An Introduction to Neuroscience: Why is it important for psychotherapists?

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Consultant Psychiatrist in Psychotherapy
Exeter
Why are you here?
Some common preconceptions

Neuroscience is neurology

Neuroscience is psychiatry

Psychodynamic neuroscience is a new sort of phrenology

Psychodynamic therapy is about relational meaning in the moment it operates in a different domain from empirical scientific research.

“Perverts the essential nature of psychoanalysis”
(Blass and Carmeli 2007, 2015)

For:
(Solms, Yovell and Fotopolou 2015)
So why bother?
The Guira Cuckoo
So why bother?

Falsifiability

Because we know so little and have so much to discover
Joining the scientific mainstream
Psychodynamic psychotherapy in the public sector.

Asking the right scientific questions
What is useful for practitioners?
Building blocks

Neurones

Neurotransmitters

Anatomy

Perceptual and motor systems

The limbic system

Subcortical areas
Neurones
Neurotransmitters

Serotonin (SSRIs)
Noradrenaline
Dopamine (Antipsychotics)
GABA (Benzodiazepines)

Opiates
Oxytocin
Brain

- **Longitudinal fissure** - cerebral hemispheres.
  - gyri = folds;  sulci = grooves
  - cortex = surface layer of gray matter
  - nuclei = deeper masses of gray matter
  - tracts = bundles of axons (white matter)
Anatomy

- Central sulcus
- Precentral gyrus
- Postcentral gyrus
- Lateral sulcus
- Parietal lobe
- Frontal lobe
- Temporal lobe
- Occipital lobe
- Cerebellum
- Pons
- Medulla oblongata
Medial view

Brain: Medial view

The Default Mode Network
Domain 2

Anterior Cingulate Cortex

Front

Back
The Insula
Relevant systems
Self and other in the brain
Self and Other in the external world

Brain: Lateral View

- Inferior Parietal Lobule
- Supramarginal Gyrus
- Angular Gyrus

The Fronto-parietal Cortex and Mirror Neurone System

Domain 1
Prosody and Mirror neurones

Mirror neurones (Rizzolatti 1995, Gallese 1996)

Prosody

Gesture and facial expression in development. (Ruth Feldman)
The still face test
‘Internal’ self and other and the default mode
Jaak Panksepp

Basic Emotion Command Systems

SEEKING
PANIC
FEAR
RAGE
PLAY
Basic emotion Command Systems

Brain: Medial view

The Default Mode Network
Domain 2

Anterior Cingulate Cortex

Front

Back
The Anatomy and Biochemistry of Panksepp’s BECS

<table>
<thead>
<tr>
<th>BECS</th>
<th>Anatomy</th>
<th>Neurotransmitters</th>
<th>Function</th>
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</thead>
<tbody>
<tr>
<td>SEEKING</td>
<td>Mesolimbic Mesocortical pathway</td>
<td>Dopamine</td>
<td>Energetic exploration to find resources to satisfy appetite.</td>
</tr>
<tr>
<td>PANIC</td>
<td>PAG to the Anterior Cingulate Cortex</td>
<td>Opiates, Oxytocin</td>
<td>Separation distress circuits.</td>
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<tr>
<td>FEAR</td>
<td>PAG to amygdala</td>
<td>Glutamate,</td>
<td>Fear of attack by persecutors.</td>
</tr>
<tr>
<td>RAGE</td>
<td>PAG to Medial amygdala</td>
<td>Substance P, GABA, Ach.</td>
<td>Hot: Fight flight Cold: Predatory</td>
</tr>
<tr>
<td>PLAY</td>
<td>PAG Thalamus and Parietal Cortex</td>
<td>Opiates</td>
<td>An endogenous urge for ‘Rough and Tumble’</td>
</tr>
</tbody>
</table>
AFFECT: The PANIC and SEEKING systems

SEEKING (Dopamine)
- Exploration
- Foraging
- MANIA and PSYCHOSIS
- Stimulants

PANIC (Opiates and Oxytocin)
- Separation distress
- Proximity seeking
- Depression
- Opiates
The embodied self
The Insula and emotional feeling

Exteroception → Insula

Interoception
- Affect
- Visceral Sensation
- Hormones

“My feeling about that thing at this moment in time” (Craig 2009)
The subjective and objective body and the illusion of continuity of the self

The body as subject:

*The internal body is not an object of perception unless it is externalized and presented to the classical senses; it is the subject of perception. It is the background state of being conscious. This is of paramount importance. We may picture this aspect of consciousness as the page upon which external perceptions are inscribed...* 

(Solms 2013)
The objective body: The rubber hand illusion
Susan Mizen
NHS Psychiatrist and Psychoanalytic Psychotherapist working with patients with Personality Disorders and eating disorders

Aikaterina Fotopoulou
Neuroscientist studying Right hemisphere lesions and Anosognosia for hemiplegia

What could we possibly have in common?
Discontinuities of the self

Anosognosia for hemiplegia

Damage to the Right Hemisphere Can ‘Split’ the Self

Anosognosia for Hemiplegia
Babinski, 1914: Apparent, intractable unawareness of motor deficits after stroke

Asomatognosia/Somatoparaphrenia (DSO)
Gerstmann, 1942: Pts fail to recognise their own limbs, sometimes they feel they fade away, or they belong to someone else

Fotopoulou, 2014; 2015 for reviews
Discontinuities of the self
Anorexia Nervosa
Consciousness

Solms
The Conscious Id
(Neuro-psychoanalysis 2013)
What does this mean for my practice as a therapist?
The Relational Affective Model
Symbolisation
The symbolisation pathway in the brain
Relating and Triangulation

0-9 months
  Face to Face interaction with mother
  (Primary intersubjectivity)

9-12 months
  Triangulation
  (Secondary intersubjectivity)

Autistic Spectrum Disorder
  Hobson (2002)

Hobson’s triangle
Triangulation in psychoanalysis

Ron Britton

The collapse of triangular space in narcissistic disorder.
Failure to symbolise

AFFECTIVE
Symbolisation

RELATIONAL
Me
You
The World

Emotional Feeling
SEE
BODY - Homeostasis

ASD
Failure to symbolise

AFFECTIVE
Symbolisation

RELATIONAL
You
Me
The World

Emotional Feeling
AFFECT
BODY - Homeostasis

Anorexia
Failure to symbolise

AFFECTIVE
Symbolisation

RELATIONAL
External World Relations
Internal World Relations
The World
You
Me

Emotional Feeling
AFFECT
BODY - Homeostasis
Summary of failures of symbolisation

Symbolisation requires:

- Affective engagement
- Relating
- First and third person position taking (Triangulation)

Triangulation fails because of:

- Inadequate affective engagement
- Relational failures
- Psychodynamic defences
Failures of symbolisation in Narcissism: A psychoanalytic account

The Relational Affective Formulation
Characteristics of Severe and Complex PD

- RISK
  - Personality disorder,
  - Eating disorder,
  - Somatisation,
  - Autistic spectrum disorder
  - Substance misuse
Projective identification in narcissism

Rey states:

“The infant, in a state of absolute dependence, must come to terms with the reality that the other is at once needed, good and separate”.
Where this cannot be negotiated, either separateness or need are defended against by acquisitive and attributive projective identification. (Britton)
Acquisitive projective identification (thin skinned narcissism)

The mental and bodily attributes of the other are treated as though they belong to the self
‘You are me’.
Otherness is denied
Two minds are felt to be one
Mother is related to as though she and baby exist inside the same skin
All that represents separateness is attacked.
Objectivity is intolerable

Hyper-subjective
‘You and I are one’
Case Study

Mr Z
Attributive projective identification
(thick skinned narcissism)

Painful, threatening attributes of the self are disavowed and treated as though they belong to the other.

‘I am you’.

The subjective connection with the disavowed part is denied. One mind is felt to have become two.

Dependent parts are projected, the patient behaves as though they need nothing and provide all.

Subjectivity is intolerable.

Hyper-objective
‘Part of me becomes you’

M

| B

(Atribution)
Case study

Mrs Y
Self and other states

Agoraphobic state: State of self and other in phantasy

Claustrophobic state: State of self and other in phantasy

M – I/You amalgam

Acquisition (Acquisitive PI)

Disavowal (Attributive PI)
# The Relational Affective Formulation

<table>
<thead>
<tr>
<th></th>
<th>Agoraphobic State</th>
<th>Claustralophobic State</th>
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<tbody>
<tr>
<td><strong>Splitting</strong></td>
<td>Only Love</td>
<td>Hatred of love</td>
</tr>
<tr>
<td><strong>Separation</strong></td>
<td>Only want to be with</td>
<td>Only want to be apart</td>
</tr>
<tr>
<td><strong>Object relationship</strong></td>
<td>Inside the object</td>
<td>Outside the object</td>
</tr>
<tr>
<td><strong>Pattern of dependence</strong></td>
<td>Malignant regression</td>
<td>Pseudo-independence</td>
</tr>
<tr>
<td><strong>Dominant Anxiety</strong></td>
<td>Trapped</td>
<td>Dropped ‘Fear of falling forever’</td>
</tr>
<tr>
<td><strong>Aggression</strong></td>
<td>Attack on the possibility of separation</td>
<td>Attack on the possibility of connection</td>
</tr>
<tr>
<td><strong>Affect</strong></td>
<td>Schizoid state mimicking depression</td>
<td>Elevated mood</td>
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The Claustro-agoraphobic Cycle

1. Trapped
2. ‘Get inside’
3. Dropped
4. ‘Get outside’
Separation

SELF ➔ Need ➔ OTHER
Claustrophobia: Trapped

B  M
‘Get outside’
Agoraphobia: ‘dropped’
‘Get inside’
Ron Britton
The collapse of triangular space.

Acquisition – hyper-subjective

_Egocentricity without allocentricity (Anosognosia)_

Attribution – hyper-objective

_Allocentricity without egocentricity (Anorexia)_)
Relational Affective Model

References:

