, 2001; Damasio et al., 2004; Moll et al., 2001, 2002, 2005 (review)

Baron-Cohen's (2005) model of the social brain





The Nature of Attachment



John Bowlby's Discovery: The Nature of the Attachment System

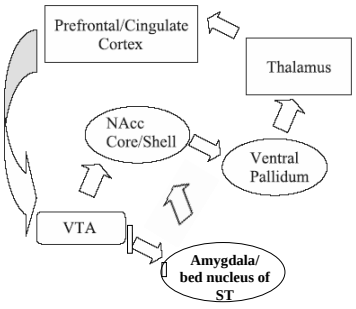
- Universal human need to form close **affectional** bonds
- Extended period of immaturity ➔ attachment as a behavioral system **triggered by fear** to ensure the safety of offsprings
- Reciprocity: attachment behaviours of infants are reciprocated by adult **caregiving behaviours** → creates attachment to particular adult

Konrad Lorenz's Discovery: Imprinting

Attachment as an Addiction

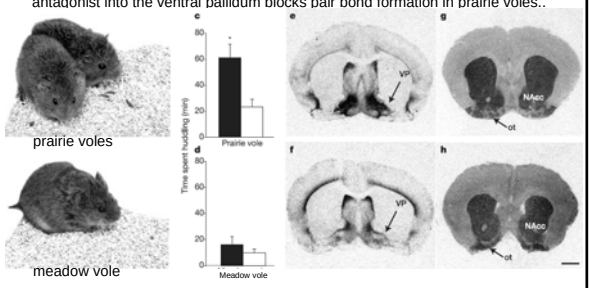
- **MacLean** (1990) speculated that substance abuse and drug addiction were attempts to replace opiates or endogenous factors normally provided by social attachments
- **Panksepp** (1998) a common neurobiology to
  - mother–infant,
  - infant–mother, and
  - male–female attachment
- **Insel** (2003) "Social attachment is an addictive disorder?"

The mesocorticolimbic dopaminergic reward circuit in addiction process



Preclinical Models of Parenting

The ventral pallidum, located within the ventral forebrain and the mesolimbic dopamine reward pathway, highly expresses vasopressin V1a receptors (V1aRs) in monogamous prairie and pine voles, but not in promiscuous meadow or montane voles. Site-specific infusion of a selective V1aR antagonist into the ventral pallidum blocks pair bond formation in prairie voles..

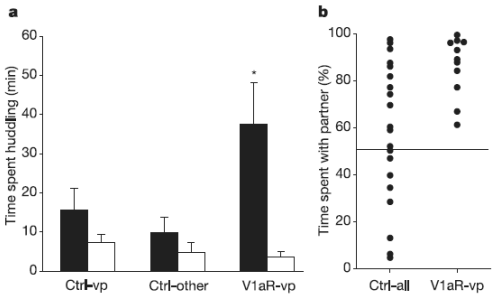


V1aRs in the ventral forebrain are crucial for pair bond formation, and this V1aR pattern seems to be correlated with monogamous social organization across diverse taxa.

The Role of OT and AVP in Relationships

- Partner preference formation in the socially promiscuous meadow vole can be increased by using viral vector V1aR gene transfer into the ventral forebrain ➔
  - ➢Increases partner preference➔
  - ➢Provides a potential molecular mechanism for the rapid evolution of complex social behaviour (Lim et al., 2004, Nature).

Lim et al. (2004) study of meadow voles



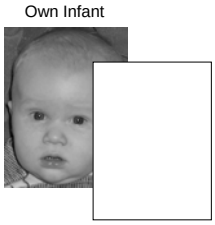
Neuroimaging Studies of Attachment

Randomly Presented Facial Images in Functional MRI (Strathearn et al., in preparation)

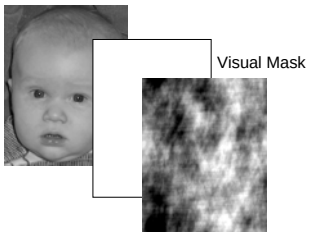
Own Infant

2 sec.

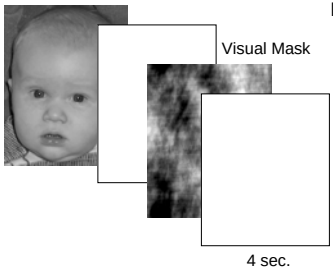
Randomly Presented
Facial Images in fMRI



Randomly Presented
Facial Images in fMRI



Randomly Presented
Facial Images in fMRI



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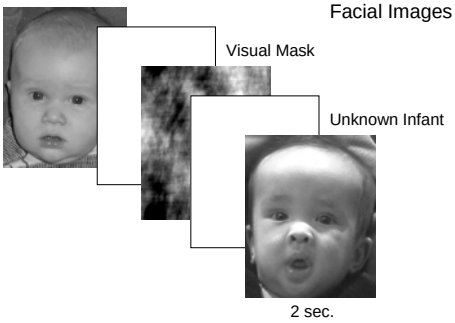
Facial Images in fMRI



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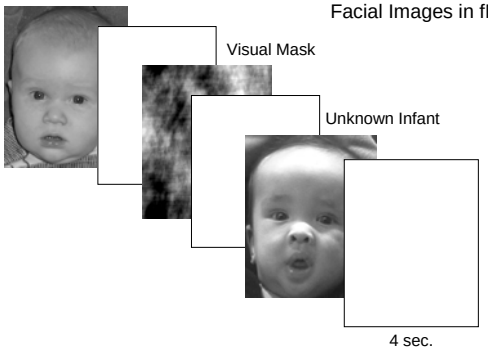
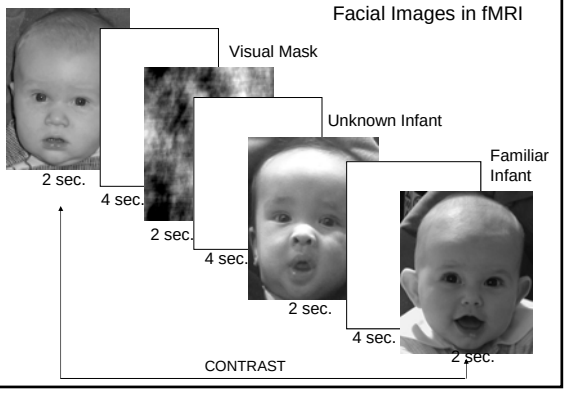
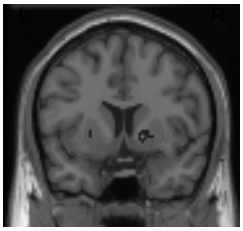
Facial Images in fMRI



Randomly Presented
Facial Images in fMRI

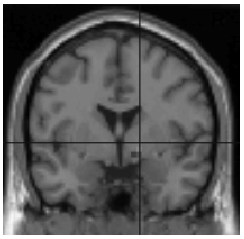


R Globus pallidus / Ventral Striatum and L Putamen



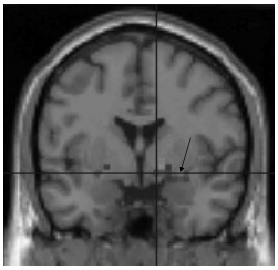
y = 8 mm

Bed Nucleus of the Stria Terminales / Globus Pallidus / Nucleus Accumbens



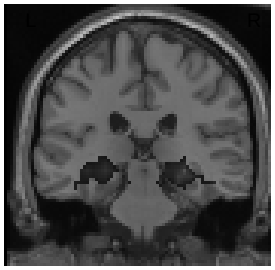
y = 0 mm

Amygdala



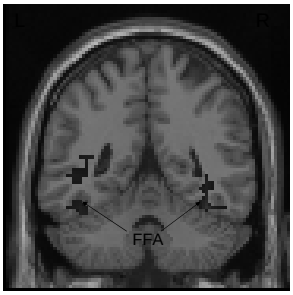
y = -6 mm

Bilateral Hippocampi



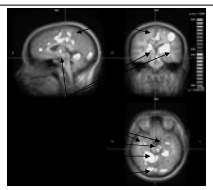
y = -28 mm

Fusiform Face Area (FFA)

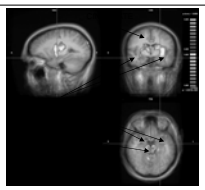


y = -48 mm

HEALTHY **MOTHERS** OF FIRST INFANTS
N=13



own baby pictures minus other baby pictures

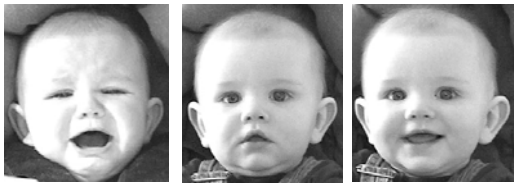


own baby pictures minus houses

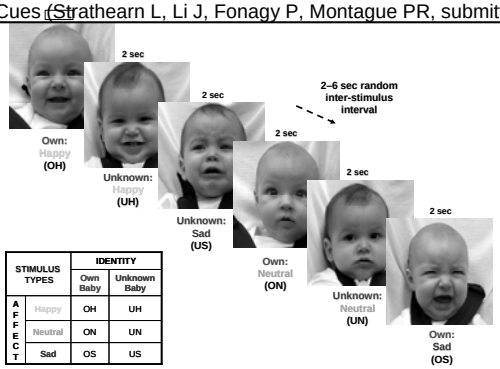
Swain *et al.*, in preparation

Do Different Affective States Trigger the Attachment System Equally?

Crying **Neutral** **Smiling**

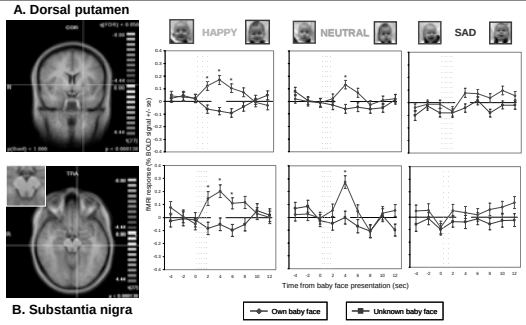


What's in a Smile? Maternal Brain Responses to Infant Facial Cues (Strathearn L, Li J, Fonagy P, Montague PR, submitted)



STIMULUS TYPES		IDENTITY: Own Baby	IDENTITY: Unknown Baby
AFFECT	Happy	OH	UH
	Neutral	ON	UN
	Sad	OS	US

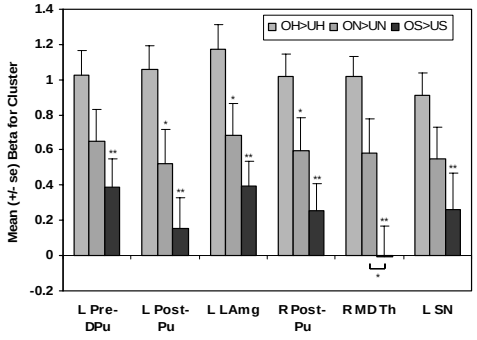
Brain response of mothers viewing their own baby's face



Areas of significant activation from own-happy vs. unknown-happy baby

Region-of-Interest / Cluster			t(27) (peak)		
Anatomical Region	Talairach coordinates (x, y, z)	Cluster size (m^3)	OH>UH	ON>UN	OS>US
Cerebrum (Cluster threshold = 100 voxels)					
L dorsal putamen (pre-commissural)	-21, 2, 4	166	7.58***	3.59*	2.53
L putamen (post-commissural)	-27, -14, -1	117	7.89***	2.81*	0.97
L lateral amygdala	-30, -6, -12	182	8.25***	3.82**	2.87*
R putamen (post-commissural)	24, -17, 9	122	7.93***	3.04*	1.72
R medial dorsal thalamic nucleus	9, -18, 4	169	8.57***	3.02*	-0.04
Midbrain (Cluster threshold = 20 voxels)					
L substantia nigra	-9, -22, -12	44	7.14***	3.05*	1.25

Progressive decrease in activation depending on infant affect



Intersubjectivity and Affect Regulation

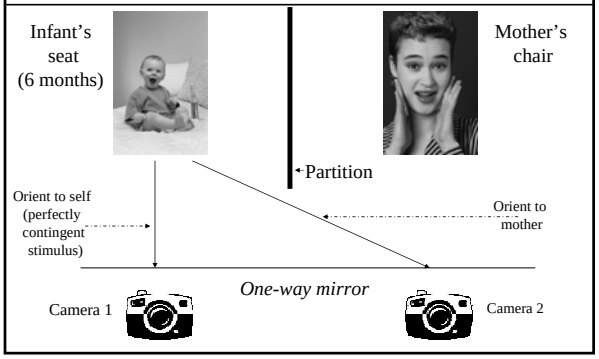
The Development of Affect Regulation

- Closeness of the infant to another human being who via **contingent marked mirroring** actions facilitates the emergence of a symbolic representational system of affective states and assists in developing affect regulation (and selective attention) ➔ secure attachment
- For normal development the child needs to experience a mind that has his mind in mind
  - ➢Able to reflect on his intentions accurately
  - ➢Does not overwhelm him
  - ➢Not accessible to neglected children

Mirroring sadness

Unmarked mirroring Marked mirroring

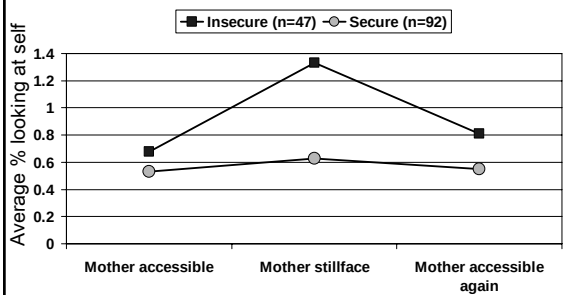
Experimental Arrangements for the Contingency Performance Modified Still Face Study (Koos et al, 2000)



High congruent & marked mirroring

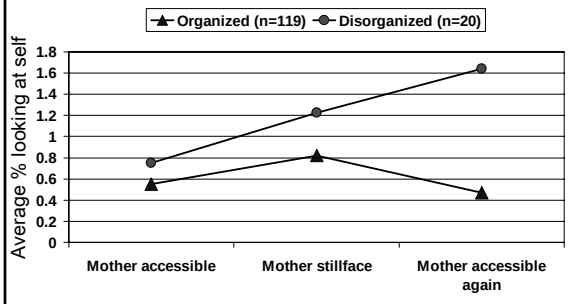
Low congruent & unmarked mirroring

Duration of Looking at Self During Three Phases of Modified Still Face Procedure



(Gergely, Fonagy, Koos, et al., 2004) F(interaction)=6.90, df=2,137, p<.0001

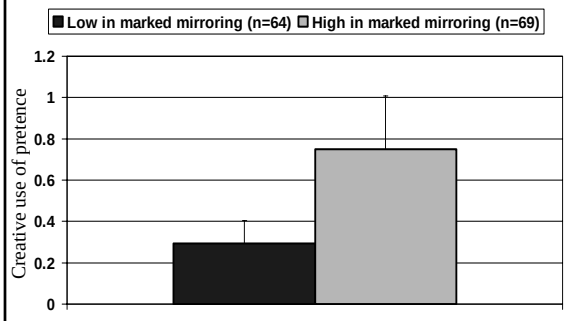
Duration of Looking at Self During Three Phases of Modified Still Face Procedure



(Gergely, Fonagy, Koos, et al., 2004) F(interaction)=12.00, df=2,137, p<.0001

Pretence task at 3 years

High and low marked mirroring by mothers in the MIS (6m) predicting the creative use of pretence (3 years)



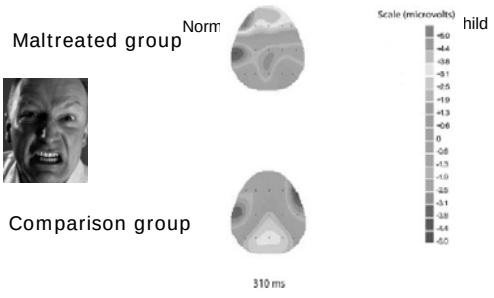
(Gergely, Koos, Fonagy et al., 2006) Mann-Whitney=196, z=2.4, p<.006

Attachment Trauma

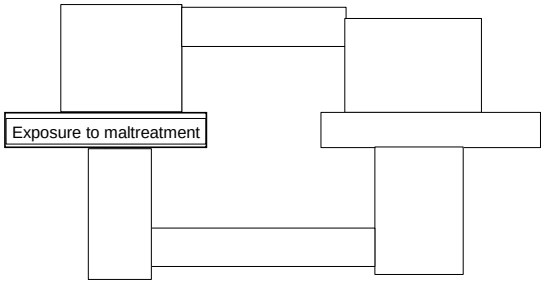
Child Abuse and Neglect

- In the United States, almost 3 million allegations of child abuse and neglect are received each year (1 million confirmed)
- Mortality: 2,000 deaths per year
- Morbidity: 18,000 permanently disabled children per year
  - Cognitive impairment
  - Behavioural and psychiatric morbidity
- A significant proportion of patients with BPD have history of childhood trauma
  - In *some* individuals trauma disrupts the attachment system

EEG study of the responses of maltreated and non-maltreated children to viewing an angry face (Cicchetti & Curtis, 2005 Dev. & Psychopath.)



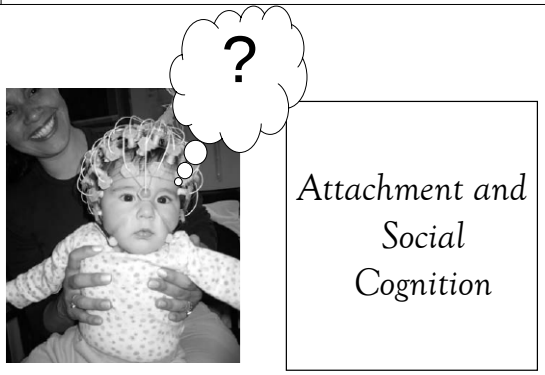
Attachment Disorganisation in Maltreatment



The 'hyperactivation' of the attachment system

The hyperactivation of attachment in BPD

- We assume that **the attachment system in BPD is "hypersensitive"** (triggered too readily)
- Indications of attachment hyperactivity in **core symptoms** of BPD
  - Frantic efforts to avoid abandonment
  - Pattern of unstable and intense interpersonal relationships
  - Rapidly **escalating tempo** moving from acquaintance to great intimacy



Genetics of Social Cognition: Passing ToM Battery

N=120

Hughes, C., & Cutting, A. (1999)

Psychological Science, 10, 429-432.

N=1,116

Hughes, C., Jaffee, S. R., Happe, F., Taylor, A., Caspi, A., & Moffitt, T. E. (2005) Child Dev, 76(2), 356-370.

"Bivariate model-fitting analyses yielded modest genetic effects"

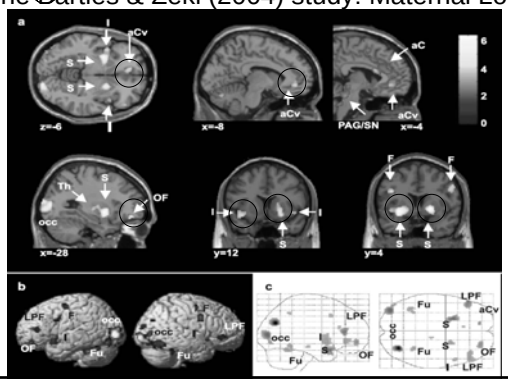
Environmental Influences on the Development of Social Cognition

- **Maternal disciplinary style** (Ruffman, Perner, & Parkin, 1999; Vinden, 2001)
- **Other features of the emotional climate within the family** (e.g., Cassidy et al., 1992; Denham, Zoller, & Couchoud, 1994)
- **The inclination of mothers to take the psychological perspective of their child, including *maternal mind-mindedness* and *reflective function* in interacting with or describing their infants** (Fonagy, Steele, Steele & Holder, 1996; Fonagy & Target, 1997; Meins et al., 2003; Meins, Fernyhough, Wainwright, Das Gupta, Fradley, et al., 2002; Peterson & Slaughter, 2003; Slade, 2005; Sharp, Fonagy; & Goodyer, 2006)

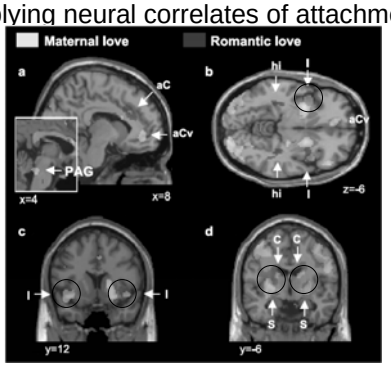
Range of Environmental Influences on the Development of Social Cognition

- **The quality of children's primary attachment relationship *facilitates theory of mind development*** leading to passing standard theory of mind tasks somewhat earlier (e.g., de Rosnay & Harris, 2002; Fonagy & Target, 1997; Fonagy, Redfern, & Charman, 1997 Harris, 1999; Meins, Fernyhough, Russell, & Clark-Carter, 1998; Raikes & Thompson, 2006; Steele, Steele, Croft, & Fonagy, 1999; Symons, 2004; Thompson, 2000; Ontai & Thompson, 2002)
  - Not all studies find this relationship and it is more likely to be observed for emotion understanding then ToM

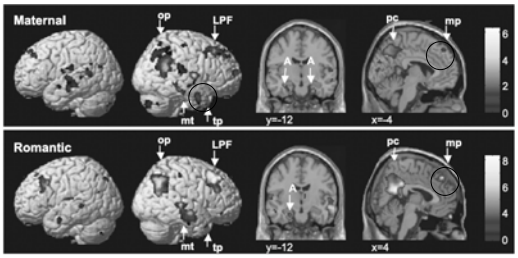
The Bartles & Zeki (2004) study: Maternal Love



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



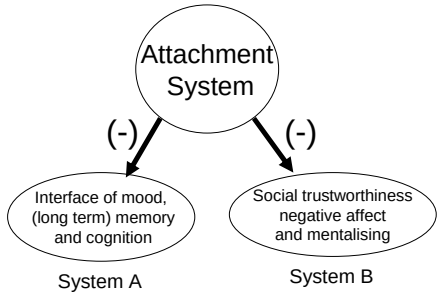
Common regions of deactivation with maternal and romantic love (Bartels & Zeki, 2004)



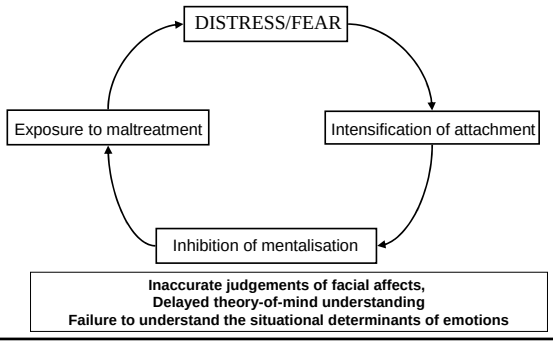
Both maternal and romantic love elicit an overlapping set of deactivations

- middle prefrontal, inferior parietal and middle temporal cortices mainly in the right hemisphere, as well as the posterior cingulate cortex ➔
  - attention, long-term memory, variable involvement in both positive but mainly negative emotions ➔
    - **underpin interface of mood related memory & cognition**
- temporal poles, parietotemporal junction and mesial prefrontal cortex ➔
  - social trustworthiness, moral judgements, 'theory of mind' tasks, solely negative emotions, attention to own emotions
    - **underpin determining other people's emotions and intentions**

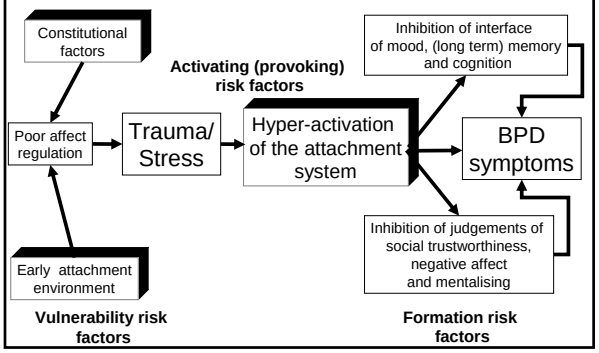
Schematic Representation of Attachment Related Brain Activation



Inhibition of social understanding associated with maltreatment can lead to exposure to further abuse



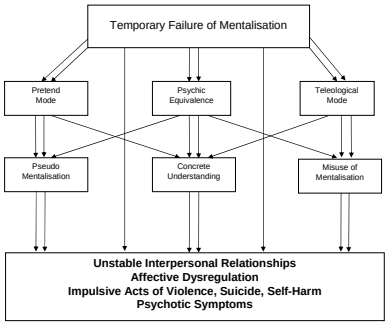
Schematic Model of BPD



Prementalizing Modes of Subjectivity Dominate in BPD

- Psychic equivalence:
  - Mind-world isomorphism; mental reality = outer reality; internal has power of external
  - Intolerance of alternative perspectives
- Pretend mode:
  - Ideas form no bridge between inner and outer reality; mental world decoupled from external reality
  - "dissociation" of thought, hyper-mentalizing or pseudo-mentalizing
- Teleological stance:
  - A focus on understanding actions in terms of their physical as opposed to mental constraints
  - Cannot accept anything other than a modification in the realm of the physical as a true index of the intentions of the other.
  - Misuse of (cognitive) mentalization ➔antisocial PD

Understanding suicide and self-harm in terms of the temporary loss of mentalisation



Understanding suicide and self-harm in terms of the temporary loss of mentalization

- Loss ➔
  - *Increase attachment needs ➔ triggering of attachment system ➔*
- Failure of mentalization ➔
  - *Psychic equivalence ➔ intensification of unbearable experience ➔*
  - *Pretend mode ➔ hypermentalization meaninglessness, dissociation ➔*
  - *Teleological solutions to crisis of agentive self ➔ manipulative suicide attempts, self-cutting*

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