

Glossary of Neurological Terms

Working Implicitly in Psychotherapy

What Decades of Neuroscience Study Has Taught Me about Being a Psychotherapist

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Neurons: The name given to cells that conduct energy throughout the brain utilizing an electrical-chemical modality

Glia cells: Smaller brain cells that maintain homeostasis, form myelin, and provide support and protection for neurons in both the brain and peripheral nervous system.

Synaptogenesis ; Neurons are connecting with one another, new receptor sites form and the axons of the neurons become covered with a myelin sheath that speeds conduction and information through the brain.

Neurogenesis: growth of entirely new neurons

Broadman Areas: A numbering system that serves to define functional regions in the cortex

RB: Right Brain

LB: Left Brain

Protoconversation: Elementary non-verbal conversations between parents and children using touch, vision and voice prosody.

Prosody: The right-hemisphere-mediated “musical” qualities of the voice; intonations, volume, timbre, intensity, speed, warmth etc. that carry the non-verbal affective information and ride along with the left hemisphere-generated grammar and vocabulary.

Mirror Neurons: Neurocircuits of empathy. Circuits in the brain that fire when we see someone behave in an intentional way, such that the same areas of our brains that we would use to complete that action, will fire in a “neural imitation” that helps us understand our world from the “inside out”.

Occipital lobe: The lobe at the back of the brain most involved in vision.

Fusiform Gyrus:- Face processing area of the brain, located in the inferior temporal lobe. The right fusiform decodes facial expressions of emotions

Prosopagnosia: The inability to recognize faces; even one's own or one's mother's face.

“Rouge or Smudge” Self-Recognition Test: Measures the capacity of the infant to recognize its own reflection.

ANS: The part of the body's nervous system that is not usually under conscious control.

SNS Sympathetic nervous system: The part of the autonomic nervous system that energizes the body into a “fight or flight” reaction.

PNS parasympathetic nervous system: The part of the autonomic nervous system that calms the body into a “rest-digest” state.

(HPA) Hypothalamic Pituitary Adrenal Axis: The interactions between three endocrine glands, the hypothalamus, the pituitary, and the adrenal glands on top of the kidneys, that results in the release of Cortisol into the body and brain..

Cortisol: A steroid hormone, more specifically a glucocorticoid, which acts as the major stress hormone of the body.

OFC Orbital Frontal Cortex: Main regulating center of the brain; also the “self-observing”, “witnessing mind”.

Anterior Cingulate: 2nd major regulating center; also processes physical and emotional pain.

GABA pathways: cables of neurons that carry Gaba Amino Butyric Acid, one of the body's naturally produced relaxants, works like valium to calm the limbic brain, especially the amygdala.

Amygdala: Main arousal center in the brain; constantly scans the environment for danger.

Amygdala hijack: In a perceived emergency, the amygdala will bypass the slower, higher cortical centers and react with a “fight” or “flight” response.

Hyperactive: Highly aroused.

Critical Ages: Periods of time when neurons must be turned on and connected with other neurons or the organism loses that particular developmental capacity.

Hypothalamus: The head ganglion of **both** the ANS and the body's neuroendocrine system. The Amygdala connects with the hypothalamus to send the body into an excitatory "fight" or "flight" response in order to protect itself.

Pituitary Gland: The major endocrine gland of the body that sends various cascades of hormones into the body.

Hormonal Cascades: Hormones acting as signals between the brain and the body. One of the major ways the brain affects the rest of the body's activities.

Biphasic Arousal: A response that swings between high levels of hyper-activation and very low levels of hypoarousal.

Affect synchrony; affect resonance: The resonant state where one individual becomes attuned to the emotional energy and intention of another.

Attachment: The bonding system between any two organisms, experienced affectively as love.

Preoccupied: Parents who are present and attuned to their infants but only part of the time such that they create an anxious, ambivalent attachment with their infant.

Dismissive: Parents who may care well for an infant's physical needs, but do not attune to the child's emotional states such that they create an **avoidant attachment** with their children.

Avoidant Attachment: Children (and adults) who auto regulate or dissociate rather than regulate their own and other's emotional states.

Unresolved: The term for parent with untreated, still active trauma who are so emotionally erratic as to create a relationship with their children in which the children both need and fear them.

Disorganized Attachment: A style of attachment in which the infant has no coherent strategy for dealing with both their need for, and terror of, their main attachment figures.

Dissociation: a survival defense against, pain in which an overwhelmed individual cannot escape nor take meaningful action or successful flight, and so escapes by blocking affects associated with emotional pain from consciousness.

Vagus Nerve: the main nerve of the PNS that connects the brain stem with organs in the neck, (larynx, trachea) thorax and through much of the abdomen allowing the individual to calm and connect (**Ventral vagal social engagement system**) or under extreme conditions to dissociate (**Dorsal vagal brake**).

Ventral Vagal System: Social Engagement The part of the vagus nerve that enervates most of the body's organs including the heart, passes through the neck, (larynx, and trachea) and becomes the 10th facial nerve such that people can use their voice (prosody) and facial expressions to reassure and connect with other human beings.

Dorsal Vagal System: the vagal brake → Dissociation: A brain stem level (unconscious) reaction to terror, "feigning death" to escape a predator.

Still Face: A condition where one individual drops out of resonant connection with another such that eye contact is a vacant stare. Used experimentally but can also occur when one individual in a dyad dissociates and drops out of attunement with the other.