ontogenesis

affect regulation and the origin of the self within the motherhood constellation

derek dey 2014-15

Abstract: *Freud's Oedipal Theory emerged from an early introspective period in 1897 where crises brought radical change to his thinking. The Oedipal Complex, Libido, instinctual drives, and psychosexual development all came from this period to define Freudian thinking. However with the release of archival material in 1980 the Oedipal scenario is now thought to reflect patterns from Freud's dysfunctional family. Moreover, Freud's death instinct, extrapolated from the same crises, is now relegated to his own attendant depression and dark thoughts.*

Yet from Freud's studies in neuroscience and a veiled reference to an ideal mother obfuscated by the Oedipal Mother, the paper follows a developmental line running from Object Relations y, to Attachments, to Affect Regulation Theory. The paper examines this journey through Douglas Fairbairn, John Bowlby, Daniel Stern and others, and then explores, the Motherhood Constellation and the relationships upon which the self is predicated. Where a 'good mother' is present, the infant's development is regulated by this essential relationship hence the ontogenesis of the original mind takes place stimulated by an empathic world. Affect regulation and neuroscience helps substantiate what becomes a hierarchical development of the infant mind, this completed at age two. Where this adult-like function comes into play, mind body problems are resolved and virtues (axiology) and epistemological concerns are potentially synthesized into the self.

Contents:

Introduction: From the Freudian world, the paper will look at three main points which are foundational for the study. The three factors, Self-Ego, the Good-Bad mother, and neuroscience, open to an evolutionary development. The paper will therefore look at Freud's early work in the field of neuroscience, Object Relations, Ego and Superego and see when these factors reimagined, come to support the hypothesis of the paper concerning Affect Regulation theory, which is the main focus of the study.

Object relations, an infant's attachment to the mother object, describes the relational world lying between mother and infant. These empathies are of vital support to the emergent self. CG Jung posits his archetypal Christ as self, in patterns and dynamics formed within his typology of individuation. These stages of growth embrace ethical proclivities. Jung however separated from the Freudian model whereby he came to regard universal prime force, or the energy of life, as élan vital, not libidinous drives. Later in a letter to Wolfgang Pauli he shifts his position calling this, 'spirit.' Freud held to the self as being tied to the emergence of ego around age 5, with a proclivity to deal effectively with the social environment, his Reality Principle. He proposed libido as a drive, as the primary engine of life's developmental processes but went no further in his developmental stages than the 'genital stage,' found in young adulthood.

Freud's model is challenged. In June of 1888 Freud was ensconced in the mountains with his family, still seeing patients and dealing with issues rising from his own unconscious. He mentions this as a personal crisis and begins to examine encoded material tied to his familial environment, and now surfacing from his subconscious depths. At the time he was described as an alienated professional troubled by failing friendships and psychosomatic symptoms, some concerning his heart. In this environment his theory on, *The Etiology of Hysteria*, radically shifted to *The Oedipal Complex*, Psychosexual stages of growth, Libido and to his Death Drive, which would become the Eros-Thanatos postulate. Ultimately 'Oedipus' presents us with a boy's feelings of desire for his mother and murderous thoughts directed towards his father in the psychoanalytic tradition, where such 'wish' formed in the child's subconscious.

This murder of the father, real or wished for, has dire consequences, unfolding as suicidal tendencies when the punishing conscience comes in to play. In this regard, Freud analyzes Shakespeare's Hamlet, who walked a similar course paying for the murder of his uncle Claudius with depression and suicidal tendencies. From the release of archival material in 1980, Freud's family history reveals a record of abuse and confusion within his family network, mirroring these incestuous and murderous Oedipal and Shakespearean scenarios. Moreover, academics now propose Freud's mother had an affair with Phillip, his half brother, leaving Freud to question who his father actually was; Jakob, the registered birth father or Phillip his son. Much of Freud's work then reveals an unresolved identity crises in Freud's life where, for example, in Moses and Monotheism, two Mosaic figures, Jakob and Phillip are encoded into his book. Hence his two fathers become the two Mosaic figures, where, moreover one is murdered. Freud is deeply troubled by what is in fact his own enduring trauma, mentioned in letters, encoded into various works and here found in his last book, all of which reveal his identity crises concerning the two fathers.[1] Additionally Amalie, his mother, is viewed as an incestuous and Oedipal mother; a bad mother, as scholarship now suggests.

Freud remarks on this where, contaminated by a mother's illicit sexual activity her child descends with her into anxiety and despair.[2] When Freud's father died he dreamed he should turn away, become blind as Oedipus did, to the father's abuse and other unfortunate familial realities. In his letters to Fliess,[3] and elsewhere Freud represses patriarchal abuse recorded in his 'Etiology of Hysteria' and by adopting the Oedipal theory is saying the problems are not about actual abuse but can be reset within the child's fantasies. However, Freud states his father was responsible for the psychological prob-

[1] NB Sources used include: J Mason's, The complete Letters to Fleiss 1986, Marie Balmary 1982, Marianne Krull 1986, Maria Rizzuto 1998, Paul Vitz 1988 /1993, Robert Langs, Freud on a Precipice, 2010, extracts from Freud's collected works. It is from Langs, Freud's doctor, and my own research (Freud and his Discontents) that suicidal tendencies were evident during Freud's psychosomatic illnesses in 1897 and that the death wish finds its genesis here.
[2] Freud, Interpretation of Dreams, Avon, NY 1965. p 299
[3] Jeffrey Masson, The Complete Letters of Sigmund Freud to Wilhelm Fliess, 1887-1904, Belknap 1986

lems of he and his siblings and that he, Freud, was sexually attracted to his mother. The Oedipal Complex is currently laid, by academia, at the feet of his own family as patterns of an abusive and incestuous record, including his identity confusion over the two fathers of whom we now read:

> *"Thus the relations between our ages were no hinderance to my phantasies of how different things would have been if I had been born the son of not my father but of my brother. These suppressed phantasies falsified the text of my book at the place where I broke of the analysis, by forcing me to put the brother's name for the father's."* [4]

Of the father Jakob, Freud says:

> *"Unfortunately, my own father was one of these perverts, and is responsible for the hysteria of my brother ... and those of several younger sisters. The frequency of this circumstance makes me wonder."* [5]

Of the mother Freud holds to an Oedipal mother yet he retains an intuition of a Pre-Oedipal mother, which we will come to. Nevertheless, of the incestuous relationship with the Freudian mother, Amalie, he says:

> *"I have found in my own case the phenomena of being in love with my mother and jealous of my father, and I now consider it a universal event in early childhood… If this is so we can understand the gripping power of [the Greek legend] Oedipus Rex… " –(Letter to Fleiss, October 1897)*

Of note, CG Jung similarly looked at the mythical dimensions of the feminine and the problematic mother, finding much the same thing. Jung's colleague, Erich Neumann, goes further and in, *"The Great Mother; An Analysis of the Archetype*," the mother is viewed through mythological sources and found to be both creative and chthonic. From the creative-chthonic mother Neumann sees Baal-Mot, Cain-Abel, Set-Osiris and

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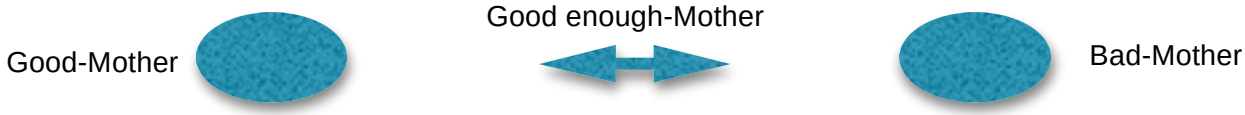
[4] Freud 1901, (Psychopathology of Everyday Life), pp 219-220. This is also cited in Langs' work (Freud on a Precipice) p 137, and discussed further by the author.

[5] Ibid Mason. pp 230-231 also p 264. (Letter dated Feb 8, 1897)

other dualities emerging from the problematic mother. Yet, Amalie, Freud's mother, is not altogether a chthonic and bad mother. She is viewed by the child as both an object of the child's love and wicked because she is drawn into an intense sexual liaison of her own making, in turn corrupting the child's world. Freud notes from Hamlet, *"O that this too sullied flesh would melt, thaw and resolve itself into a dew …Fie on 't, ah fie! 'Tis an unweeded garden that grows to seed. Things rank and gross in nature"* (Hamlet Act 1, Scene 2). Freud is therefore thinking that he, like his mother, has been sullied by a rank and gross affair and wishes again, that death could save him from this corruption. The idea that Freud was, amongst other things, suicidal during his crises in 1897 is reinforced by such conclusions, doctors evaluations, current studies, and reveals his death-wish as being of a personal and pathological nature, rather than a universal event.

The Oedipal Theory is also personal and pathological rather than universal, yet the good mother is obfuscated in his theory. She remains as a vague idea intuited in the back of Freud's mind. There was some attempt by Freud to come to terms with what he wants; that is to say as an Oedipal child he is searching for the deeper nature of a secure mother in her Pre-Oedipal State, but as Freud says, *'There are spots in every dream which are unplumbable - the navel is point of contact with the unknown."*[6] Freud is left with this unanswered enigma. This good-mother, bad-mother typology is left to us, becoming a central motif in this study, which will open to further development.



The transition: Freud conducted a number of neurological studies in his early days but did little with his work on neuroscience believing it would supply a biological basis for pathological behaviors thus weakening his psychoanalytic theory, as he saw it. He did however write papers on neuroscience, which might have supplied a basis for a psy-

[6] Freud, Interpretation of Dreams, (1976a: 186n)

chobiological theory embracing natural sciences; however his seminal neurological work, Project for a Scientific Psychology, was never published in his lifetime.[7]

Despite Freud's impenetrable agency of the good-mother, his Oedipal mother remained tainted by an obscure sexual craving; a violation of the incest taboo of which he would write later but innate attachments to the good mother began to unfold, even within his own lifetime. Within the early Freudian ranks Melanie Klein, during her clinical work, spotted ego splitting in infants when an interface with bad mothers existed. Yet, her psychology moved to a creative release from these deeply troubling issues. Otto Rank, looking at the, Ego and the Creative Self, identified birth trauma, preceding the Oedipal dynamic, which appeared at three to five years in the phallic stages of growth, as Freud put it. A window therefore opened to explore the mother-infant dyad and the mother-object.

Ronald Fairbairn (1889-1964) picks up on Freud's version of object relations, which is given to seeking an, 'Object' for libidinous pleasure. Fairbairn offers an Object seeking theory rather than a drive-discharging Freudian theory, so against Freud's pleasure-seeking drives, Fairbairn thought of the libido as a relationship oriented function; something social, not sexual, and is the first meaningful connections a child makes vis-à-vis, with parents. In addition these early experiences become the child's prototypes for all later experiences regarding social connections with others.

Erik Erikson (1902-1994) significantly took the psychosexual growth stages beyond Freud's postulates to include all of life.[8] Erikson additionally attaches different tasks and meanings to be accomplished at each phase of life. The psychosexual model has significance but life is much broader than the psychosexual parameters.

[7] Allan. Schore, Affect Regulation and the Origin of the Self, Lawrence Erlbaum UK 1994, p 533
[8] See index: Erikson's stages compared to Freudian psychosexual stages.

Heinz Kohut (1913-1881) opens the self to a relational field. He emphasized the need for a child to identify and to absorb the positive attributes of an idealized or admired figure, for example, thus opening the superego to more than punishing factors inherited from a tyrannical father as Freud had stated. Kohut then opens the Oedipal theory to empathy, a quality supportive of a healthy bond between parent and child and where socialization can be defined more creatively. Kohut's self belongs to a post war zeitgeist wherein he saw people struggling with such questions over identity, meaning and self-expression; to one's sense of self-worth, otherwise under the rubric of pathologies and narcissistic states where the false self becomes a case of arrested development.

Donald Winnicott (1896-1971) Kohut is a highly influential figure in the field of Object Relations theory, and he takes us fully to the question of nurture. The attributes and benefits of a motherhood matrix, where familial dynamics either frustrates the emergence of an innate self or comes to support natural growth through healthy attachments is viewed as central to the task of growth. Winnicott emphasizes influences of the good mother, whereas the bad mother conflates healthy growth patterns. He also offers us the good-enough mother who might prove beneficial. Winnicott also puts an emphasis on play and delight as being an important factor in an infant's development.

John Bowlby and Mary Ainsworth (1907-1990 / 1913-1999) credited with Attachment Theory per se, pick up on this mother-infant relationship and positive empathic attachments whereby from their clinical infant studies they also find self is not definable in isolation, rather it is organized by a dialogue between mother and infant and organized between biological and psychological lines. They stress affect theory (psychological term for emotions) as a regulation theory, that is to say influence from the mother supports infant growth and where the infant assimilates positive values. The infant is thus regulated by the emotional attachments formed between self and the mother.

Bowlby's journey began with maladjusted children in the 70's and his concept was fully formulated by 1991. Bowlby had been introduced to Kleinian thinking early on but Mary Ainsworth's innovative methodologies in the field came to support Bowlby's work, so between them empirically testable methods and clinical research was applied. Mary Ainsworth's 'secure attachments' was posted early, in a dissertation of hers in 1940:

> *"Familial security in the early stages is of a dependent type and forms a basis from which the individual can work out gradually, forming new skills and interests in other fields. Where familial security is lacking, the individual is handicapped by the lack of what might be called a secure base from which to work."* [9]

Daniel Stern (1934-2012) At the same time as Tavistock thinking matured, the Motherhood Constellation emerged. As an analyst, Daniel Stern is identified as 'post-Freudian', and in terms of his emphasis on Object Relations, we read; *'Creating transference/countertransference conditions allow for a new and better experience of self in relationship with others.'*[10] Stern then takes this Matrix to a Post-Freudian and Post-Oedipal framework, to a better experience lying beyond Oedipal concerns and Freud's mysterious Pre-Oedipal mother. In this, a new restored psychic triad (Grandmother-Mother-Infant) has come into existence.[11] This healthy Motherhood Constellation is confirmed by hours of clinical research and film work on mother-infant interactions. Freud on the other hand had no clinical work to speak of including his Little Hans case, which was studied through the surrogate father of Hans, not by Freud directly.

This new Constellation hypothesis presupposes the infants emotions are first regulated by the mother, becoming increasingly self-regulated over the course of infancy as the

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[9] Mary Ainsworth nee Salter, An Evaluation of Adjustment Based Upon the Concept of Security (dissertation). p 45.
[10] Daniel Stern, Motherhood Constellation, Basic Books 1995. p 122
[11] ibid, p 172

self moves to full ego development; that is to say towards a sense of selfhood and social competency; independence. Alice Miller, the noted Swiss Psychologist, frames it up well when the early maturing right hemisphere and right frontal lobe processes, connects at the end of an 18 month developmental journey, to offer a clear sense of self formed by empathies: *"The individual (infant) to emotionally salient experiences and memories underlying self-schemas, is the glue holding together a sense of self."*[12]

Attachment experiences then become encoded internal working models or strategies which function at non-conscious levels in creating an architecture of mind, neural connections and subsequent behaviors, which in turn shape the self, and support early socialization skills. This emergent self suggests we are now looking at the human soul, the mind, and intellect, as an interconnected psychological organism.

Daniel Siegal (1957 - -) Siegal sees the developing mind as an integration of mental processes including memory, emotion, neurobiology and interpersonal relationships. In fact he offers us the idea that; *"A core aspect of the mind is an embodied and relational process that regulates the flow of energy and information."*[13] The definition of the psyche is ultimately threefold holding to; 1. The human soul, 2. The intellect, and 3. Psychiatry, together, being an examination of complex processes governed by the total organism. Such ideas are organized around an additional three fundamental principles:

1: The human mind emerges from patterns in the flow of energy and information within the brain and between brains of mother and child

2: The mind is created within the interaction of internal neurophysiological processes and interpersonal experiences

[12] Miller et al 2001 cited from Schore. - Miller, B.L., Seeley, W.W., Mychack, P., Rosen, H.J., Mena, I., & Boone, K. (2001), Neuroanatomy of the self. Evidence from patients with frontotemporal dementia. Neurology, 57: 817-821. Miller is best known for her, The Drama of the Gifted Child and for the concept of poisonous pedagogies which include repressive and harmful child-raising methods including behaviors and communication that theorists consider to be manipulative or violent.

[13] Daniel Siegal, Mind Brain and Relationships. Guilford 2012. Chpt 1, Section: 'Defining the Mind.

> 3: The structure and function of the developing brain are determined by how experiences, especially within interpersonal relationships, shape the genetically programmed maturation of the nervous system.[14]

These findings offer an interactive model of a mind (regulation), brain (mechanism), and relationships (sharing), forming as a triadic-interactive pattern, as affect regulation.

Affect regulation theory is established by multi disciplinarian studies including neuro-biology. It is a body mind theory, the main thrust of which, suggests the mother in the early stages of infancy regulates the infants growth through intimacy and empathy: this implies simultaneous changes occur in both members of the dyad and the mother's regulation of her own affects requires synchronization with he infant. From this synchronous regulation from late pregnancy through the second year the infant's brain/mind is in a critical period of growth. There is a spurt beginning in the intrauterine period but most growth continues from birth to about 18 to 24 months when the brain is rapidly generating nucleic acids. The brain runs from a mass of 400g at birth to 1000g at 12 months, influenced by an affective environment. This interface of nature and nurture is a 'psychoneurobioligical' theory where, through this period the social and personal hierarchical brain emerges as unique domains in three orderly stages. *'It is through secure attachments between a good mother and her infant that a regulation of the infants mind unfolds; a non-conscious bioregulation forming within a dyadic regulation of emotions'* – (Antonio Damasio 1998.) The first year of development is heavily dependent on the regulation of the mother, however in the second year the infant begins to move to self-regulation and homeostasis of the self: towards identity.[15]

How does affect regulation work?

[14] Daniel Siegel, The Developing Mind, Guildford Press 1999. Chpt 1, p 2 / see p 8 for the triangulated diagram.
[15] Much of Affect Regulation is based on, Allan Score, Affect Regulation and the Origin of the Self, Lawrence Erblaum 1994, and Affect Regulation Theory: A Clinical Model by Daniel Hill, W.W. Norton 2015.

The first year of development is particularly related to the conversation, taking place within the dyad. The second is year less so, as the infant begins to 'separate' to meet his or her world as an individual. Early movements to separate occur in the era of the cingulate so success or separation anxiety and shame can occur in that period. Nevertheless, Affect regulation moves ultimately to self-regulation. Ego identity or the self, and self-consciousness is therefore established at the end of the day, not as a thing rather as an agency; a ground of being and dynamics serving the self and the exploration of the environment. Within the dyad up to the 18-month mark, the emotional stimuli occurring between mother and infant activate cAMP responses; that is to say, gene transcription is activated by dopaminergic functions, which leads to an increase in building proteins and developmental processes necessary for growth. These processes also function, as internal clocks, which coordinate the timing of events in support of the hierarchical development of the infants mind and brain, now underway, and where form and function of the brain's architecture are married. (See Index)

The first functional domain of this architecture is found in the core amygdala. It is already online at birth and from here a topological architecture of mind unfolds in three stages. The cingulate area emerges second, between 3-9 months, followed by the orbito-frotal cortex at 12 months. The frontal area establishes an executive function, which manages, evaluates and responds to subsequent mental complexities. Regulation of the information from the system as a whole, in a successful model, helps maintain homeostasis even when faced with stressful situations; this applies to physiological and psychological functions. The executive brain forms as an adult-like mind but obviously there is still work to be done in socialization processes and through subsequent developmental stages. Indeed, through the course of life another major change takes place where inappropriate neurons are 'pruned' and refocused for another stage leading to more complexity in early teens around age 13, where 30,000 synapses of a total of 100 billion approximately, may be lost per second during this time. It is known the female losses slightly more than the male but simply put, childhood behaviors are upgraded to an adolescent brain specific to gender and to more complex functions.

Hemispheres: Throughout these stages it is to be noted that the right hemisphere given to emotional regulation reveals more development, despite the common assumption that the left linguistic hemisphere is more important. The emotional amygdala, right brain, and right fontal orbital area show more growth and complexity revealing these areas are centrally involved by attachments to the environment (thinking, social, cultural). Specifically they are rooted in the empathies to the mother where right hand functions remain prioritized. These emotional centers remain dominant in the regulation of bodily, emotional states, stress management and survival mechanisms - all vital to the well being of the neonate. Antonio Damasio, for example, asserts that, *"emotions are the highest order of bioregulation in complex organisms."*[16]

Facial recognition: In terms of attachment, the mother as a whole performs the task of the primary object however facial recognition becomes a major factor in affect regulation. Indeed, the two right brains in the dyad, both the mother's and the infants, are mutually entrained in what is called affective synchrony and this synchrony, focusing on facial recognition, creates a resonant system, which evolves into a spontaneously oscillatory system. This, *"Tune[s] networks operating in frequency ranges of special biological meaning."*[17] The infant changes and the mother changes with her neonate in affective synchrony as the infant approaches self-hood. Indeed it is noted Motherhood also improves learning, memory, and dendritic growth, in the mother's brain.[18] Moreover a network of support found through family and friends is also important as a mother in isolation becomes over-stressed. A dyad, is nested into the triad and the triad is nested into the extended family and to broader social systems all of which are viewed here, as systemic and relational.

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[16] Adolphs, Tranel, Damasio, The Human Amygdala in Social Judgement, NATURE | VOL 393 | 4 JUNE 1998.

[17] Hutcheon and Yarom; Cited in, Allan Schore, The Effects of a Secure Attachment Relationship on Right Brain Development, Infant Mental Health, Infant Mental Health Journal, 2001, 22, 766. / p 12/48

[18] Ibid. p 13.

Facial recognition occurs around 8 weeks, this in relation to the visual cortex coming online in the infant brain. At this point a visiolimbic pathway is established in relation to maternal facial recognition. At these early stages facial interactions and responses related to this function hold to a central significance where the mother's entrainment to the infant's rhythms and internal states are vital. It is now known that specific postnatal and critical periods orchestrate these developmental sequences requiring optimum stimulation, which trigger dopamine and noradrenaline responses. This synchrony or 'regulation' of the infant's inner world and biological systems operates as an organism would, particularly within the dyad.

On a functional level, mother infant facial interactions open as episodic moments of play and delight displayed by the infant. Three-month-old infants innately display an eagerness to engage with the mother's gaze and enter into these occasions of mutual joy, delight and appreciation. Episodes can last up to 5 minutes, then the infants gaze will fade or cease momentarily, then begin again at a less intense level; this generally repeats in 5 cycles. Before the 3 month marker infants do not posses this ability. However, when these phases begin they are likened to a trophic affect (The number of nurture or feeding steps related to the development of an organism) where the infant is nourishing himself / herself, feeding, as it were, in order to promote neuronal and synaptic growth. This fits well with REM studies, which are now known to promote brain growth-maturation in specific cycles of sleep where growth and increases in memory require synaptic growth. In the case of affect regulation cREB mechanisms, a cellular transcription factor is set in motion by mesocortical dopamine, which acts as a trophic stimulus. Put simply joy stimulates the production of dopamine or serotonin, which in turn activates protein kinase. This opens a gate-like response, cREB1, where instructions are given to the RNA element in the cell, giving rise to transcription / gene expression, which then supplies more protein for growth in neurons and neuronal networks: neurogenesis. This is a simplified picture but in the infants responses of delight with the mother we have neurogenesis, taking place in these early interactions.

General myelination (the forming of a sheath around the axon to support and enhance its function), part of these processes and maturations, takes place in the rapidly developing limbic, cortical association areas and the limbic areas of the cerebral cortex. Much of this maturation is formed by the 15th month of life. Indeed this joyful-excitation function seems to continue through life where we read:

> *Citing only one example, Damasio's group (2000) reports a PET study revealing that happiness is associated with activation of the right orbitofrontal right indula, right somatosensory, right anterior cingulate, and right hypothalamus.*[19]
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> *Moreover* it is now thought:
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> *"The right hemisphere of the neonate is actively involved in the perception of speech melody and the intonations of the voices of mother and surrounding people. The pre-speech stage of child development is characterized by interactions of the descriptive and emotional components due mainly to mechanisms operating within the hemispheres on the principle of non-verbal communication" (Bogolepova and Malofeeva 2001, p. 353).*[20]

Synaptogenesis: Within these visual, spacial, gestural and emotional events, psychoneurobiological functionality resolves any form of mind and body duality. In the interaction with the mother, the visual input and playfulness induce the production of neurotrophins in the infant's brain, which are responsible for spurts of growth, resulting in synaptogenesis; the genesis and evolution of functional brain development. Thus syn-

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[19] Allan schore, Effects of a Secure Attachment Relationship on Right Brain Development, Affect Regulation, and Infant Mental Health, INFANT MENTAL HEALTH JOURNAL, Vol. 22(1–2), 7–66 (2001 Michigan Association for Infant Mental Health

[20] Judith / Allan N. Schore, Modern Attachment Theory: The Central Role of Affect Regulation in Development and Treatment. Clin Soc Work J DOI 10.1007/s10615-007-0111-7 / 2007.

aptic networks, the hierarchical brain consisting of amygdala, cingulate and cortex, come online in an orderly, interactive, and sequential fashion, and in response to affect regulation. Likewise, an early epistemological factor suggests functional cognition can also be identified and provisionally set into play at the 18-month marker. Of such growth factors involving mesencephalic dopamine neurons, and dopamine functions, activating receptors in the general postnatal development of the cortex, we read:

> *"BDNF (brain-derived neurotropic factor) is also a growth-promoting factor for mesencephalic dopamine neurons (Hyman et al., 1991), and dopamine, which activates NMDA receptors (Knapp, Schmidt, & Dowling, 1990), is known to perform a growth-promoting role in the postnatal development of the cortex (Kalsbeek, Buijs, Hoffman, Matthijssen, Pool, & Uylings, 1987), especially in corticolimbic areas that send axons down to the dendrites of these dopamine neurons, and thereby come to regulate their activity (Sesack & Pickel, 1992; Schore, 1994)."*

John Bowlby already hypothesized that hierarchical growth like this illustrated a succession of increasingly sophisticated systems mediated by healthy attachment and emotionally rich experiences. Likewise the executive function, receiving information from all areas, supplies feedback loops regarding managing situations or stress in life. Whilst we now associate behaviors and responses to this mind-body evolution these sequences are dopamine functions located in the Ventral Tegmental Area, located centrally to and lying close to the Pons at the core of the brain. Here a shift from a "pacemaker-like firing to a, "burst-firing" mode under visual, auditory and tactile stimuli, occurs synchronously with secure attachments lying between mother and child, then forming later and autonomously as the self emerges.[21] VTA and dopamine, forms as a reward, motivation, and cognition system tied to normal responses to pleasurable and rewarding experiences.

[21] The development of positive affect over the first year, p 89. See: Schore, Affect Regulation and the Origin of the Self, Lawrence Erlbaum Associates, UK 1994

It is to be noted the right side of the hemisphere and right orbitofrontal areas show greater development where they are dedicated to the Ventral Tegmental area and to dopaminergic factors; that is to say to active, coping, stress-managing and positive emotional functions, whereas the left hemisphere is regulated from the Lateral Tegmental circuit, to noradrenergic, inhibitory, passive, withdrawing and negative emotional regulatory functions. The hemispheres and orbitofrontal lobes therefore exhibit a positive negative interactive function given to homeostasis just as the right orbitofrontal lobe and hemisphere show more development, which confirms the primacy of emotional functions. These dopamine pathways, as it were, function as a pleasure-reward system and in creative activities, however failures in regulation lead to the same pathways supporting addictive and pathological responses.

Amygdala: During pregnancy the infants 'startle response' reveals such basic responses are already active within the womb. The amygdala is therefore viewed as the core or emotional foundation of the brain and at birth only the amygdala is online, functioning as a primitive regulatory system. However through the right amygdala the infant can recognize the mother's scent and olfactory clues, suggesting even at 6 days infants can distinguish the scent of the mother's breast pad. At this time only autonomic and arousal systems are functional but already the earliest representations of the infant's maternal representations are being formed. In this sense we see an early subcortical limbic control system, starting to give rise to emotional and motivational functions, which are described as a proto-attachment mechanism.[22] Likewise we begin to see a structure to function paradigm, which becomes evident throughout but particularly so in later phases. This is our 'architecture' of the brain-mind

Cingulate: The second tier development forms at the cingulate level, which comes online between 3-9 months. The infant develops a certain responses to social cues, shared or synchronous pleasure states, and an understanding of anxiety and separa-

[22] Schore, The Effects of a Secure Attachment Relationship on Right Brain Development, Affect Regulation, & Infant Mental Health, See p 17: http://www.trauma-pages.com/a/schore-2001a.php

tion anxiety. To some extent this developmental phase is a balancing act where a dopaminergic excitatory world is complemented by a noradrenergic and inhibitory world. On the active side coping strategies can now be developed including the flight-flight mechanism used in survival situations. Added to this are general stress management skills now being developed and where such strategies lend themselves ultimately to a healthy and robust psychological life: homeostasis. On the Noradrenergic side passive coping strategies include immobility, withdrawal and reduction of stress by reflective and introverted methods. By en large this limbic subsystem progresses from a sympathetic-dominant excitatory phase followed by a parasympathetic-dominant inhibitory phase, which finally moves to an excitation-inhibition balance. What we see then, is a more complex set of responses rising from gaze and facial recognition which moves neurochemically to regions of the anterior cingulate, this giving rise to play, separation, laughing, crying, vocalizations, mirrored facial representations, and modulation of autonomic activity. Autonomic activity, the beginnings of control of the vagus area and the nervous system, introduce the vagally controlled hormone oxytocin, released again by sensory stimuli found in facial expressions conveying warmth and familiarity. This function composed of nerves dedicated to the control of neck chest and abdomen link the parasympathetic system to mind and such responses are identified as coming online at around the four-month mark. The mother's cingulate and right orbitofrontal cortex respond to pain, separation and the cries of the infant according to studies made by Lorberbaum in 1999.[23] At 7-10 months the infant exhibits fear and behaviors of a complex defensive nature also attached to the maturation of the cingulate area.

Cortex and orbitofrontal: The final development consists of the cortex and frontal areas; the orbito-frontal region which comes online at 10-12 months - a foundation for an executive control system, which in its final stages of development, yields great complexity regarding synthesis, evaluation, rational functions, understanding of consequences, and the birth of ego - that is to say the complex interactions of the self to the

[23] Lorberbaum etc,Feasibility of using fMRI to study mothers responding to infant cries. See: http://www.ncbi.nlm.nih.gov/pubmed/10604082

external world, point toward the emergence of primary consciousness; a self-awareness, a self to other, and self to world proposition. Within this proposition we can say this is the birth of the self-proper and consciousness when all the formative agencies come together. It is currently thought that the maturing anterior cingulate controls the previous domain of the amygdala-dominated limbic configuration. Moreover in the last quarter of the first year *the right cortex is also associated more distinctly with emotional synchrony, which develops, in this late stage. There are critical advances made now by the infant who exhibits an ability to shift attention in coordination with the caregiver so that an object and the mother's focus are both recognized.*

> *"Joint attention occurs within highly affectively charged social referencing transactions, an attachment process that mediates a resonance of positive affect (Schore, 1994). This dyadic mechanism allows the infant to appreciate that, "The other person is a locus of psychological attitudes toward the world, that the other is attending in such a way that shared experiences are possible" (Hobson, 1993, p. 267). In this manner the child comes to understand others "as intentional beings, that is, as subjects of experience possessing internal states such as interest and attention" (Tomasello & Camaioni, 1997, p. 20)."*[24]

This complex function is viewed as a regulatory mechanism of the left hemisphere thus a form of emotional intelligence persists throughout the hierarchical brain but expresses itself more clearly in the left at these late stages of development. What is also observed is the ability to mentalize, to organize concepts and predict the behavior of others, where the infant is now referring to the record of his / her experiences in interpreting the behaviors and intentions of others. This function is also ascribed to the right hemisphere, the right orbitofrontal and right anterior insular cortices which embody the components of a neural circuitry enabling integrative and adaptive responses in relation to the emotional and attentional states of the organism; affect and empathy reside

[24] Allan Schore, Affect Dysregulation and Disorders of the Self, Norton 2003. p 160

here. Thus the right prefrontal cortex is fundamental in regulating emotional responses. The frontal or executive mind is then described in this way:

> *"In a recent entire issue of Cerebral Cortex on, "The mysterious orbitofrontal cortex,*" *the editors conclude that,* "*the orbitofrontal cortex is involved in critical human functions, such as social adjustment and the control of mood, drive and responsibility, traits that are crucial in defining the personality of an individual*" *(Cavada & Schultz, The Mysterious Orbitofrontal Cortex, Oxford 2000, p. 205).* [25]

From neuroscience and the psychology of attachments a clue to identity is offered as an integral proposal, but the picture of a left to right mother to infant interaction as they face each other, maintaining a coherent synchrony throughout, including the innate capacity of the mother to generally hold the infant on her left side, also becomes evident. Moreover the frontal area on the right side of the infant reveals more development than the left thus leaving us with the idea that the core emotional amygdala and the right emotional hemisphere and frontal area are the major regulatory functions of the tripartite brain. Concluding, we can say the two hemispheres work synthetically in a harmonious or synthetic proposition yet, with a slight difference in their hierarchical significance and mass. This is a systems proposal offering a homeostatic type of control which regulates the self and helps bring one back to an even keel when challenged by the vicissitudes of life. Certain emotional resonances still inform function and design from a deeper ground so the human mind is not mere intellect rather an emotional, feeling and relational project, full of empathies towards others and towards ideas, which are identified as being meaningful for self and others.

Gender: neural circuits are ordered when sex steroids alter their morphology specifically by altering their dendritic growth. Processes are critically influenced by gonadal steriods. Permanent effects then occur in the brain circuitry, including specific organi-

[25] Ibid p 84.

zations in the developing orbitofrontal region. The action of sex steroids on the brain structures underlies the developing child's sexual motivation and behavior and this accounts for the emergence of gender based infantile sexuality where an upsurge off genital excitement is seen in the middle of the second year of infant development. Parental interactions here, influences development from the regulation of the sexual drive but depending on the parents these influences may range from supportive mirroring to shame transactions. Nevertheless a sexually dimorphic maturation of the orbitofrontal cortex is responsible for observed sex differences in structure (cerebral lateralization, hemispheric asymmetry) and function (cognition, spatial perception). Nevertheless, socioemotional functions and wiring patterns, feminized or masculinized, on the front cortex produce gender differences, which emerge and develop from this point.

Early moral development: These developmental process spanning the first two years of life is what Daniel Stern calls the proto-narrative envelope. Experiences, interactions, growth spurts, socialization processes, empathies, rhythms, resonances, and the virtues of the good mother are all recorded in the deep structures of the mind, and in developing neuronal networks. Schore suggests this is a moral realm.[26] Moreover, neuronal networks and memory dedicated to early experience supports mentallization; the ability by experience to acknowledge and predict the intentions of others to a point, guiding the self towards optimum empathic and social behaviors notwithstanding free will embraces possible adaptations. These responses are referred to the right hemispheric prefrontal affect regulator emerging at 18 months and can be linked to Freud's superego, to the ego ideal. This story writ large in infancy continues to evolve through life as an intentional agency and guide to the unfolding of the innate characteristics and the calling of the self. Patterns etched into the early mind, unfold as sequential repetitions, which paradoxically embrace some randomness, as life-patterns are wont to do. Sequential idealization therefore recurs throughout life as various objects and relationships become invested with such higher values.[27] Idealizations persist even after fail-

[26] Allan Sore, Affect Regulation and the Origin of the Self, Lawrence Erlbaum UK, 1994. Chpt 27
[27] Cited in Hagman, Aesthetic Experience, Rodopi 2005. p 46.

ures revealing such core values are highly resilient. Indeed neural correlates in long-term romantic love between specific partners have also been found to be consistent with activation in specific brain regions, in line with attachment theories.[28]

This core value of idealisms is formed as a controlling agency of the superego which auto-regulates early emotions of shame and acts as a pilot or guide for the ego. Failures to met ideal standards result in shame and a decrease in self esteem, whereas pride related to success exerts a positive pull indicating a standard or rule has been successfully applied. Inculcated by the good-mother, good-father, and caregiver affirmative 'reflections,' these supply images of the self, which the child can strive to become. A healthy sense of self-esteem points further, towards positive social and cultural responses. This base of empathic responses to the primary caregiver[s] becomes the root of virtues. This function emerging as an adult-like function at the 18-month marker is an essential signature of self-regulation, identity and ethical proclivities.

Failures in affect regulation at the cingulate era (3-9 months), for example, shows us that anxiety and distress cannot be regulated, so avoidance, detachment, indifference, shame and passive avoidant behaviors have been identified and assigned to underdeveloped neuronal networks tied to the behaviors. Indeed the failure of the dialogical self and homeostatic regulation leaves us with sociopathy, a failure of self-esteem, anger, and rebellion tied to cingulate and prefrontal damage. This neurological substrate of empathic moral and social behavior, become 'arrested at an immature stage.' Then in late childhood such ill-tempered hostile dependent personalities become explosive children who utilize an interactional style described as, "moving away from the world."[29]

Nevertheless through 10 to 14 months, then optimally at the 18 months marker prosocial, altruistic behavior and positive other-orientated behaviors become visible in re-

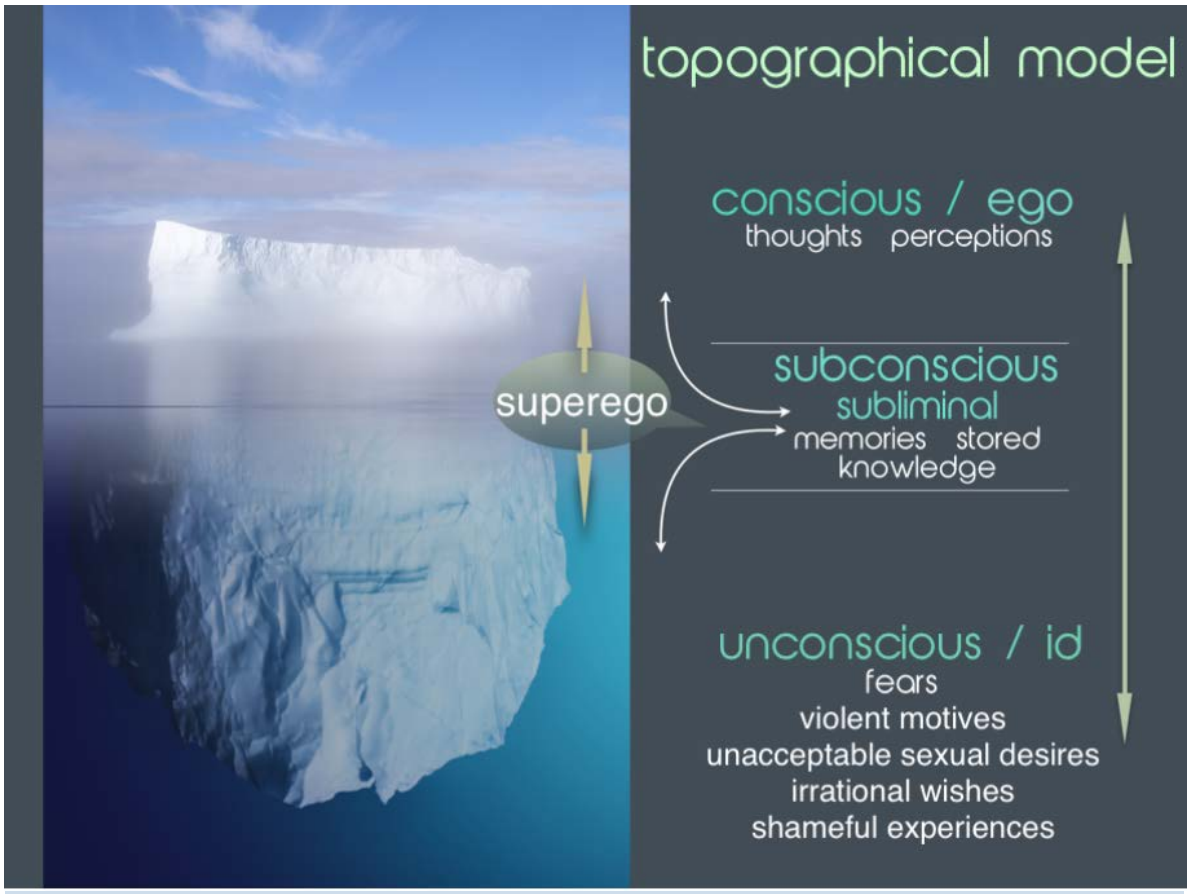
[28] Bianca, Aron, Fisher, Brown, Neural correlates of Long-Term Intense Romantic Love, Soc Cogn Affect Neurosci (2011) doi: 10.1093/scan/nsq092 First published online: January 5, 2011
[29] Ibid Schore p 382.

lation to positive affect regulation from the good mother. Successful affect regulation also functions as the child's distress release therefore management of the self and management of the whole, ones response to self and world becomes anchored in positive / constructive response, emerging from the earliest form of empathic reactions to the affective distress of the mother, which has been observed and studied. Moral behavior is therefore dialogical behavior. In this we see an axiological proposal unfolding.

At 10-14 month infants show first signs of empathic reactions to the mother whereas a fuller sense of empathic capacities, as an important prerequisite to later social and moral development, emerges when self-regulation has reached it's early completion stage. At this point moral pro-social altruistic behavior towards others, reveal compassion to those in distress and a penchant for initiating positive other orientated activities in order to comfort others. Moral behavior is therefore related to affectional ties to the parents and posited as a hierarchical developmental theory of social-moral development of cross-cultural universality (Kohlberg). Within this theory early idealization places an emphasis on affective processes regulated by guilt and shame on the one hand and self-esteem on the other as mechanisms of conscience might suggest. Early moral development depends on propensities which are strongly biological i.e. the orbitofrontal cortex but require facilitation / direction through accumulated experiences within the infant caregiver relationships.

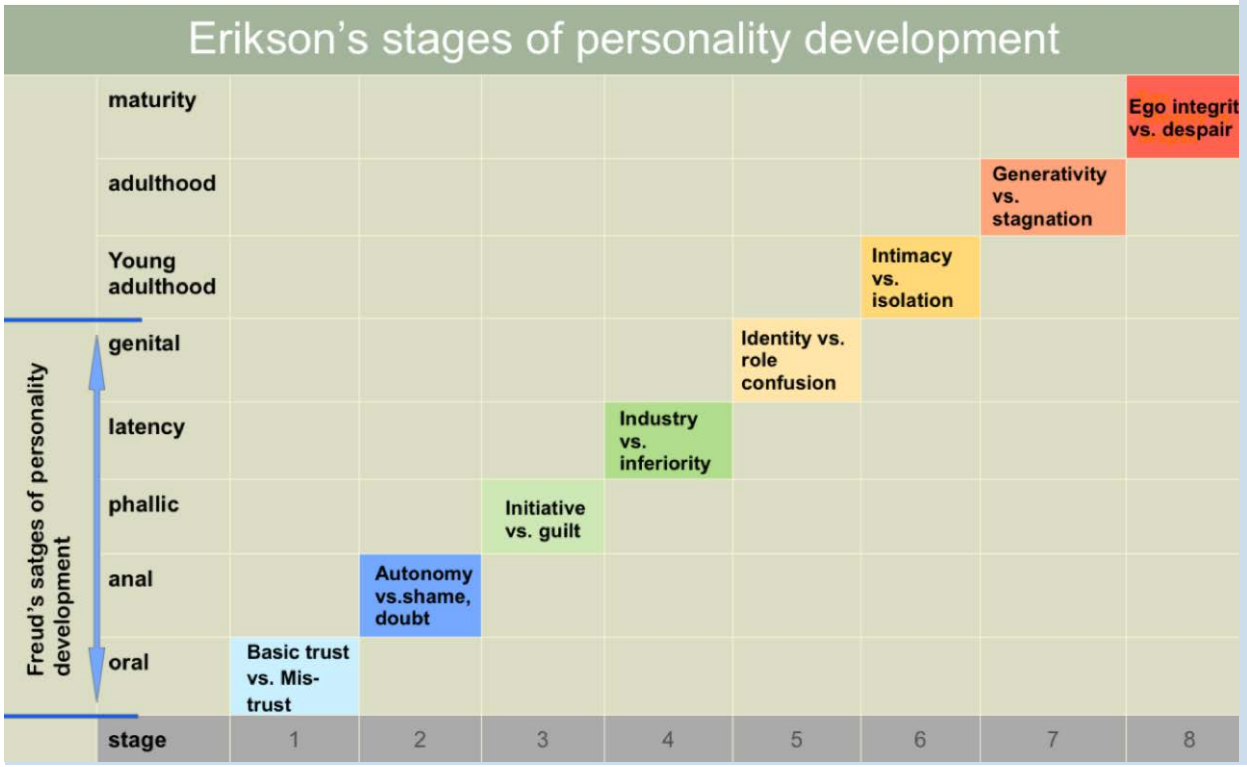
In conclusion, much of the paper has been brief and therefore offers a sketch of what must become a larger study. Much is left to do in the detailing of neuronal and biochemical responses related to behaviors, whilst the evolutionary journey of the self needs be linked to transcendent roots at its origins and to protoconscious functions emerging potentially at the mature 18 month stage if a complete transpersonal model is to be furnished. Therefore the origins of the neuropsychobiology of mind might best be expanded to such parameters so that the self can be reasonably proposed as an emotional-cognitive yet transcendent being.

Index: 1.

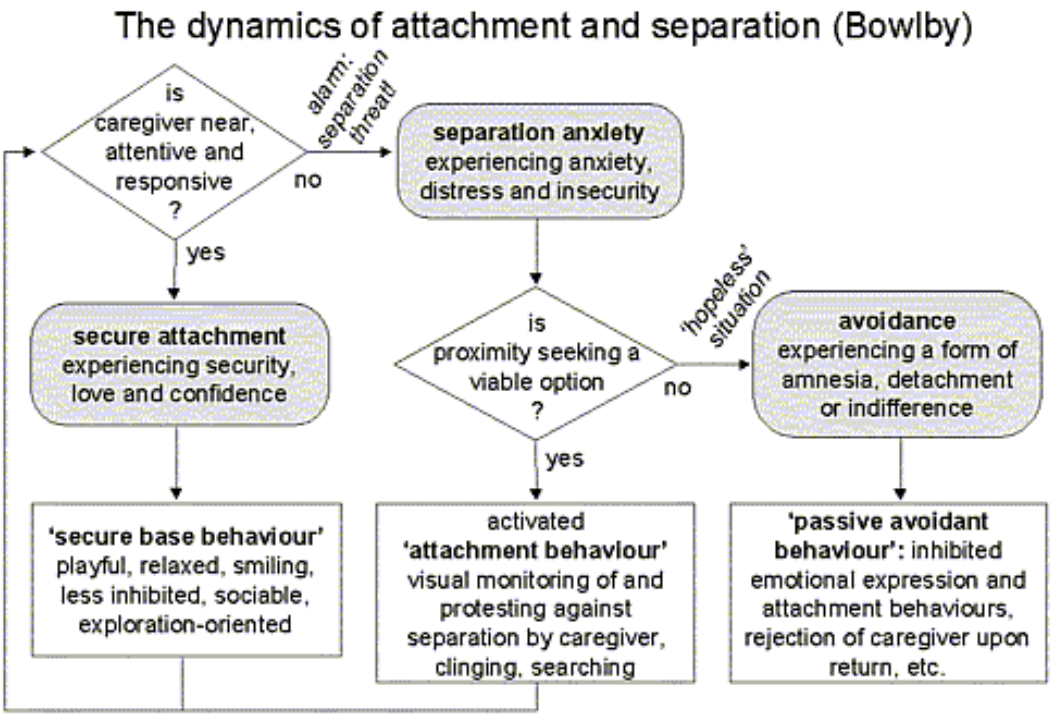


Freud's topological self - ego id and superego, which contains the ego ideal agency. First proposed in The Interpretation of Dreams this structural model appears fully in The Ego and the Id (1923). It is essentially a conscious to unconscious proposal.

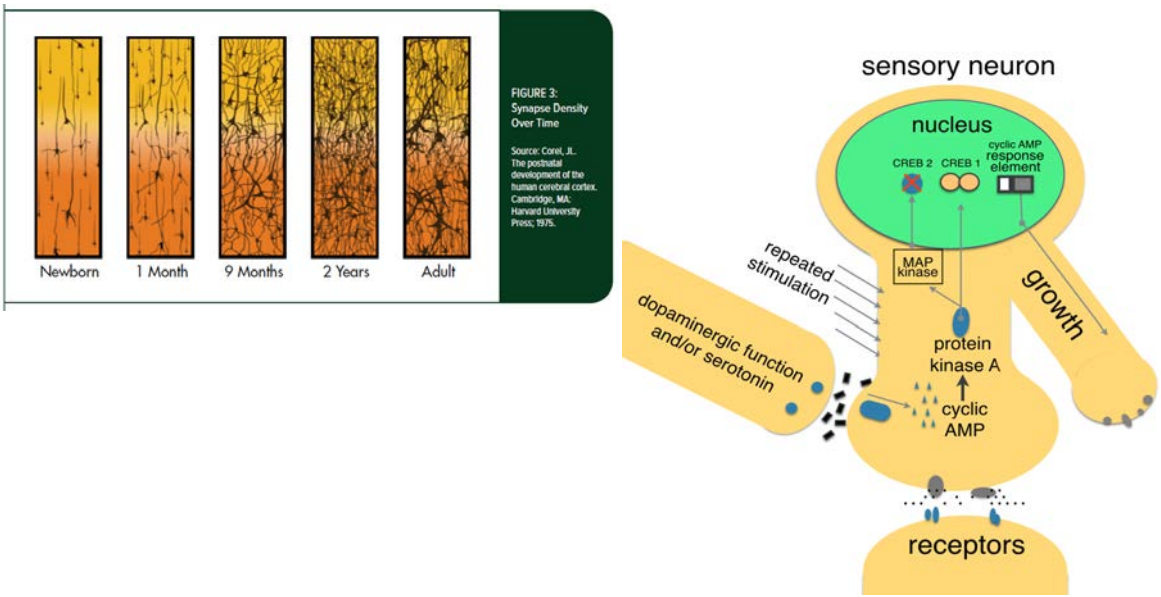
post freudian (erik erikson)



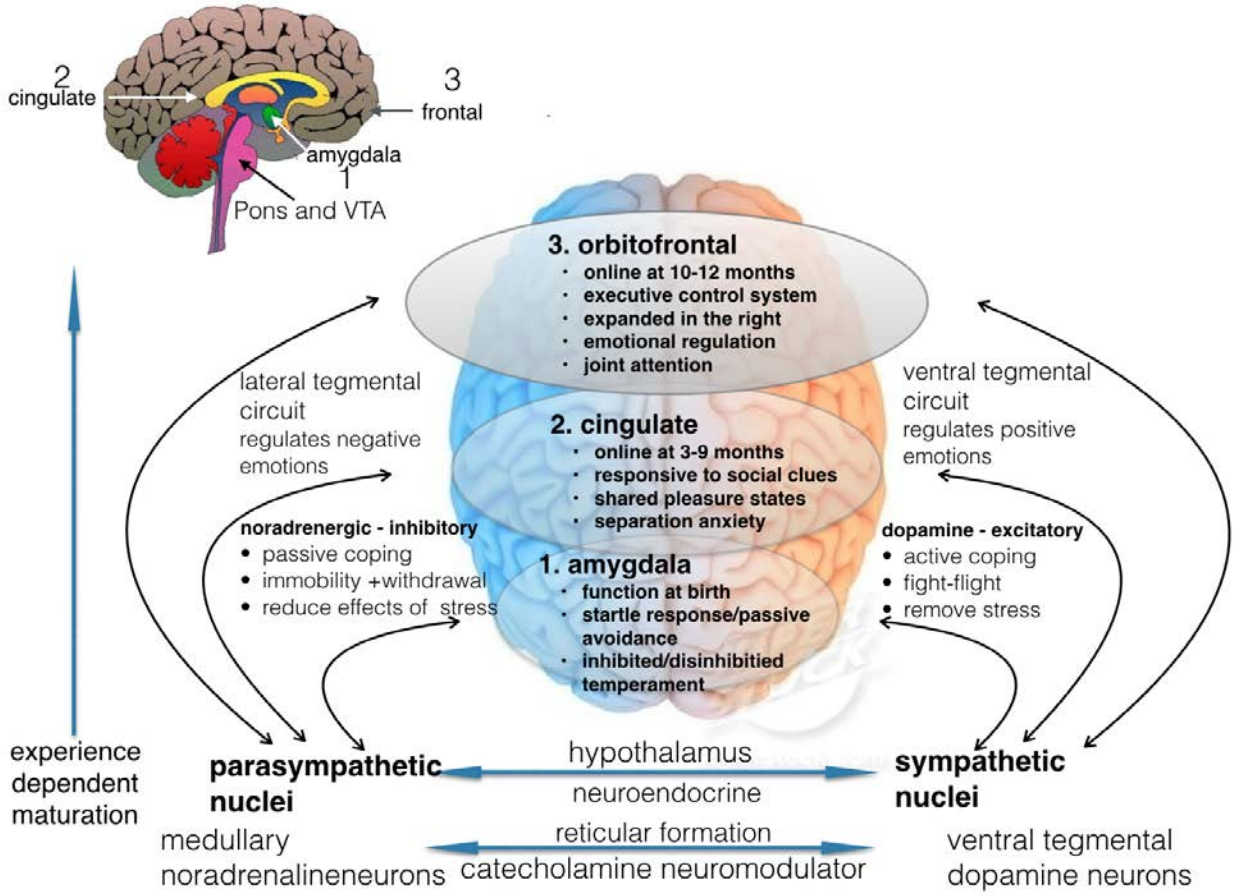
Above: Erikson's stages of growth and life tasks lie beyond the psychosexual model extended in time and functionality



Above: Bowlby's secure attachment and separation model.



Above: The trophic development of developing neurons. Right: a serotonin/dopaminergic protein kinase function, where RNA in the cell is instructed to develop new protein transcriptions, hence growth.



Above: the hierarchical brain showing developmental stages / issues / and hemispheric differences based on noradrenergic and dopamine functions.