



Deep Brain  
REORIENTING

# **Complex dissociative disorders: treating traumatic attachment wounding with Deep Brain Reorienting (DBR)**

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# Is absence of care *experienced as painful*?

- “For complex, highly comorbid patients, the bad things that happened in childhood are probably less important, less damaging, and less traumatic than the events that did not happen. . . . **The deeper trauma is the absence of normal love, affection, attention, care, and protection. The trauma is not being special . . . .**”

Colin Ross, 2007, *The Trauma Model*, Manitou Communications, Richardson, TX.  
(page 61. Bold emphasis added)

# Are attachment shock and attachment wounding *experienced as painful*?

- “The primary missing experience of neglect is the failure of mirroring.” (Ruth Cohn. *Working with the developmental trauma of childhood neglect*. Routledge, London. 2022. Page 26.)
- Can *the internal experience* of the lack of mirroring – as well as the lack of contact, support, love and care – be painful and/or shocking to the infant?
- Are there relational-disconnection experiences that are *experienced* in the body and transmitted from the body to the upper levels of the brain via the anatomical pathways for pain?
- If attachment shock and attachment wounding are painful are some of the adverse effects of neglect and deprivation mediated by responses to internal pain?

# Aloneness pain and affective responses to it

- Orienting Tension: neck.
- Very painful from solar plexus to heart. I can't bear to feel it: uncontrollable anger – I'm frightened of it.
- The most excruciating pain – that baby left alone – unbearably painful beyond words.
- There is nobody there – waves of pain from solar plexus.
- That poor little child! I see what I've been with all these years.
- incredible anger that it happened to me and that I haven't lived my life because of it.
- The (silent) screaming and scratching goes back to the baby.

# Aloneness pain and affective responses to it

- Orienting Tension: forehead
- I can't really bear it: trapped in a zombie state without feelings (but painful).
- I want comfort – but I can't get comfort. (Pain of unmet need).
- Legs and abdomen and shoulders are rigid. (Armouring against the core pain.)
- A vacuum inside: a black cave; empty. Nothing there.
- Aloneness. *Nothing touches me.* (And nobody brings comforting touch.)
- For such a long time there was nobody.
- I think there is distress in the black hole. Mother was like a robot.

# Maternal withdrawal and later life suicidality

- “Maternal withdrawal in infancy was a significant predictor of both borderline symptoms and suicidality/self-injury in late adolescence. . . . . The effect of maternal withdrawal was independent of, and additive to, variability explained by severity of childhood abuse. Borderline symptoms and suicidality/self-injury may be preceded developmentally by disturbed interactions as early as 18 months of age.”

Karlen Lyons-Ruth et al (2013). Borderline symptoms and suicidality/self-injury in late adolescence: prospectively observed relationship correlates in infancy and childhood. *Psychiatry Res.* 206(0): 273–281. doi:10.1016/j.psychres.2012.09.030.

# Aloneness pain and caregiver unavailability

- “Thus, the relevant traumas of infancy most often result from the “hidden traumas” of caregiver unavailability and interactive dysregulation. These hidden traumas are woven into the fabric of interaction between caregiver and infant and do not necessarily stand out as salient events to the observer. . . . .”
- “. . . disturbed parental affective communications are often an enduring, day-in-day-out feature of the childhood years. In contrast to a more discrete traumatic event, the parent’s responses to the child’s foundational needs for comfort and soothing are worked into the fabric of identity from a very early age. They are also worked into the fabric of the child’s biologic stress regulation”

Karlen Lyons-Ruth et al (2006). From infant attachment disorganization to adult dissociation: relational adaptations or traumatic experiences? *Psychiatr Clin North Am.* 29(1): 63–viii.  
doi:10.1016/j.psc.2005.10.011 2006

# Aloneness pain and caregiver unavailability

- “Presently we lack the diagnostic language to describe the enduring catastrophe of the child whose mother has turned away. However this comes about – through neglect, abuse, abandonment, mental illness, addiction, or other troubles – the baby is left without **a felt sense** of the mother’s presence and without the experience of an organizing other.” (Page 3, Bold added)
- “... babies depend on the face-to-face, eye-to-eye, voice-to-voice, emotionally reciprocal interaction to know that they exist.” (page 15)

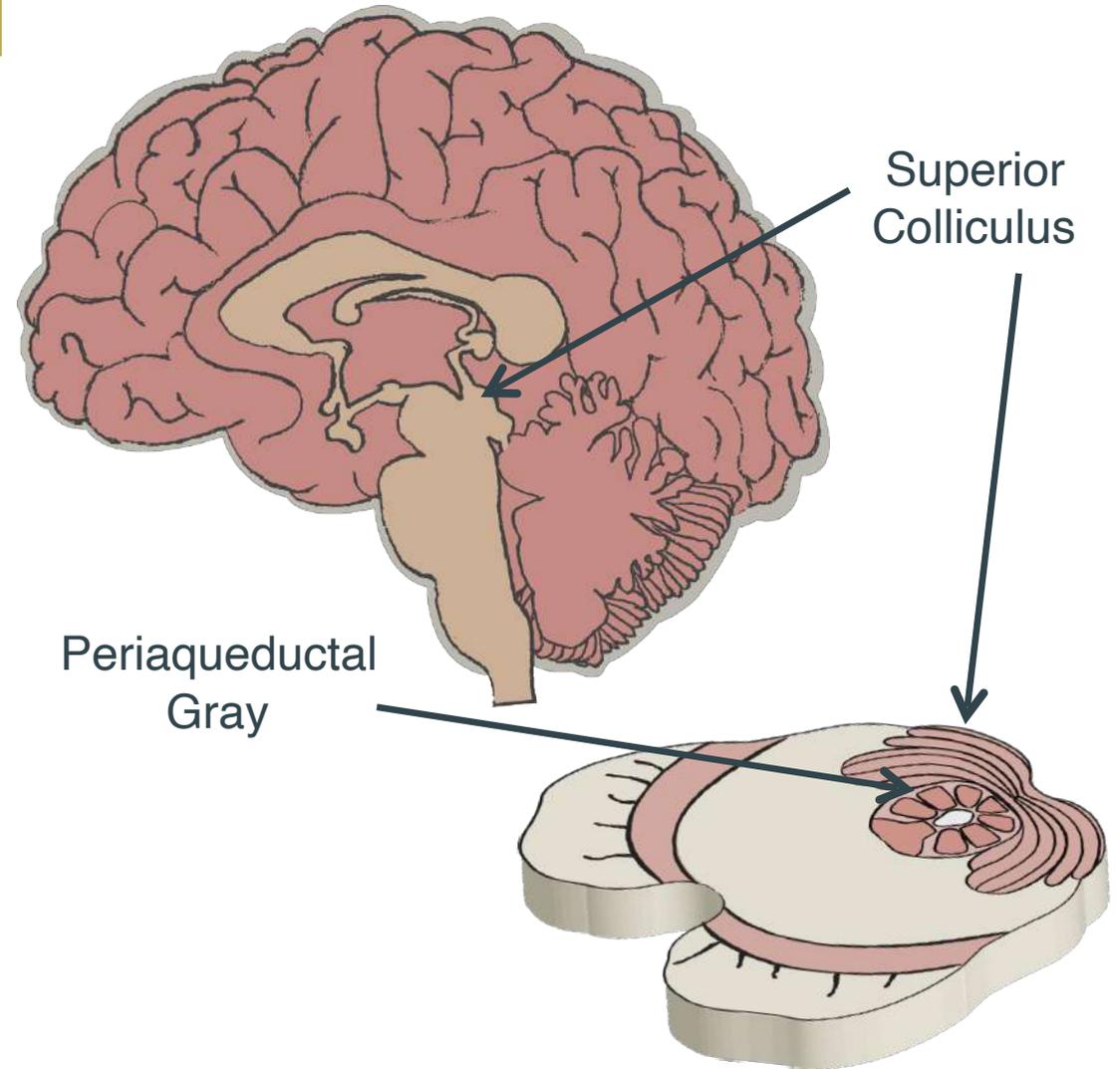
Sebern Fisher, 2014, Neurofeedback in the treatment of developmental trauma, Norton, New York

# Aloneness pain and affective responses

- Activating stimulus: Inability to communicate with teenage daughter.
- Orienting tension: wincing around the eyes.
- Sadness at the barrier – I can't get through.
- As a baby, even when I'm held I don't feel loved – everything's empty: like cuddling a dead person.
- Then a lot of fear. I feel so alone. Tempting to scream "Wake up!"
- I still feel the pain. The first was more shock-like – this is more long-lasting.
- New Perspective: That feels different! I can connect now! My head has come up.

# The innate connection system: where the impact is first registered

- For “the face-to-face, eye-to-eye, voice-to-voice, emotionally reciprocal interaction” the baby requires the sensorimotor transformation made possible in the midbrain.
- The **innate connection system** for connection and attachment is anatomically very close to the system for responding to threats.
- It can register a warm smile or touch, a kind tone of voice, leading to positive affect from the periaqueductal gray (PAG) – e.g. care and nurturing or joy.



# The innate connection system in humans: the fundamental sensorimotor transformation

- “The superior colliculus . . . . is known to support behaviors . . . , such as the ability to pay attention to relevant stimuli and to produce automatic motor responses based on sensory input. . . . It is the main brainstem hub . . . , making continuous, implicit decisions about where to direct our attention. . . . It contains first-line specialized neurons enabling the detection and tracking of faces and movements from birth. **During development, it also sends the appropriate impulses to help shape brain areas necessary for social-communicative abilities.**”

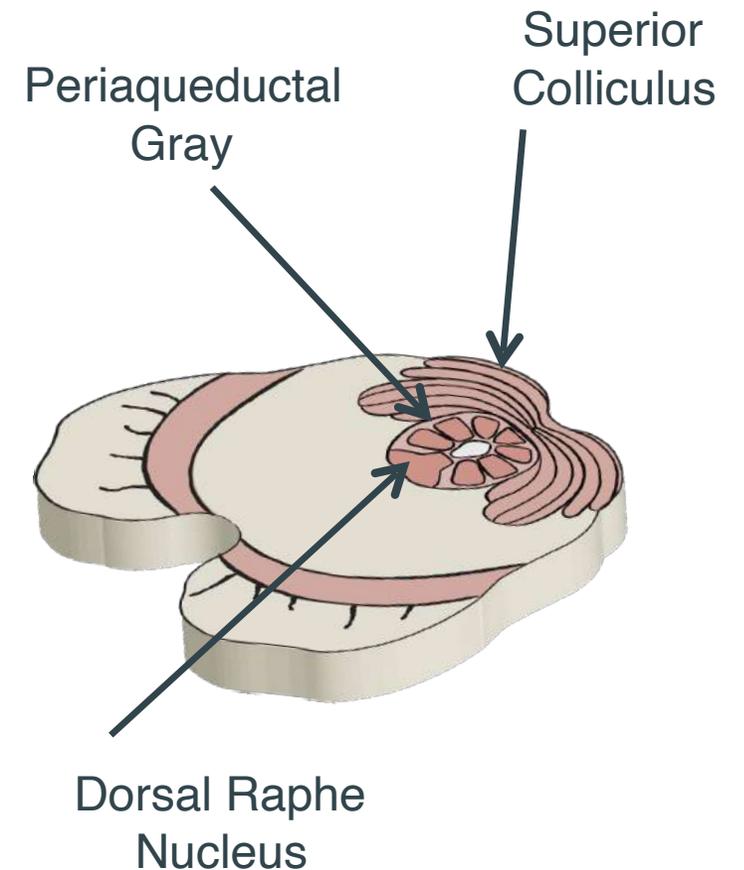
Jure R (2022) The “Primitive Brain Dysfunction” Theory of Autism: The Superior Colliculus Role. Front. Integr. Neurosci. 16:797391. doi: 10.3389/fnint.2022.797391

# The innate connection system in humans: the fundamental sensorimotor transformation

- The Superior Colliculus (SC) is part of the brainstem sensory network. Its main role is to integrate multisensory information to orient the head and the body towards objects of interest.
- In humans, the SC is heavily interconnected with the arousal-motor network (e.g. cuneiform nucleus and mesencephalic reticular formation), targeting these emotional-motor nuclei to trigger head movements in response to salient stimuli.
- Other links of SC were with the Periaqueductal Gray (PAG) and the dorsal raphe nucleus (DRN), “which further locate the SC within the sensory network interconnected with the arousal-motor network”.

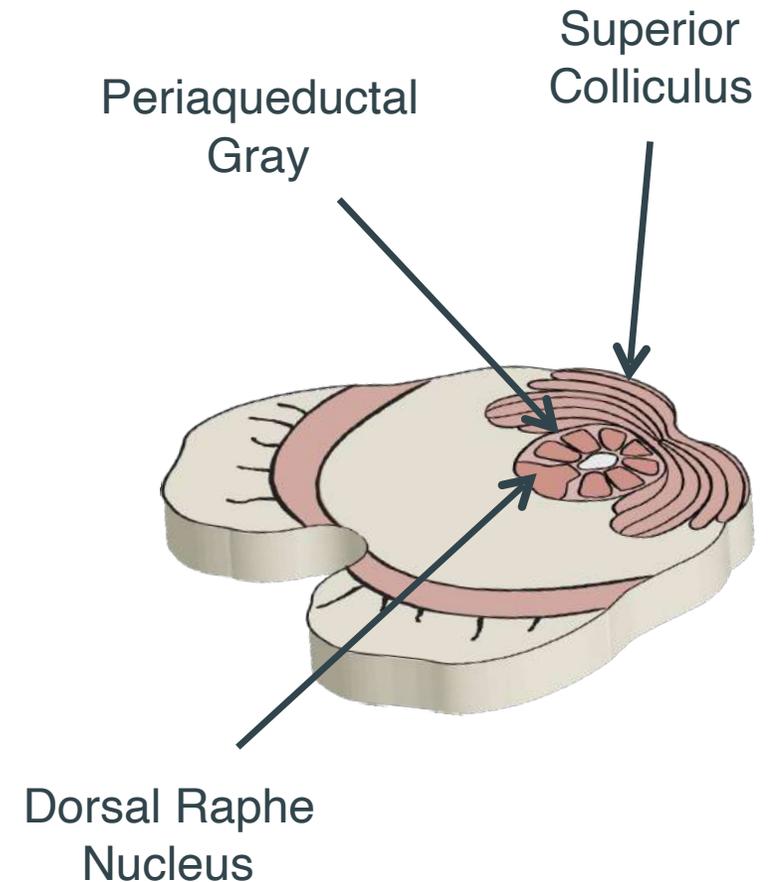
Cauzzo et al (2022). Functional connectome of brainstem nuclei involved in autonomic, limbic, pain and sensory processing in living humans from 7 Tesla resting fMRI. *Neuroimage*, 15;250:118925.

state



# The innate connection system in humans: is absence of contact painful?

- If there is no comforting touch, no warmth in the caregiver's voice, no attuned facial expression – how is that absence registered in the body and experienced as painful?
- What are the mechanisms for the conversion of absence of caregiving – the awareness of unmet need – to a painful inner experience that then drives protest, despair, detachment, and other negatively valenced states?
- The Dorsal Raphe Nucleus may be an important substructure for the core aloneness pain of abandonment and humiliation.



# Dorsal raphe nucleus (DRN) response to isolation in early life

- Dorsal raphe nucleus (DRN) dopamine (DA) neurons become more active with social contact after an acute period of isolation. They promote rebound sociability, supporting a role for DRN dopamine neurons in mediating a loneliness-like state – and the response to it.

Matthews et al. (2016). Dorsal Raphe Dopamine Neurons Represent the Experience of Social Isolation. *Cell*, 164(4), 617–631.

- Rats exposed to post-weaning social isolation (from postnatal day 21) exhibit greater anxiety-like behaviours as adults and have a greater density of corticotropin-releasing factor (CRF) type 2 receptors in the DRN. CRF2 receptors within the DRN may mediate anxiety-like states following early social isolation.

Bledsoe et al. (2011). Anxiety states induced by post-weaning social isolation are mediated by CRF receptors in the dorsal raphe nucleus. *Brain research bulletin*, 85(3-4), 117–122.

# Dorsal raphe nucleus response to isolation

- Mice that were deprived of food ate more (x3) sugar pellets than well-fed mice as opioid receptors at the terminals of neurons projecting from the DRN to the nucleus accumbens enhanced eating in food-deprived mice.

Castro et al (2021). An endogenous opioid circuit determines state-dependent reward consumption. *Nature*, 598(7882), 646–651.

- Inescapable or uncontrollable stressors lead to proinflammatory cytokine changes (increased IL-6 and decreased IL-10) in the dorsal raphe nucleus.

Donner et al. (2018). Two models of inescapable stress increase *tph2* mRNA expression in the anxiety-related dorsomedial part of the dorsal raphe nucleus. *Neurobiology of stress*, 8, 68–81.

- The DRN-ACC (anterior cingulate cortex) serotonergic neural circuit is implicated in consolation-like behaviours and sociability.

Li et al (2021). Dorsal raphe nucleus to anterior cingulate cortex 5-HTergic neural circuit modulates consolation and sociability. *eLife*, 10, e67638.

# Physical pain and the brainstem's emotional reaction

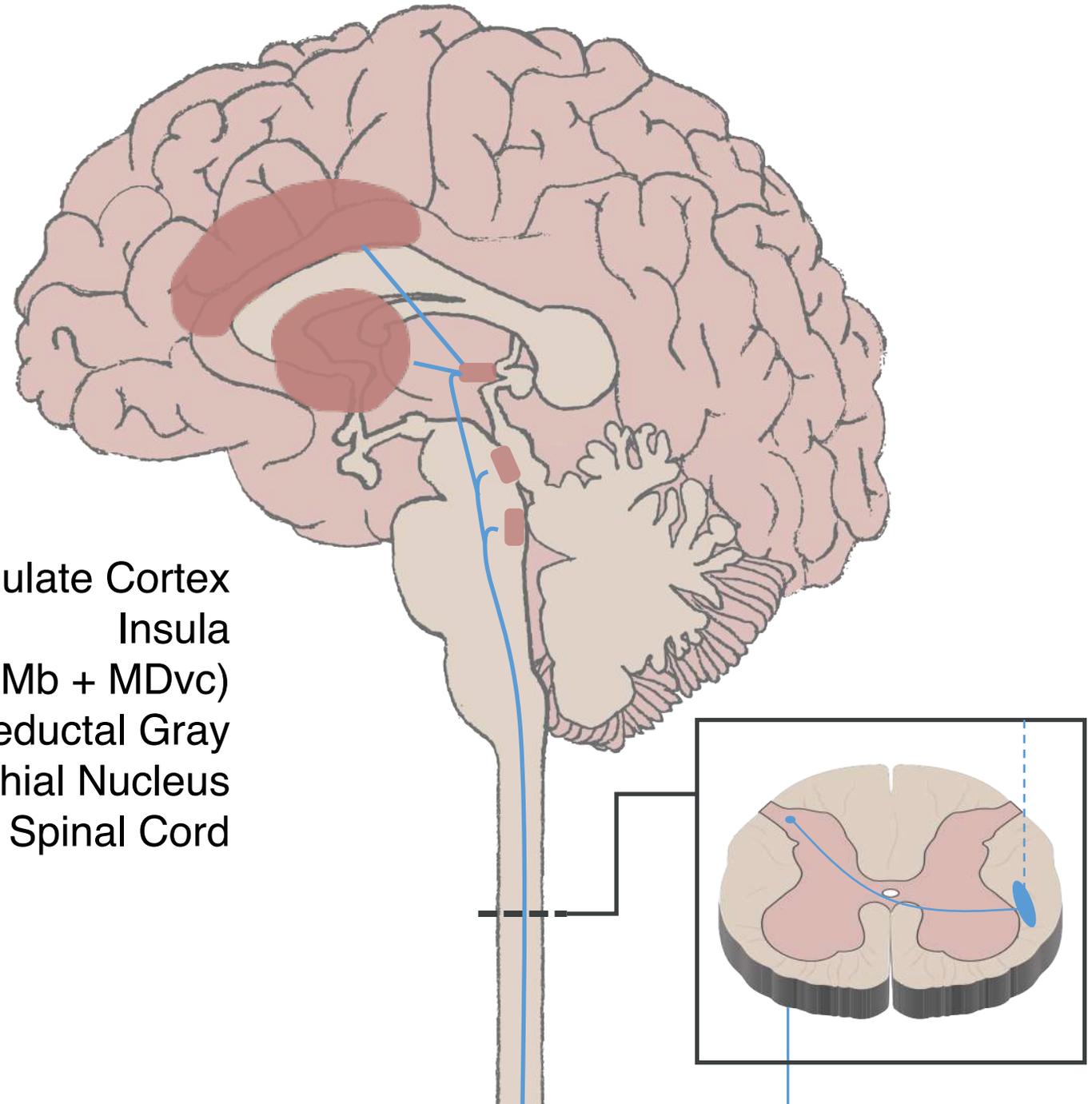
- A wound that is mapped in the brain stem (within the parabrachial nucleus), and that is perceived as pain, unleashes multiple responses back to the body. The responses are initiated by the parabrachial nucleus and executed in the nearby periaqueductal gray nuclei. They cause an emotional reaction and a change in the processing of subsequent pain signals, which immediately alter the body state and, in turn, alter the next map that the brain will make of the body. . . . In parallel with a changed body, the ongoing cognitive processing will be altered as well.

Damasio, A. Self comes to mind. William Heinemann, London, 2010. P 100.

## Neospinothalamic Pathway

- Phylogenetically 'newer'
- Fast
- 'Sharp' pain

Anterior Cingulate Cortex  
Insula  
Thalamus (Vmpo, VMb + MDvc)  
Periaqueductal Gray  
Parabrachial Nucleus  
Spinal Cord



# Subconscious pain that influences behaviour

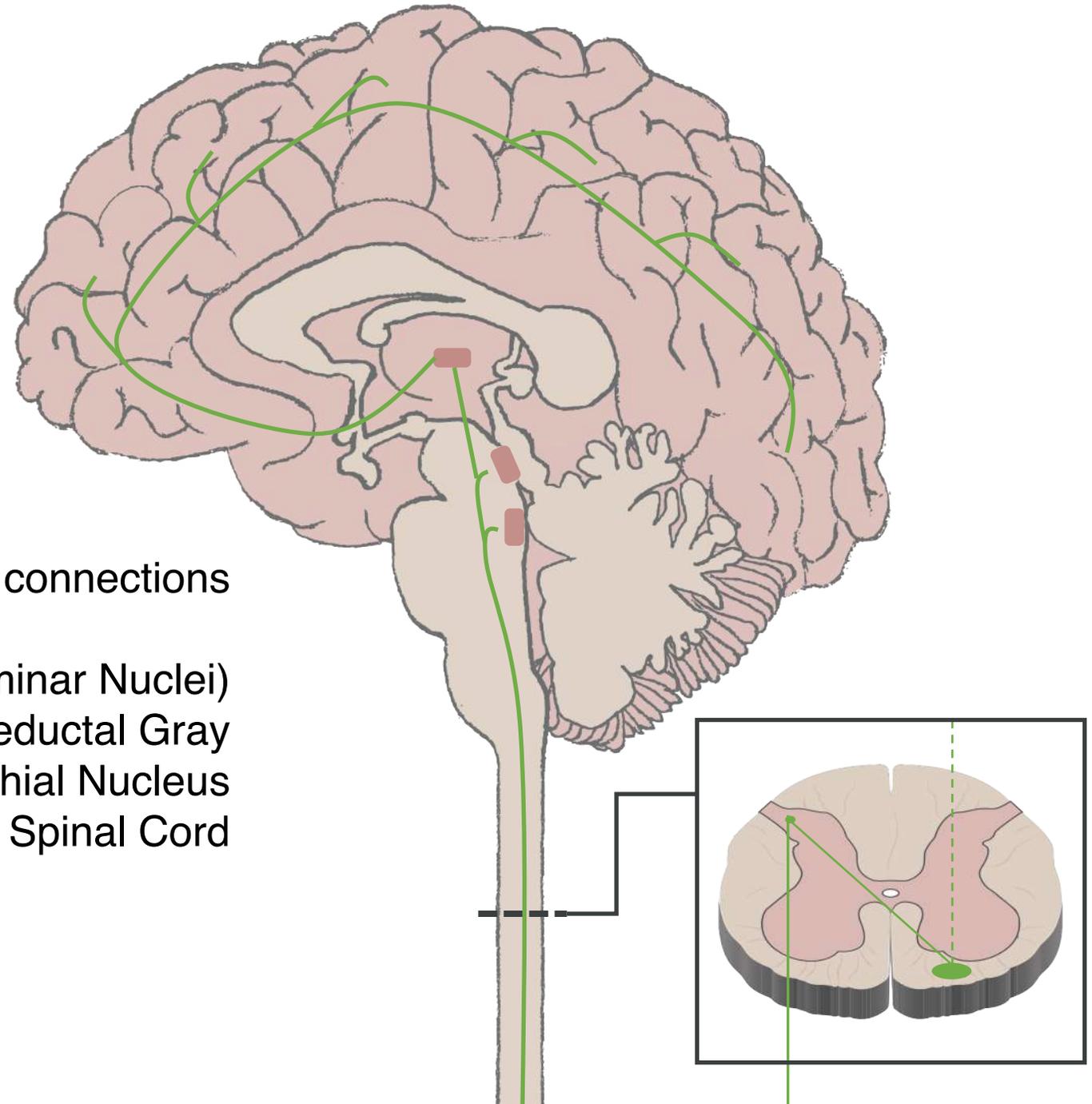
- About 15% of the cortical mantle is responsive to nociceptive stimuli making it unlikely that the cortex contains neural tissue linked specifically to pain perception.
- The majority of peripheral nociceptors can be activated with stimuli that are sub-threshold for pain perception.
- Therefore, the nociceptive control of behavior routinely occurs in the absence of consciously perceived pain, rendering it “subconscious.”
- Nociception continuously occurs in the absence of pain perception and is a fundamental physiological process that subconsciously provides information to protect the organism from tissue damage.

Baliki, MN & Apkarian, AV. (2015) Nociception, pain, negative moods and behavior selection. *Neuron*, 87(3): 474–491. doi:10.1016/j.neuron.2015.06.005.

# Paleospinothalamic Pathway

- Phylogenetically 'older'
- Aversive behaviours in response to pain from deep somatic and noxious visceral stimulation.
- 'Dull', ill-defined, pain

Diffuse cortical connections  
Thalamus (Intralaminar Nuclei)  
Periaqueductal Gray  
Parabrachial Nucleus  
Spinal Cord



# Pain below the mesolimbic threshold

- As nociceptors are continuously active, there must be a threshold phenomenon that transforms nociception to conscious pain.
- The nociception-pain threshold may be in the mesolimbic and nigrostriatal circuitry, modulated by limbic and cortical inputs that reflect past experiences, values, expectations, and self-relevance.
- The output then modulates striatal-cortical loops involved in thoughts and actions.

Baliki, MN & Apkarian, AV. (2015) Nociception, pain, negative moods and behavior selection. *Neuron*, 87(3): 474–491. doi:10.1016/j.neuron.2015.06.005.

# Orienting to the pain conveyed in the “older” pain pathway

- The intralaminar thalamic nuclei respond to salient, visual, somatosensory and auditory stimuli.
- They are active in response to the location of a visual stimulus with respect to the head-body axis.
- They form part of an attentional system linking attention, working memory, and eye movements.
- Spinal cells projecting to the intralaminar nuclei are unlikely to subserve discriminative nociceptive functions because they have large receptive fields and respond weakly. Discharges, however, are sustained long after a (painful) stimulus ceases.
- The concentration of opiate receptors is high throughout the intralaminar nuclei.

(Jones, EG. The Thalamus, Cambridge University Press, Cambridge, 2007, pages 1171-1174).

# Is attachment shock painful in adults?

- Violent displacement from home country.
- Activating stimulus: Turning towards that moment of leaving your home country and crossing the border: tell me when you notice an Orienting Tension in the back of the neck, the forehead or around the eyes.
- Orienting Tension: “In the muscles around the eyes.”
- Deepen into that. I’m giving you a few moments to be with that tension around the eyes.
- Shock: “Some waves are rising in my chest. My head gets twisted somehow.” (Head turned to the right).
- Being with the shock and allowing it to clear made space for the full force of the grief to emerge.
- If the shock energy is not picked up – because it is swamped by the intensity of the grief, for example, - then processing of the grief is less complete and can be protracted.

# Orienting to the pain conveyed in an ancient spinothalamic tract, the old pain pathway

- Attachment shock and attachment wounding that have occurred in the person's development before the maturation of the anterior insular and anterior cingulate cortices need therapeutic ways into them that are “below” the overt body feelings.
- The orienting behaviours in circuitry from the SC through the thalamic nuclei can be used as they precede affective and defensive responses mediated by the PAG.
- The orienting tension and the immediate orienting impulse can open the files linked to attachment shock, horror and pain.
- Animal studies show that the first response to orienting to an activating stimulus is a muscle tension in the neck.

Corneil BD, Olivier E, Munoz DP. Neck muscle responses to stimulation of monkey superior colliculus. I. Topography and manipulation of stimulation parameters. *J Neurophysiol.* 2002 Oct;88(4):1980-99. doi: 10.1152/jn.2002.88.4.1980.

Corneil, B., Munoz, D., Chapman, B. *et al.* Neuromuscular consequences of reflexive covert orienting. *Nat Neurosci* **11**, 13–15 (2008). <https://doi.org/10.1038/nn2023>

# Are attachment shock and wounding painful?

- Hypothesis: Attachment shock and wounding – and the pain of unmet need – are painful, that is, they activate pain pathways in the body that communicate with brainstem pain and affect centres and with sensorimotor integrative regions of thalamus. When the emotional pain is intense and potentially overwhelming the body will seek ways to regulate this through transmutation into somatisation pain, neurochemical dissociation, and structural dissociation.
- Clinical implications: Deep pain pathways that do not have ready access to insular cortex for conscious awareness – and that are modified by different types of dissociation – will be difficult to access through talking therapy.

# Are attachment shock and attachment wounding painful?

- “Where in your body do you feel the hurt or pain?” **can be** an upper-level question: “When you focus your prefrontal cortex powers of attention on the information available from your anterior insular cortex what comes into your thinking?”
- In Deep Brain Reorienting (DBR) we aim to open the information file on the painful experience by eliciting the Orienting Tension.
- This is the tension in the muscles of the forehead, around the eyes, or in the back of the neck when the deep brain turns towards, for example, the neglect, the abandonment, the loss.
- This will often be achieved by using an activating stimulus from a recent event or experience.

# Mechanisms of dissociation in the DBR model

- **Intracortical.** Disturbances of the activity within the cortex which lead to alteration of the subjective experience of the integrity of the self – and of its connections with the world around and the people in that world. Derealisation and depersonalisation are hypothesised to arise from shock-induced activation of ascending noradrenergic systems.
- Neurochemical.
- Structural.
- Supracortical.

# Is attachment shock *experienced as painful* and can it lead to intracortical dissociation?

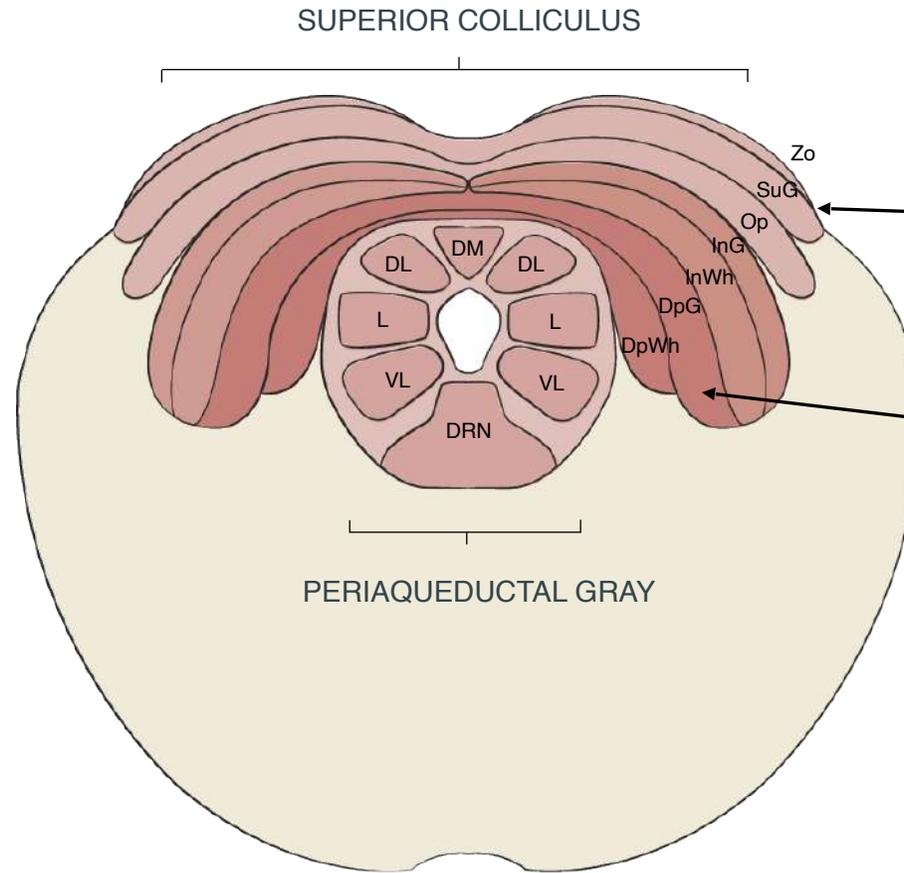
- Is there a painful shock with the sudden recognition of loss or abandonment or isolation which precedes the affective response?
- In other words, a painful shock that precedes affects such as GRIEF/PANIC or SEEKING?
- Any preaffective impact could be quickly swamped in awareness by affects and their visceral correlates.
- What would it feel like? A fleeting, “previsceral”, pain that is known mainly through its effects?
- Is there a loss of contact with the space around, or with the sense of self in relation to others in that space? An egocentric, proprioceptive, or allocentric, bounded space, shock?
- “My world turned upside down.”

# The Midbrain in Preactive Shock and Wounding

The midbrain sequence in preactive shock and attachment wounding

When the stimulus is registering as a horrifying disruption of connection the **Orienting** to it may be followed by an immediate **Orienting Tension**, a Preactive **SHOCK** and an emotional pain that occurs **before** the basic affect.

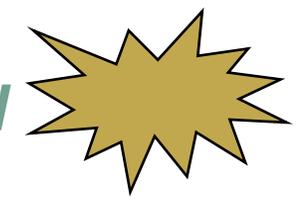
The preactive shock may lead to derealisation and depersonalisation.



**ORIENTING**

**TENSION**

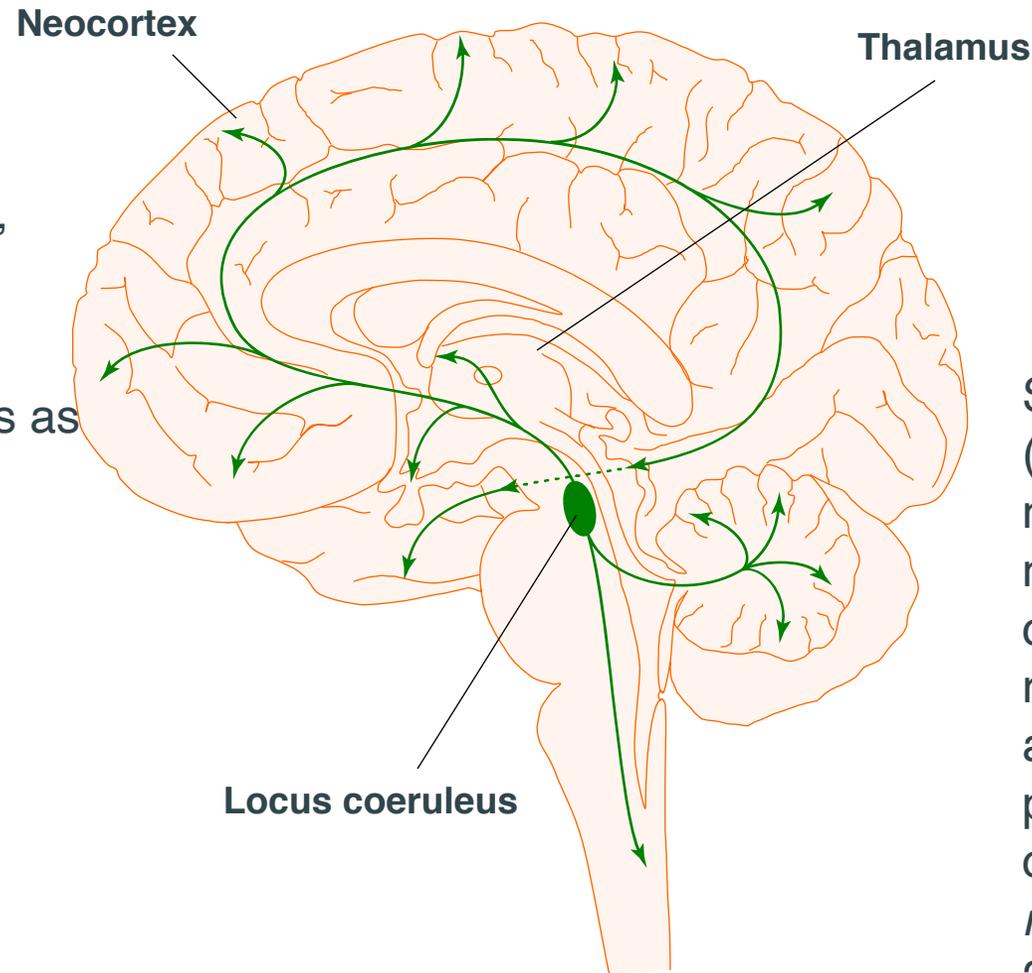
*Painful Shock through activation of locus coeruleus*



- SUPERIOR COLLICULUS
- Zo ZONAL
- SuG SUPERFICIAL GRAY
- Op OPTIC NERVE
- InG INTERMEDIATE GRAY
- InWh INTERMEDIATE WHITE
- DpG DEEP GRAY
- DpWh DEEP WHITE

## Preaffective shock and *ascending* noradrenaline pathways from the locus coeruleus

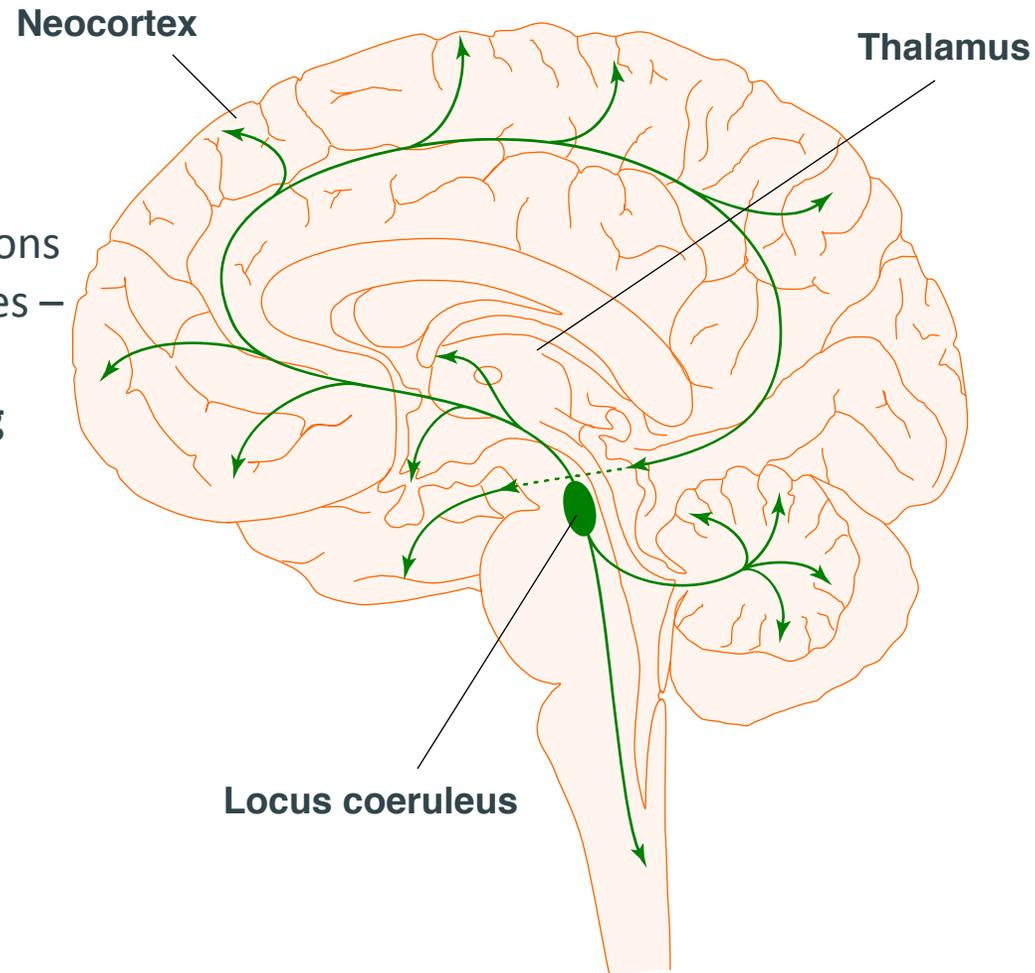
The locus coeruleus is “a major wakefulness-promoting nucleus” that enhances alertness. It activates the majority of the cerebral cortex and the thalamus as well as cholinergic and serotonergic nuclei of the brainstem. It inhibits sleep-promoting GABAergic neurons.



Samuels, E. R., & Szabadi, E. (2008). Functional neuroanatomy of the noradrenergic locus coeruleus: its roles in the regulation of arousal and autonomic function part I: principles of functional organisation. *Current neuropharmacology*, 6(3), 235–253.

# Preaffective shock and noradrenaline pathways from the locus coeruleus

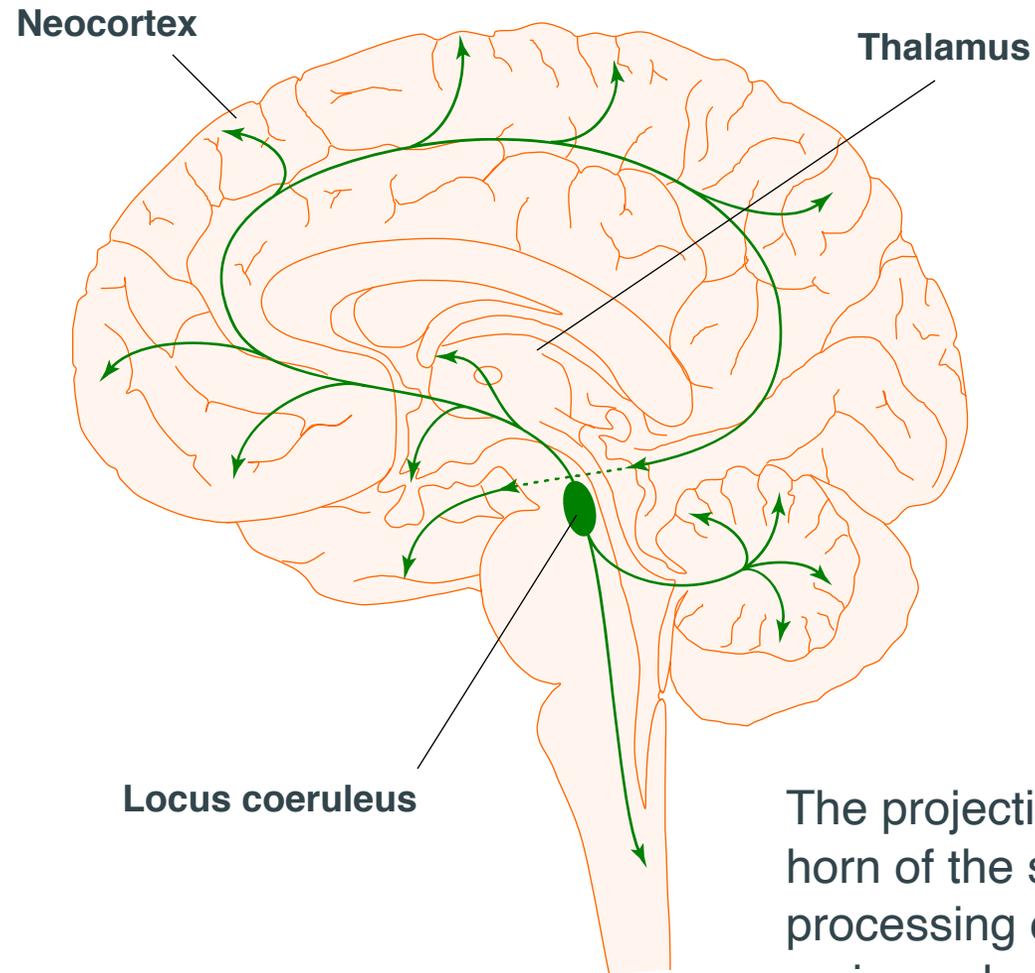
Distinct cell populations of LC neurons were activated by fear or safety cues – but there was “**robust, global recruitment** of most cells by **strong aversive stimuli**”.



Uematsu et al, 2017. Modular organization of the brainstem noradrenaline system coordinates opposing learning states. *Nature Neuroscience*, 20, 11.

# Preaffective shock and *descending* noradrenaline pathways from the locus coeruleus

Through projections from the locus coeruleus to the spinal cord there can be selective sympathetic nervous system activation of organs.  
(Samuels & Szabadi 2008)



The projection from the LC to the dorsal horn of the spinal cord is important in the processing of painful stimuli. There is a reciprocal connection.

# Is attachment shock painful in adults?

- Activating stimulus: A sudden, unexpected, death.
- It is important to find the Orienting Tension (OT) when your body first registers that something is wrong.
- Tell me what you notice in the neck, forehead or around the eyes when you turn towards that moment before you consciously realised that he was dead. (The brainstem has elicited a shock response before the feelings and thoughts come in.)
- Orienting Tension: “In the back of the neck, at the base of the skull.”
- Deepen into that tension in the back of the neck before we go any further.
- “It’s like everything empties out of me.”
- Shoulders brace. Head rotates backwards.
- Hold that moment of shock as best you can.
- Allowing the shock to dissipate made space for the grief to emerge.

# Painful preaffective shock

- A relational disconnection that is sudden, unexpected, dismissive, humiliating, contemptuous, or otherwise painful, – especially if preceded by a positively valenced state of expectation – can be experienced as shocking, horrifying, and painfully wounding.
- The subjective accompaniments may be fleeting and hard to pinpoint.
- There may be a shiver or shudder, a hollowing or emptying, an “electric” jolt.
- There may be an impulse to recoil and then a muscular bracing.
- If the shock experiences are repeated they can lead to an armoring, a pattern of tension through the body which serves “to protect an individual against painful and threatening emotional experiences.” (Lowen, Bioenergetics, 1975.)
- The pain may be an **internal** stimulus to affective and defensive responses and lead to chronic tension in the braced and armoured body.

# Painful preaffective shock

- Experienced in early life this can lead to ontological impacts:
- Can I choose what my body will do? Do I have a sense of agency?
- Can I speak? Do I have a voice?
- Why am I here? Why am I?
- Do I exist?
- Is this world real?

# Case example: severe DP/DR and the pain of having “no self”

- Patient: I was in serious (aloneness) pain and I don't exist. I cannot connect to the enormity of it. I'm in a different reality to everyone else.
- Therapist: It must have been excruciating to have the awareness of the pain – and the skills to express it – but to know it couldn't be heard without derision and denial.
- Patient: The urgency of the need to express is real. There is no self here. The pain is here; I am utterly alone. Nobody believes me. This is the awful pain that I'm living with every day.

# Mechanisms of dissociation in the DBR model

- Intracortical.
- **Neurochemical.** Capping of extreme affective responses at their origin in the midbrain. May be a precursor to structural dissociation.
- Structural.
- Supracortical.

# Attachment loss and affective responses

- The brain anatomy underlying human GRIEF is the same as that for animal separation distress calls.
- “This key system for feeling the sting of social isolation appears to have risen evolutionarily from brain systems that mediate the affective intensity of physical pain. . . . (T)his ancient subcortical brain system for affective aspects of pain is different than systems that loop to higher brain regions to mediate the cognitive-discriminative aspects of pain.” (Panksepp & Biven, page 314.)
- Affective pain is often diffuse – difficult to pinpoint – and can be hard to describe. (Even if less so than the preaffective response.)

**Basic  
Mammalian  
Affects  
(Panksepp  
1998) – all left  
intact by  
removal of the  
cerebral cortex**

- **RAGE:** amygdala, bed nucleus of stria terminalis (BNST); hypothalamus; periaqueductal gray (PAG)
- **FEAR:** amygdala; hypothalamus; PAG
- **PANIC/GRIEF:** anterior cingulate cortex; BNST; hypothalamus; PAG
- **SEEKING/Expectancy:** mesolimbic and mesocortical dopamine systems; hypothalamus and PAG
- **SEXUAL DESIRE/LUST:** amygdala; BNST; hypothalamus; PAG
- **CARE:** anterior cingulate cortex; BNST; hypothalamus; PAG
- **PLAY:** parafascicular area; PAG

# The physiology of sadness (Kreibig 2010)

- The activating sadness response, which partially overlaps with the physiological response of crying sadness, is characterized by increased cardiovascular sympathetic control and changed respiratory activity . . . On the other hand, the deactivating sadness response, which partially overlaps with the physiological response of non-crying sadness, is characterized by **sympathetic withdrawal**, . . . .
- Pools of sympathetic neurons can be selectively engaged, such that individual systemic circuits or other effector units are independently activated: it is not all-or-nothing.
- A distinct characteristic of deactivating/non-crying sadness to all other negative emotions is the decrease in electrodermal activity. In contrast, the activating/crying sadness response largely overlaps with that of, for example, anxiety . . . .

# Autonomic nervous system (ANS) activity in emotional pain

- Emotional visceral or previsceral/preaffective pain that is difficult to localise may involve deep layers of the spinal cord.
- Deeper layers project to the intralaminar nuclei of the thalamus involved in the expression of defensive responses.
- Experiences that are viscerally, emotionally, painful may not involve the vagus nerve.
- An inescapable stressor such as deep pain, haemorrhage, or repeated defeat evokes passive defensive strategies via the ventrolateral PAG (Keay & Bandler 2001).

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Non-crying sadness involves sympathetic nervous system withdrawal so may involve the ventrolateral column of the PAG (VLPAG) and its projections to the medulla.

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The neurochemical environment of the VLPAG determines the valence of the low arousal state – with oxytocin it can be warm and safe.

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However, submission in animal models can be associated with **activation of the mesolimbic dopamine (DA) system.**

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Submit and Despair states may be indistinguishable clinically – and may involve an unpleasant mix of activation and deactivation.

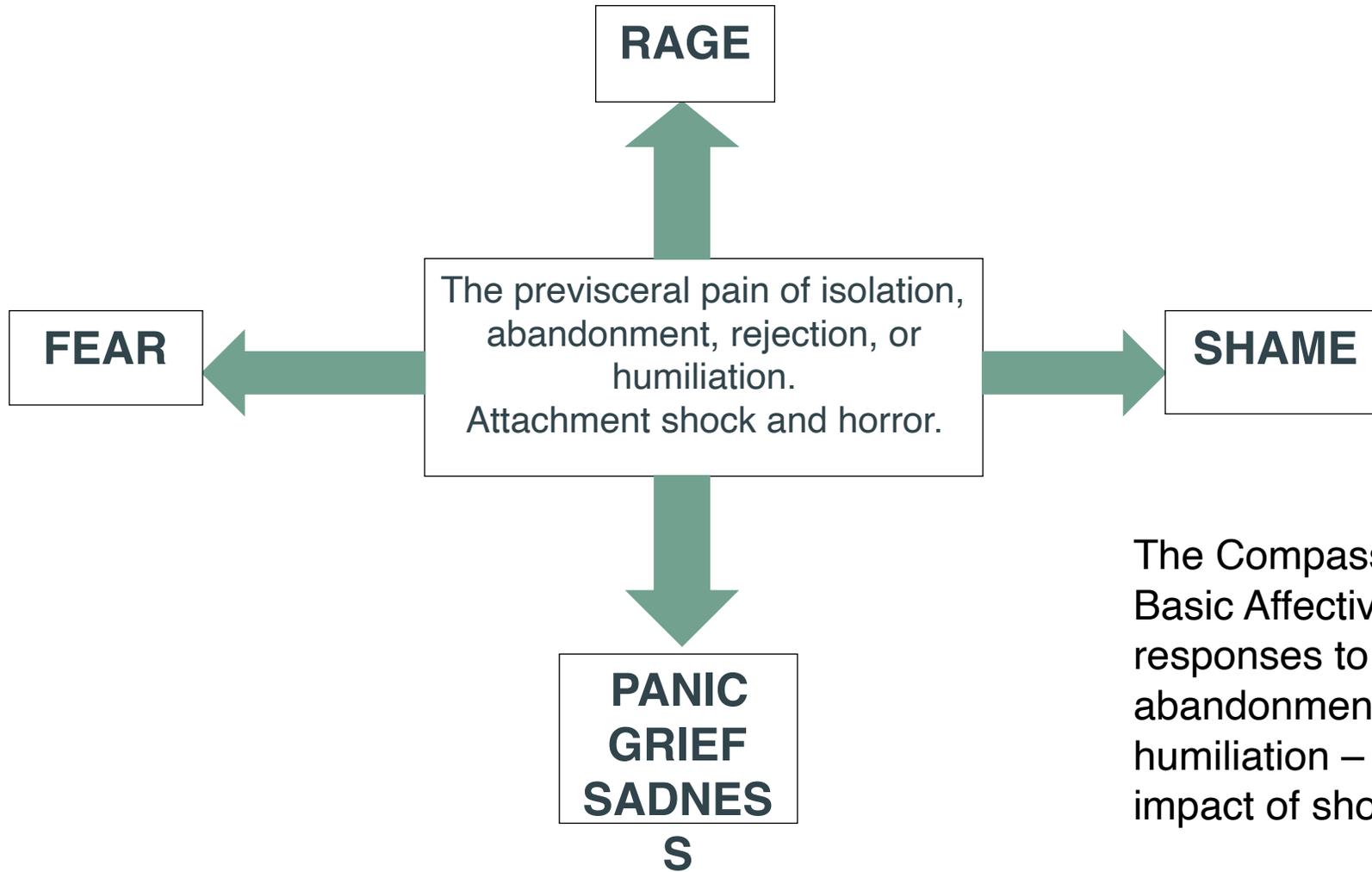


**Shame – an evolved basic affect for painful exclusion and the associated sense of worthlessness**

- Shame may not be present after decortication so may lack that commonality with the Panksepp basic affects: it may require an input from the prefrontal cortex to the PAG and hypothalamus.
- However, it has an action urge (to curl up, to hide, to disappear), a sympathetic autonomic nervous system profile, and a visceral pain – all of which must recruit the PAG.

# Affective responses to pain and horror in key interactions

- In a moment of profound attachment disruption there may be a pre-visceral – or deep muscle? – impact that has ontological consequences.
- It is experienced as painful and provokes an affective and a defensive response.
- That is, the stimulus to the affect is coming from inside rather than outside.
- The pain and the affective and defensive responses can then appear “out of the blue”.

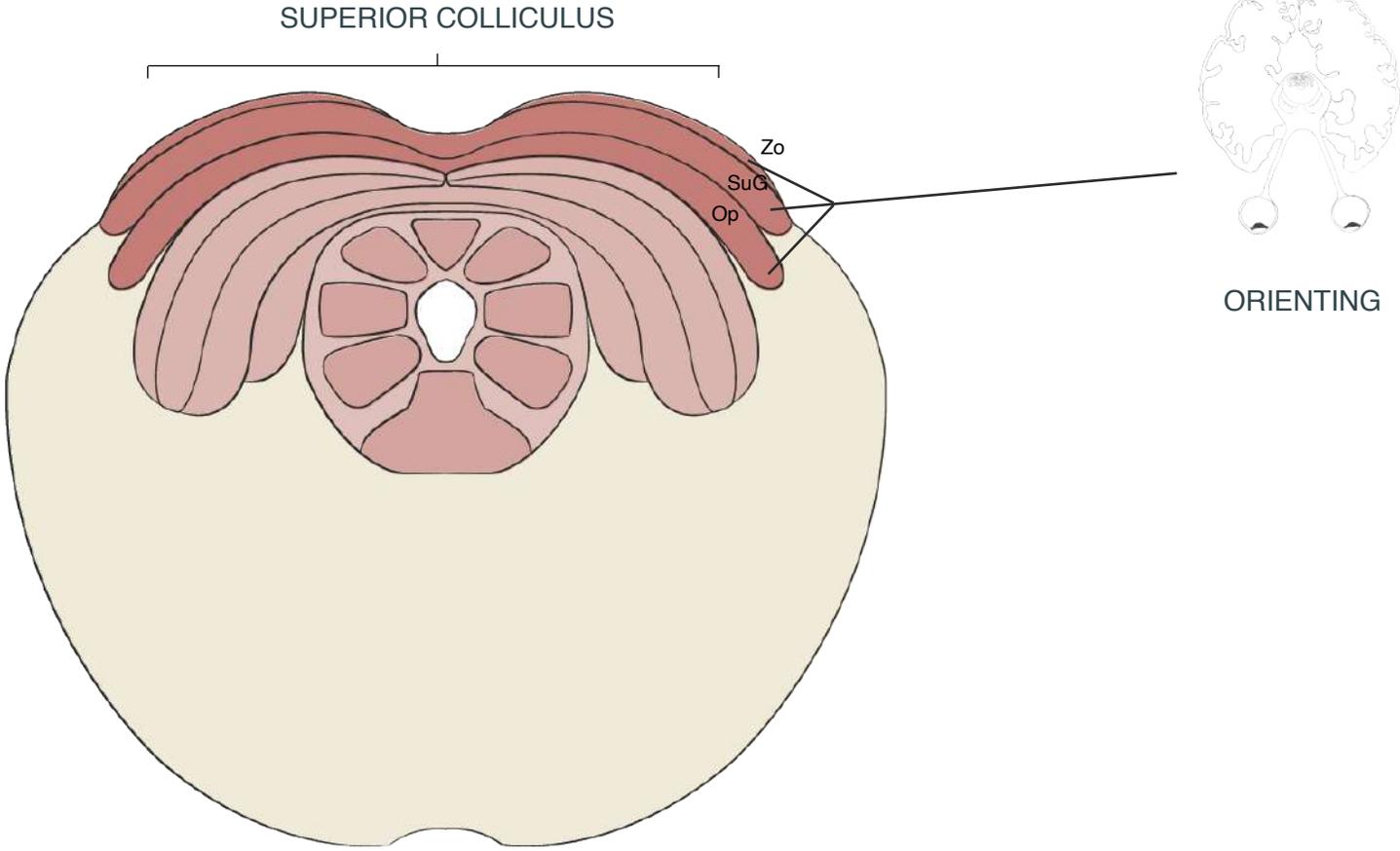


The Compass of Pain:  
Basic Affective responses to the pain of isolation, abandonment, rejection or humiliation – or to the bodily impact of shock and horror.

# Compass of pain example

- Activating stimulus: “It’s OK. I’ll do that.” Implication: “I’ll do it better and faster!”
- Transition from positive affect state. Shock of sudden disconnection.
- Momentarily, approach stops. Impulse for recoil of the head.
- Pain of being humiliated: fleeting internal wince.
- Shame: “I am worthless. I can never get it right.” Urge to curl up around the pain.
- Rage. (Attack other. Compass of Shame. Nathanson 1992). “You always find fault.”
- Altered SEEKING state: angry hopelessness about the relationship.

# Visual stimulus to pain of disconnection

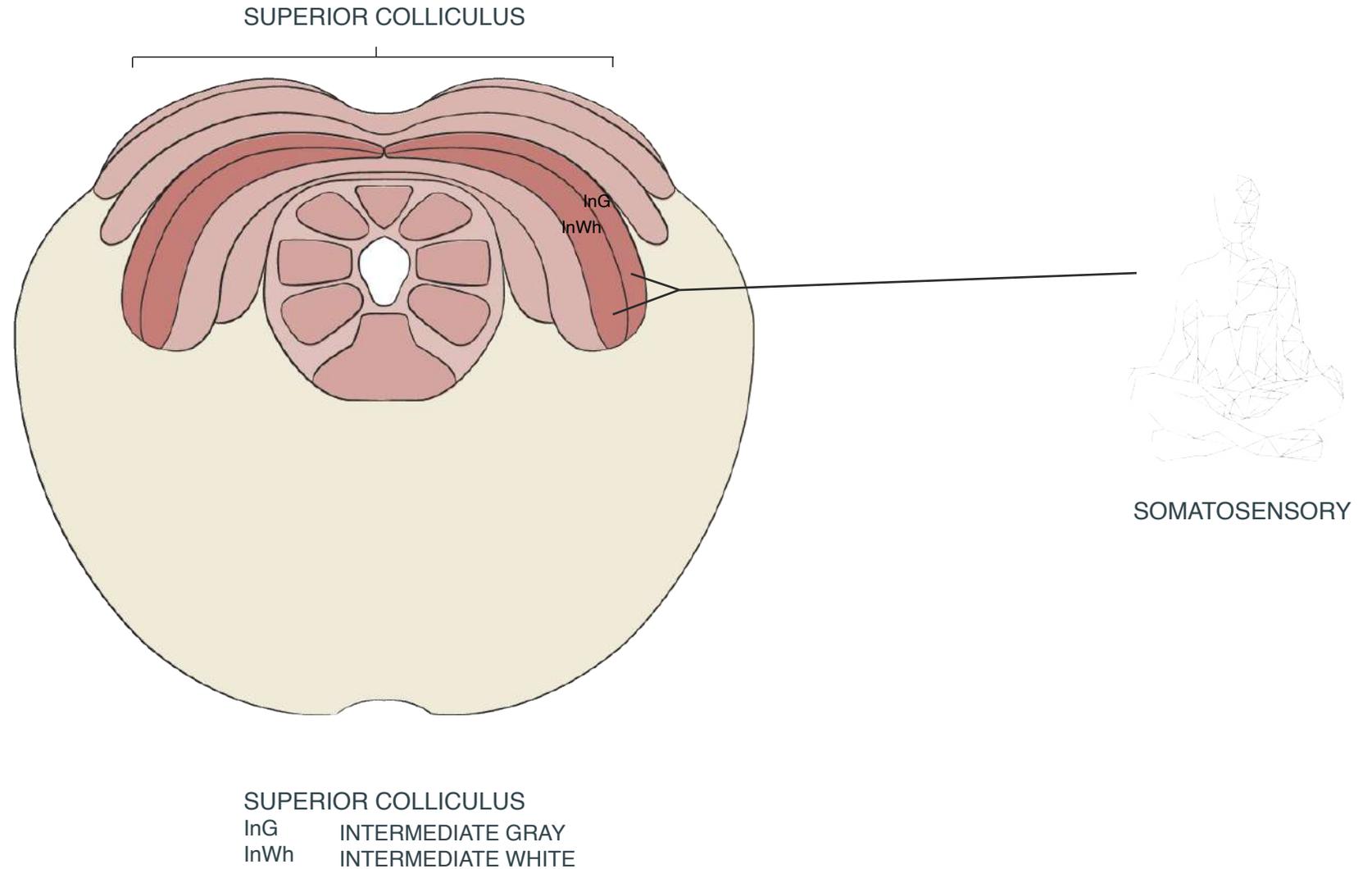


Where the attachment disconnection is first registered when the stimuli are visual.

SUPERIOR COLLICULUS  
Zo ZONAL  
SuG SUPERFICIAL GRAY  
Op OPTIC NERVE

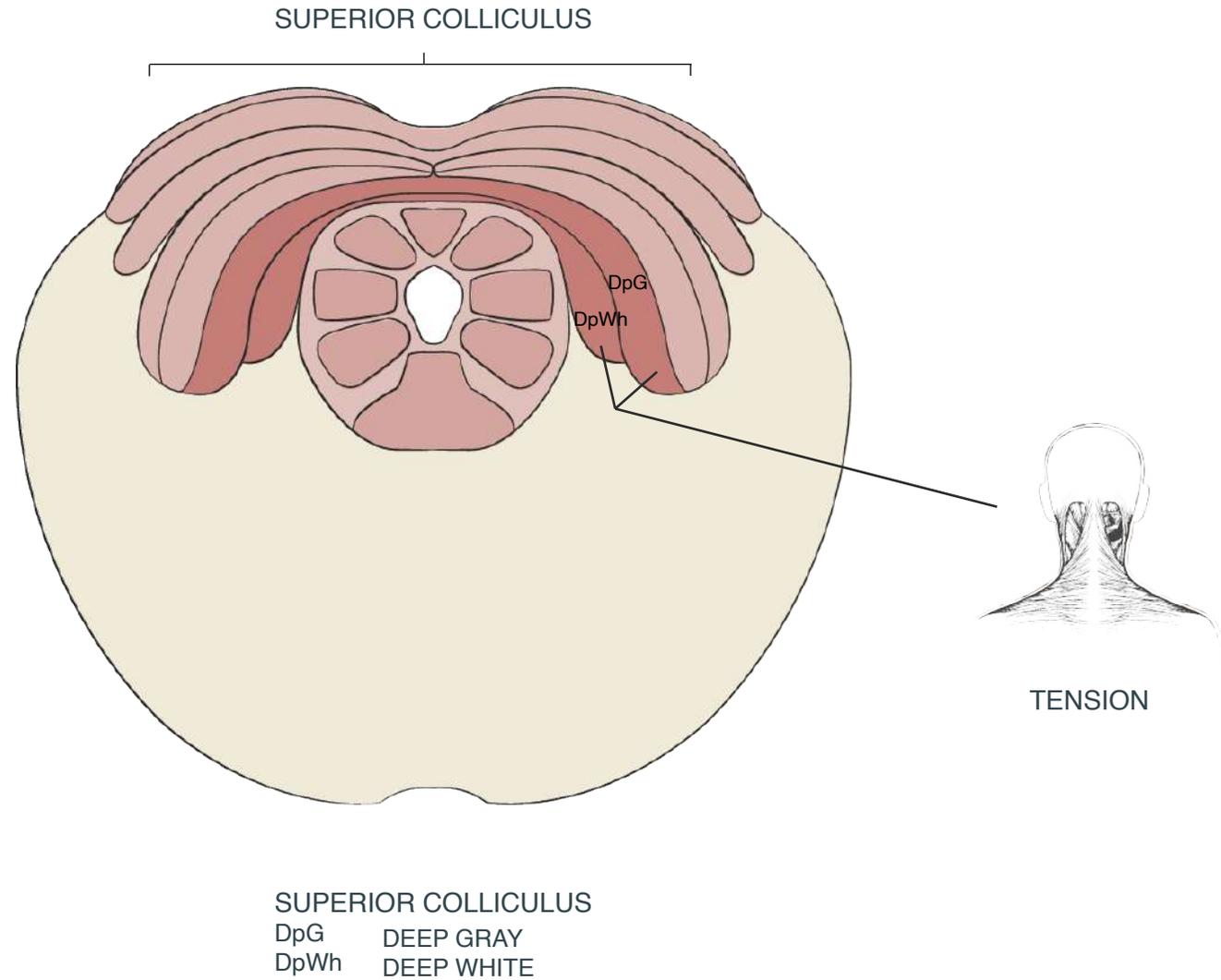
# Auditory stimulus to the pain of disconnection

Where the attachment disconnection is first registered when the stimuli are auditory or somatosensory.



# The Orienting Tension

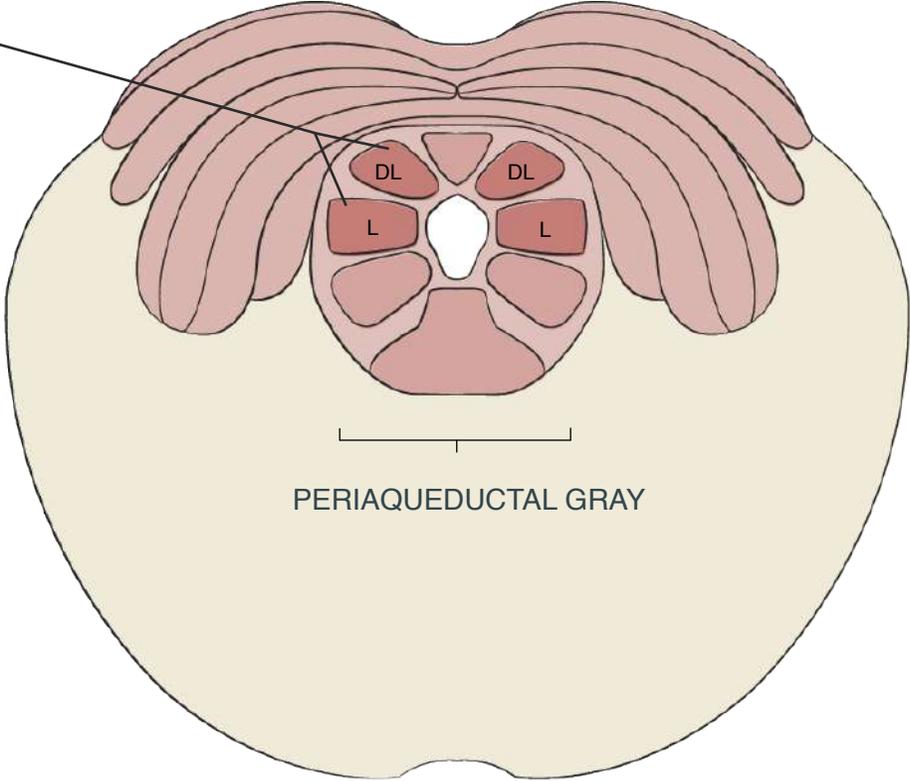
The origin of the Orienting Tension and of Shock and Horror responses which can cause bracing and rigidity.



# Basic affects



FREEZE, FIGHT & UNCONTROLLED ACTIVATION

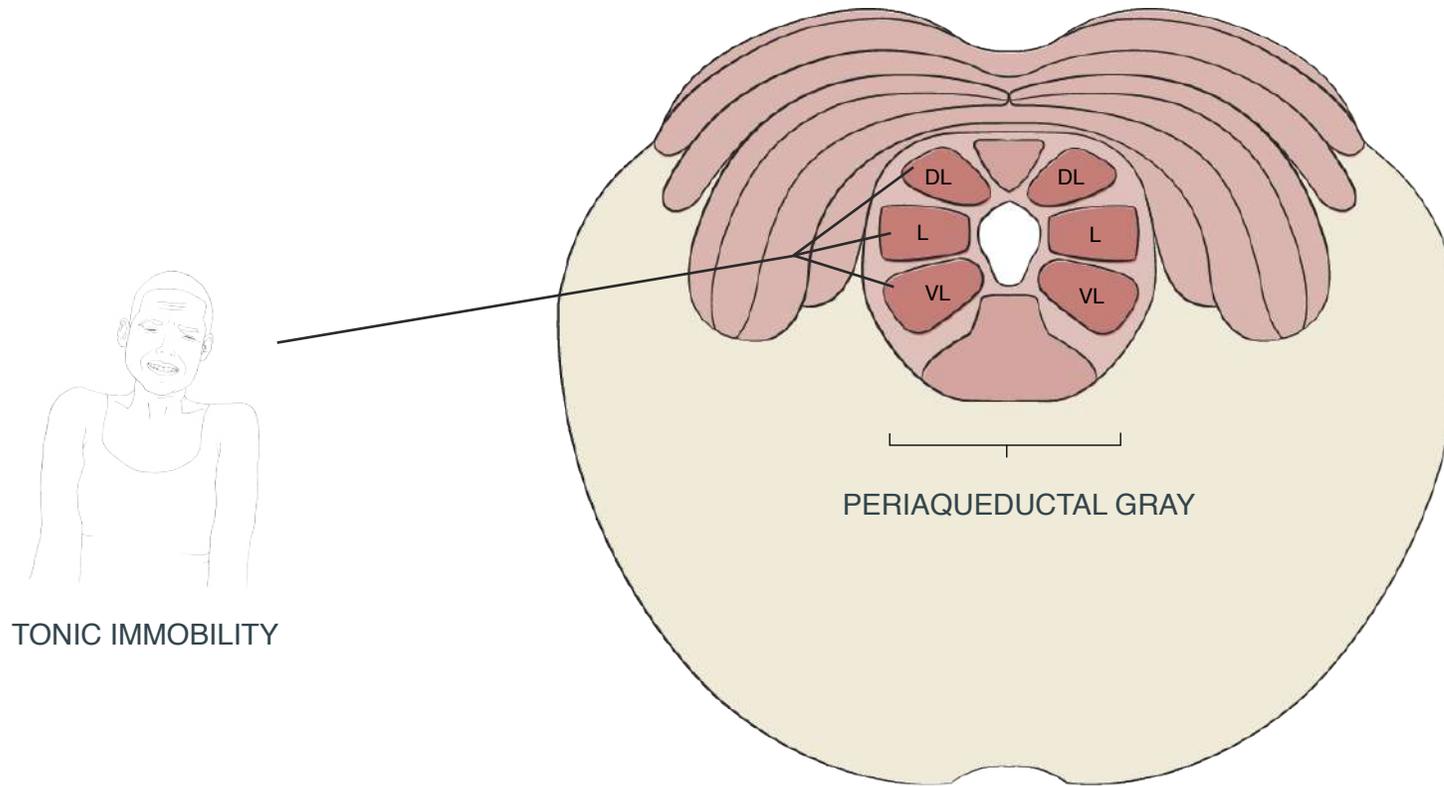


PERIAQUEDUCTAL GRAY

PERIAQUEDUCTAL GRAY  
DL DORSOLATERAL  
L LATERAL

Fear, anger, sadness, shame can all be activated by the dorsal PAG and the hypothalamus. Endogenous cannabinoids are the likely mediators of high arousal neurochemical dissociation.

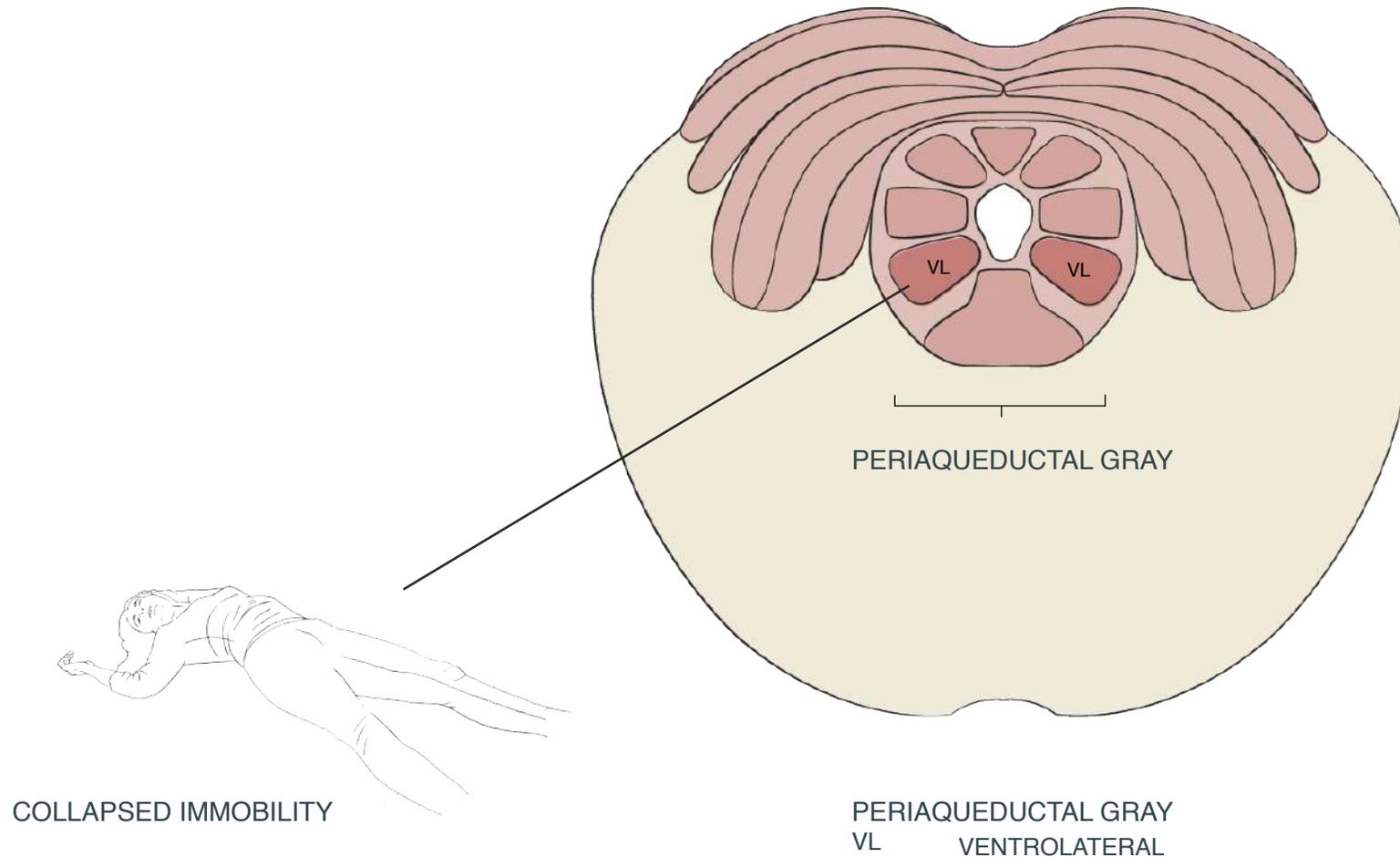
# Tonic immobility and column coactivation



The infant who cannot move when trapped and helpless in a disorganised communication may exhibit the prototype of this state.

PERIAQUEDUCTAL GRAY  
DL DORSOLATERAL  
L LATERAL  
VL VENTROLATERAL

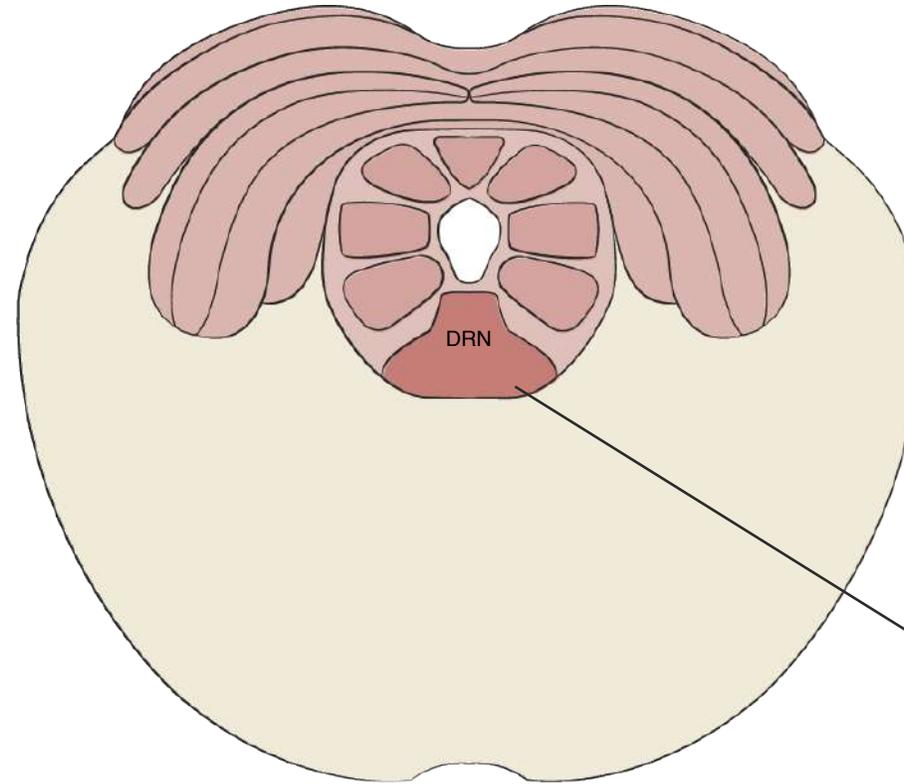
# Collapsed immobility and the vIPAG



The infant who becomes floppy and tired in a disorganised communication may exhibit the prototype of this state. Endogenous opioids are the likely mediators of the low arousal dissociation.

# Aloneness

**Dorsal Raphe Nucleus (close proximity to the vIPAG for interactions of 5HT, opioids and oxytocin).**



The origin of the core aloneness pain “below” the affective responses?

All the defensive responses have failed and nobody has come to protect.

Mu opioids but no oxytocin in the adjacent ventrolateral PAG.

DRN DORSAL RAPHE NUCLEUS



ALONENESS

# Core aloneness pain – high arousal dissociation (Endocannabinoids)

- Activating Stimulus: Sitting in a corner, not speaking. Wanting to cry but unable to.
- Orienting Tension: Right forehead.
- Wanting to be held by someone – in a non-abusive way. The need was never met.
- Pinging of pain. Numbing out. Explosion of pain – then nothingness.
- (Return to Orienting Tension) Chest aching with holding in painful feelings.
- Able to access the peak of pain before the dissociation.
  
- Was able to return to this at the next session – recognising the pain of the unmet need to be held in a loving way – and the dissociative numbing that had ensued..

# When the pain is too great – low arousal dissociation (Endogenous Opioids (EOs))

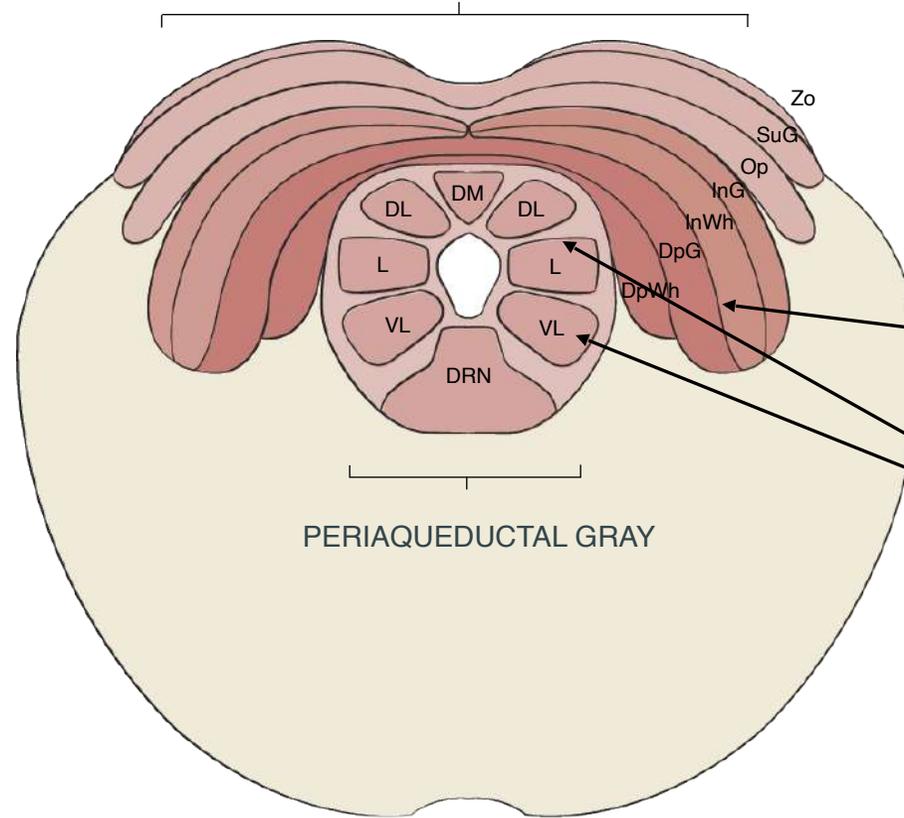
- Activating Stimulus: the pain is too much – I want to be dead.
- Orienting Tension: ears (!)
- I had enough of being hated. I gave up (muscles floppy).
- I really want to die: it feels good. It's quiet. (EOs in vIPAG)
- They didn't see me as human: I want to kill them. (l/dIPAG)
- I'm very angry. What is hard to stomach is the hatred.
- Mother didn't hear my pain. Father was very passive. (vIPAG/DRN)
  
- New Perspective: I should love my pain – even if it is not comfortable – instead of turning away.

# When the pain is too great – low arousal dissociation (Endogenous Opioids)

- Activating Stimulus: Unexplained pain in back.
- Orienting Tension: Right eye – orbicular muscles.
- Everything silent and still. All senses heightened. (Vigilance state dependent on SC/LC.)
- Hearing insects – I'm not alone; I feel connected.
- I'll never see my parents again. (Sadness: dorsal PAG.)
- How come all this comes from the right eye?
- No-one is coming; relaxing again. Cold and sleepy. (vIPAG)
- So angry (l/dIPAG) but I need to stay still and listen.
- Weird sensations in the skin (as endogenous opioids wear off?).

# Midbrain

SUPERIOR COLLICULUS



PERIAQUEDUCTAL GRAY

**Orienting  
TENSION**

**High and  
Low  
arousal  
capping**



**DISSOCIATION**

The **O-T-A** sequence  
in  
Neurochemical Dissociation

If it is possible to maintain awareness of the orienting tension – it is then possible to process the body memories of the sequences that include either high arousal dissociation or low arousal dissociation.

**SUPERIOR COLLICULUS**

- Zo ZONAL
- SuG SUPERFICIAL GRAY
- Op OPTIC NERVE
- InG INTERMEDIATE GRAY
- InWh INTERMEDIATE WHITE
- DpG DEEP GRAY
- DpWh DEEP WHITE

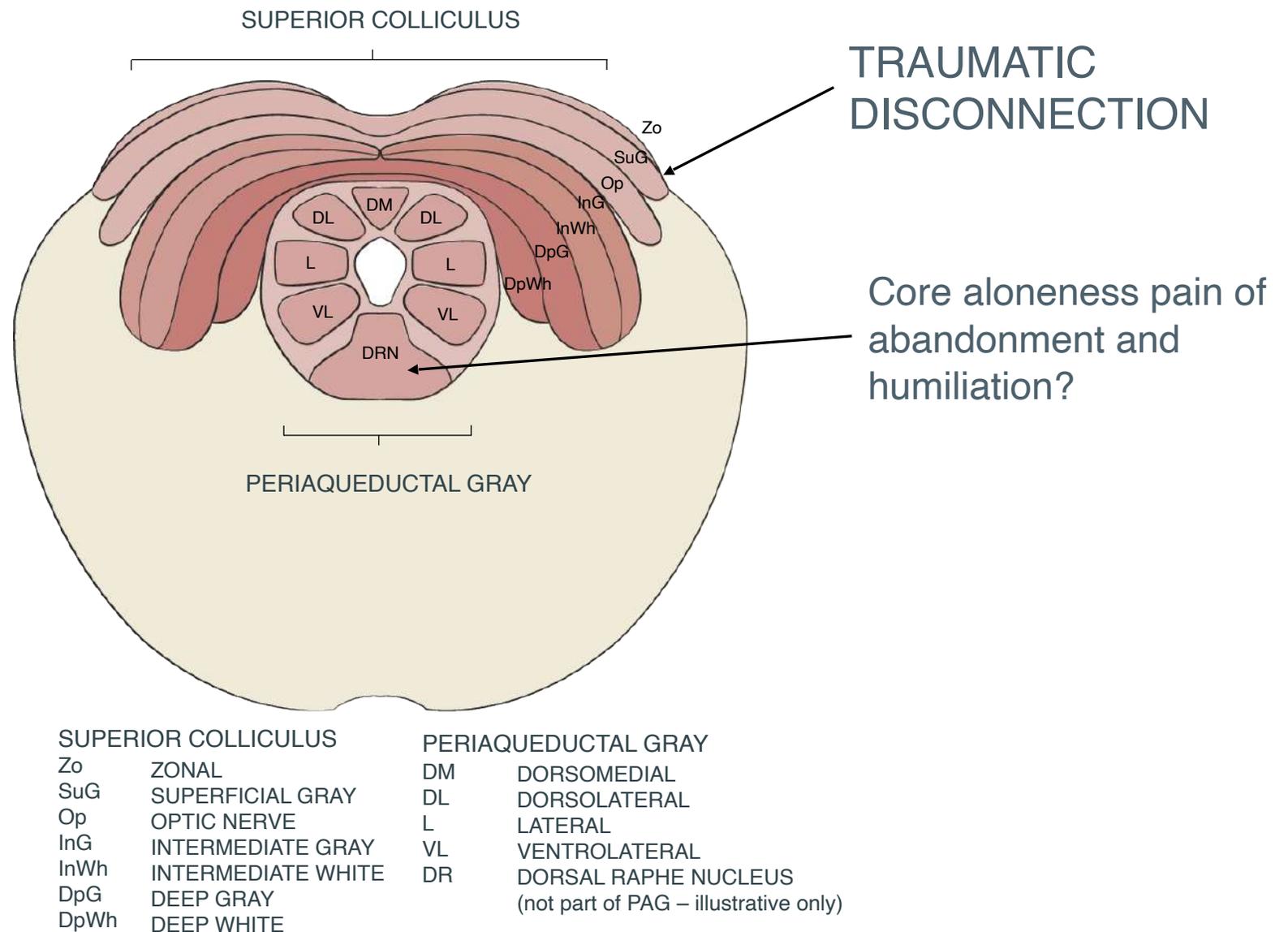
**PERIAQUEDUCTAL GRAY**

- DM DORSOMEDIAL
- DL DORSOLATERAL
- L LATERAL
- VL VENTROLATERAL
- DR DORSAL RAPHE NUCLEUS  
(not part of PAG – illustrative only)

What are the mechanisms for dissociating from the core aloneness pain hypothesised to involve the Dorsal Raphe Nucleus which is closely interlinked with the ventrolateral column of the PAG?

**5HT neurons are necessary for the action of opioids in the DRN/vIPAG control of pain.**

This may be the key area for the emergence of the structural dissociation of defence response parts.



# When the pain is too great: a switch in DID

- Activating Stimulus: Turn your attention at that Where Self level towards the part that – you have been told – has been shouting all the time.
- “Shut up! Oh! Sorry, Frank. It’s Morag. Who’s Morag? She can’t shut up.”
- Activating Stimulus with a refined focus: What comes in to your face and neck when you turn towards “Morag”?
- Orienting Tension: back of neck.
- She stops me from talking and making a fool of myself so that people can’t think I’m simple and stupid. If I just shut up people won’t judge me.
- Many examples of being rejected as an embarrassment.
- I’m heartbroken.
- Processing of the pain of aloneness and humiliation without further switching or loss of contact with present moment orientation.

# A moment of switching self-state

- Disconnection from husband: I think I'm going to die – so I switch and come back up as her (The Destroyer). I don't want to see what she is going to do.
- Activating Stimulus: That moment of transition.
- Orienting Tension: pain in left neck.
- Affect: (nausea).
- Mother is the template: belittling father: “stupid, no good, . . .”
- I need her rage to keep me safe. I have to stay angry. He can never be right.
- Vulnerability and pain and helplessness if I don't switch.
- I have to let it go – it hurts him. I have nothing to give anybody. I do love but it is full of pain.
- New Perspective: I'd rather be kind.

# Core aloneness pain and/or Parts work

- Core Aloneness Pain processing and/or Parts work.
- Core Aloneness Pain processing does not mean “We work with the whole person, not parts.”
- We are still acknowledging the importance of structural dissociation but seeing it as more of an upper level phenomenon.

# Mechanisms of dissociation in the DBR model

- Intracortical.
- Neurochemical.
- **Structural. Self-states, often holding separate autobiographical and affective components, which can take executive control of thoughts, perceptual sensitivities, and actions.**
- Supracortical.

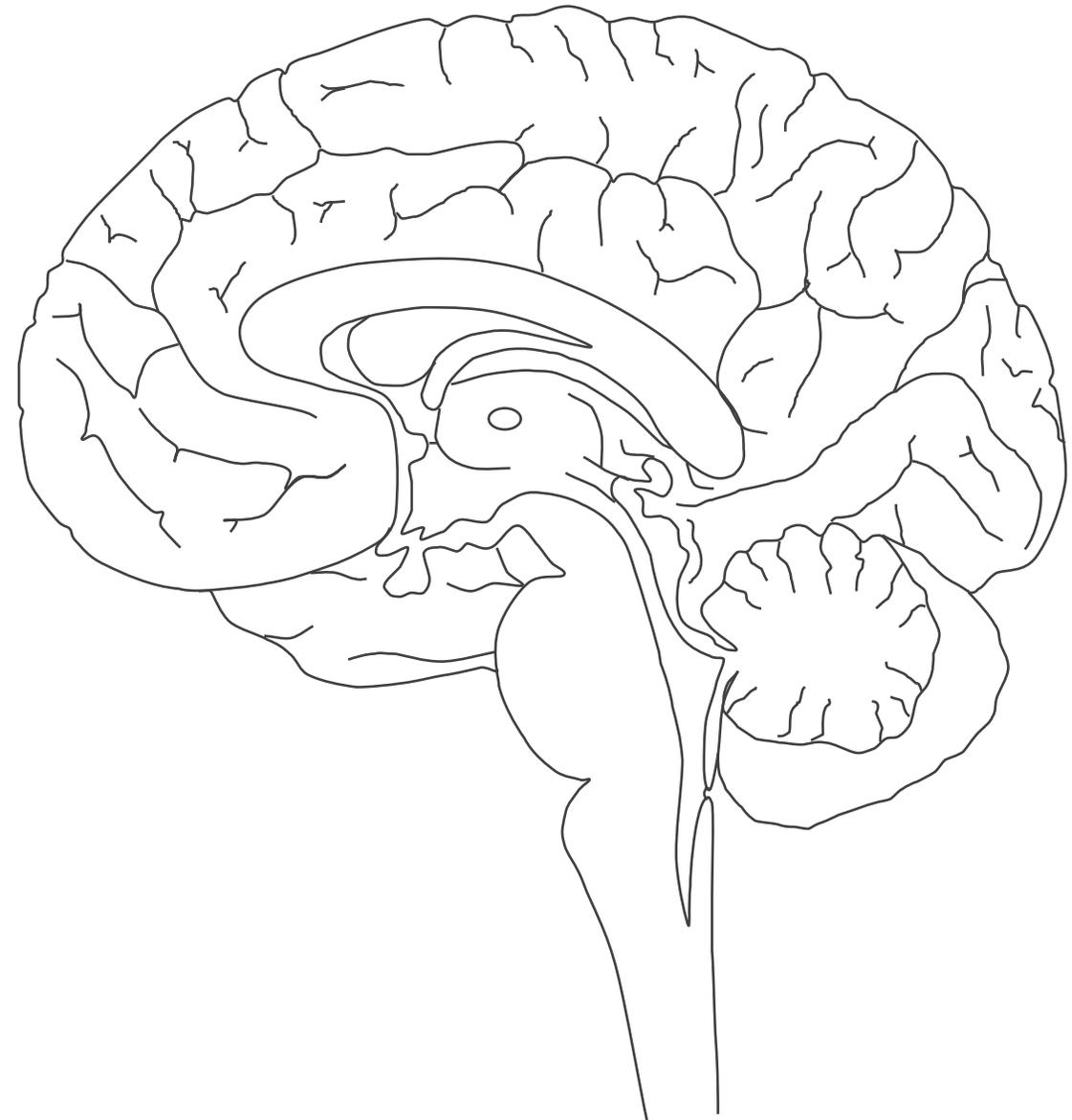
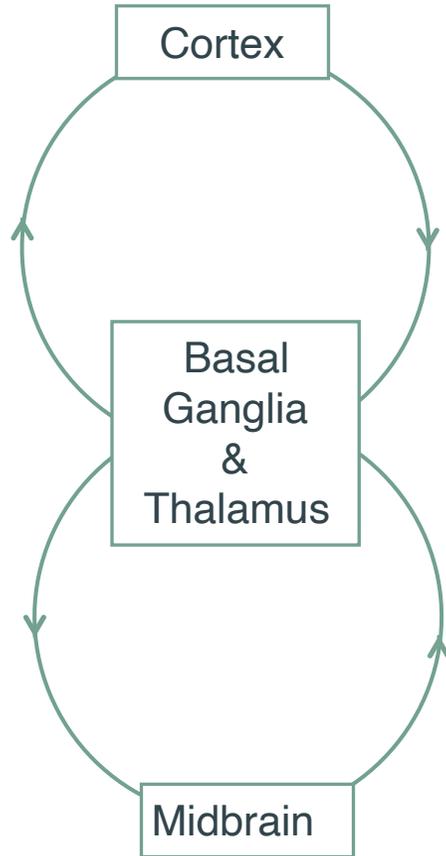
# Mechanisms of dissociation in the DBR model

- “Alter personalities are highly stylized enactments of inner conflicts, drives, memories, and feelings. At the same time, they are dissociated packets of behavior developed for transaction with the outside world. They are fragmented parts of one person. There is only one person.”
- Colin Ross, 1997. *Dissociative Identity Disorder*. John Wiley, New York. P 144.
- “In my view, child alters are not packets of childness retained in a surrounding sea of adult psyche. They are stylized packets of adult psyche. . . . I hold the child alters responsible for their behavior in the same way as the adult host personality. . . . The vast majority of child alters have a clear sensorium, are alert, and are cognitively intact.” op cit, p 147.

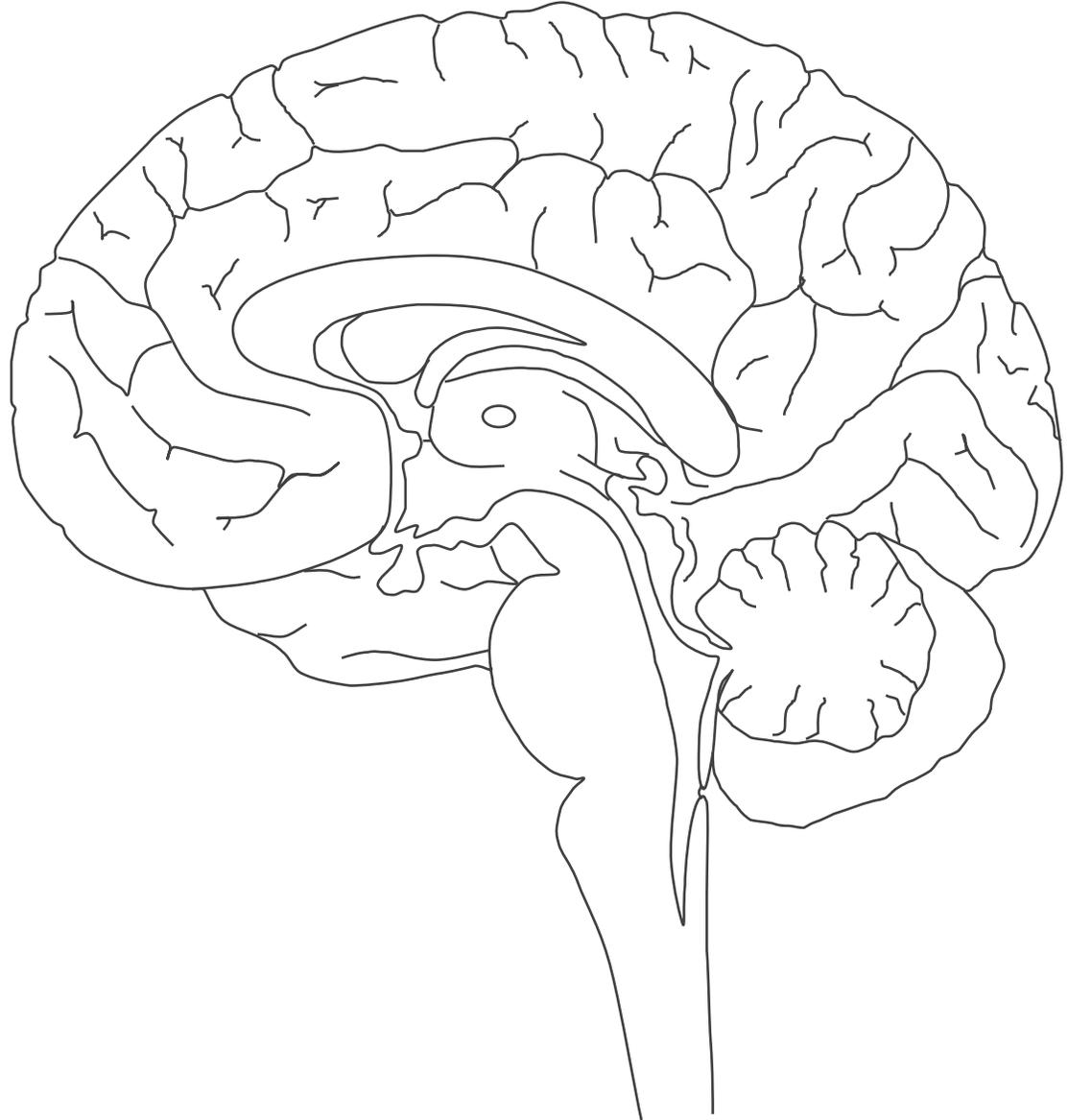
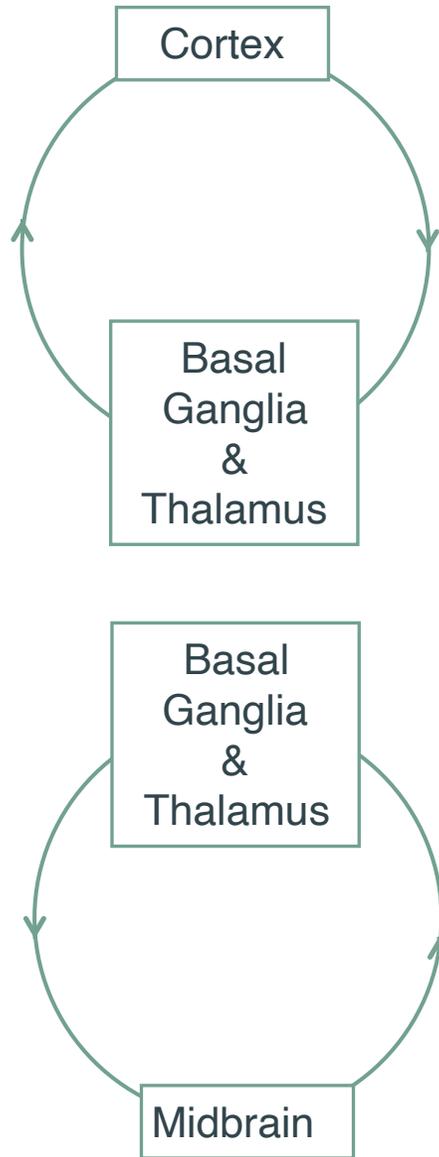
# Mechanisms of dissociation in the DBR model

- These observations suggest that complex corticothalamic looping is involved in extreme forms of self-state creation – even when there is amnesia for the behaviour.
- That is, fight, flight, freeze, attach, hide, submit, traumatised, emotional, exiled – and apparently normal, getting-on-with-normal-life, and adult – parts all have upper level structures acting as substrates for them.

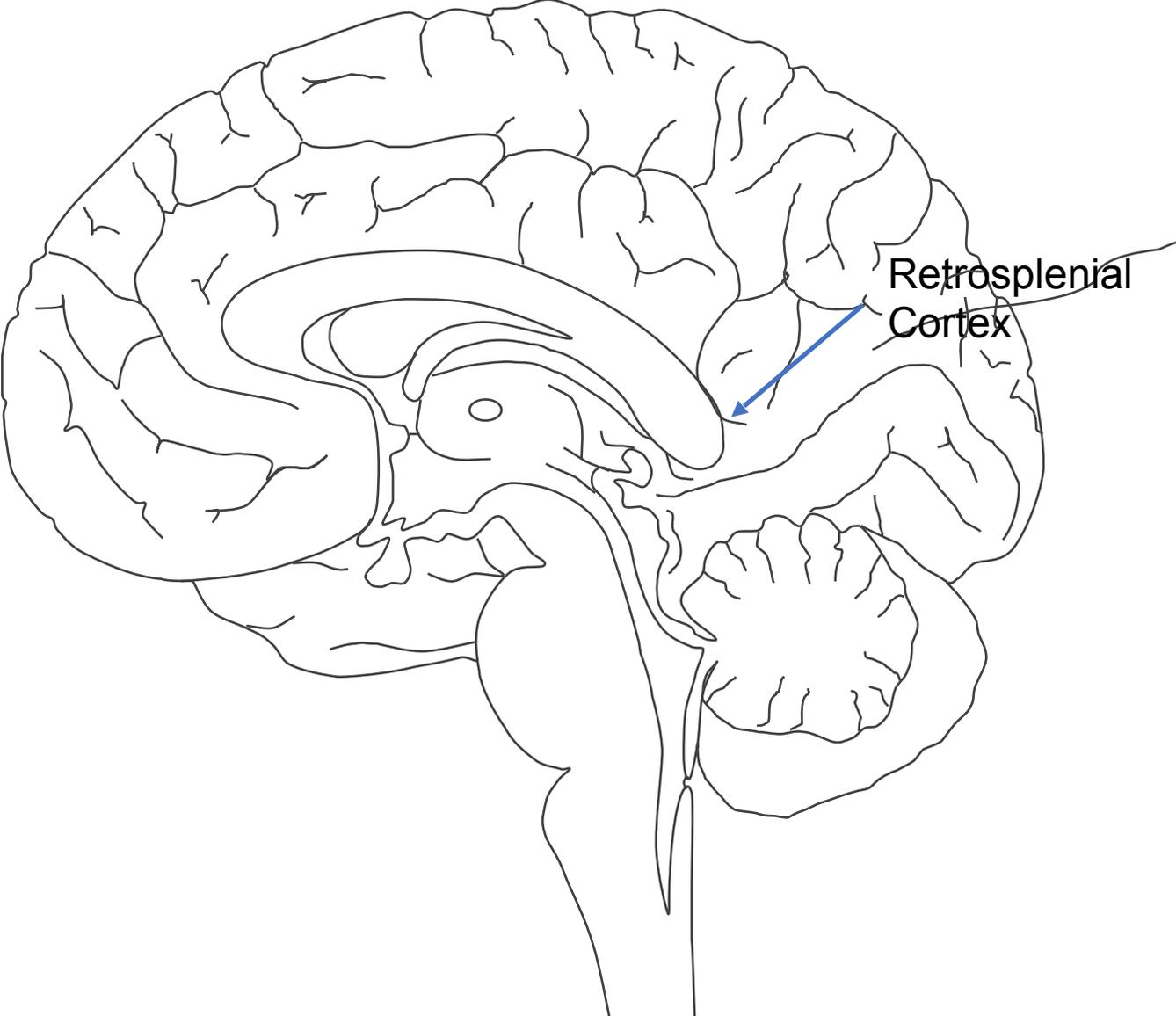
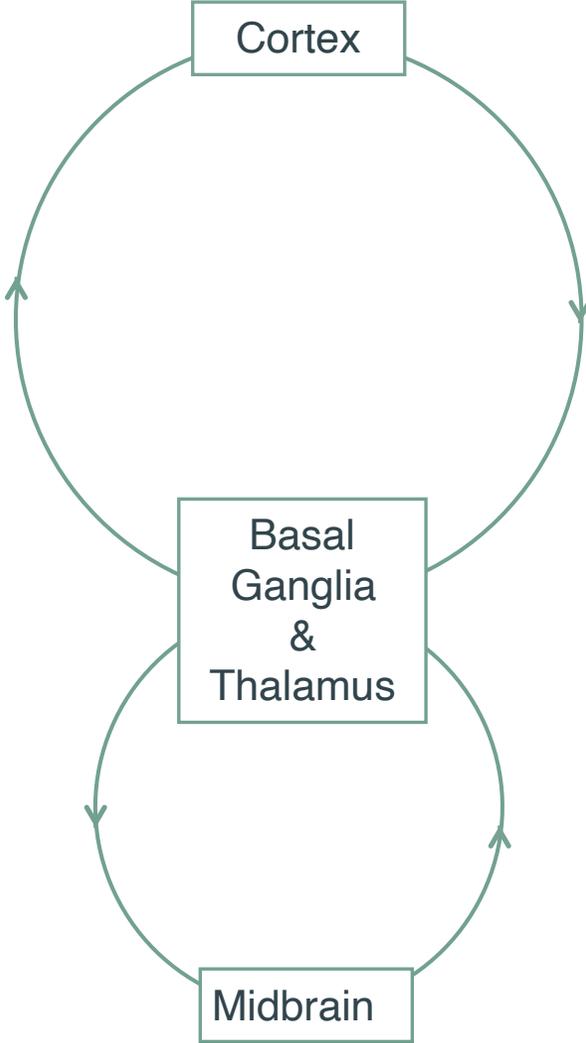
# Cortical and Midbrain Loops: The Head and The Heart (Alexander et al 1990; McHaffie et al, 2005)



# Cortical and Midbrain Loops: Alters detaching



# Post-traumatic Stress Disorder Dissociative Subtype



# Processing below the parts: core aloneness pain

- In those with the (putative) reduction of MPFC activity and the increased amygdala responsiveness the emotional dysregulation can be extreme. The PAG is remaining active even during default states (Ruth Lanius).
- There may be different self-states holding different aspects of the trauma history but underneath is the pain driving the intense affective responses.
- It is important that the therapist and the patient are openly collaborating on the goal of clearing the underlying pain – or stabilising through parts work and the resourcing of parts.
- Deep Brain Reorienting (DBR) in Complex Trauma Disorders: Patient Information

# Core aloneness pain underlying parts of self

- Every part of me inside and out is riddled with pain . . . my head explosive. . . . I have no idea what's going on in my head although I could cry, not sure why.
- The emotional pain is impacting and I can relate to the aloneness, not being wanted, not worthy of love, yet longing for anyone to be there to help. It's like all parts are crying out for the same thing and feeling every reminder of the physical events in which they needed that help. It is almost unbearable.

# Core aloneness pain underlying parts of self

- Activating Stimulus: Turning towards the pain of the 13 y.o. intent on suicide.
- Orienting Tension: Right eyebrow and back of neck on right.
- Pressure building in head. Stabbing pain in heart. So much pain.
- They (parts of self) are all present. They are all sitting back watching.
- The need was just to have somebody – even if it was going to happen again and again – to have somebody to go back to.
- Outcome in the following week: No suicidal thinking, no headaches. Still that hurt there but a bigger space around it. I can breathe.
- The underlying hurt is the same for them all.

# Mechanisms of dissociation in the DBR model

- Intracortical.
- Neurochemical.
- Structural.
- **Supracortical.** Turning away, unconsciously, at midbrain level. The collicular self “*decides*” it is too much to look at what is in conscious awareness.

# The collicular self is a non-phenomenal directional pivot for phenomenal sensory space

- The place from which one is looking or attending is occupied . . . by oneself.
- It is the one location that is forever beyond the reach of any attention or perception, because it is the point from which attention is directed and relative to which percepts are located in the space whose origin it defines.

Bjorn Merker (2013). The efference cascade, consciousness, and its self: naturalizing the first person pivot of action control. *Frontiers in Psychology*, 4, 501.

# The SC and PAG as functionally supracortical

“ . . Merker calls this affective / sensory / motor interface between the PAG, the superior colliculi and the midbrain locomotor region the brain’s ‘decision triangle’. Panksepp calls it the primal SELF, the very source of our sentient being.”

Solms, 2021, The Hidden Spring, p 139.

The turning towards or turning away from the contents of consciousness represents a most basic capacity to disconnect from the emotional experience of something horrifying or terrifying or agonising.

Effective therapy can involve the turning towards the unbearable so needs to be a collaboration that is paced for safety and tolerability.

# Not alone with aloneness pain

- Feeling sad and lonely: I don't belong, never have. Reluctant to go out in case of a health emergency.
- Activating stimulus: the pain of being alone.
- Orienting Tension: around the eyes.
- Shoulders and arms in armouring response.
- Waves from the solar plexus: catches in the heart. A heartache: such intensity.
- You (therapist) are there! It makes such a difference!
- TH: Notice the healing mismatch in that awareness of not being alone with the pain of being alone. (Oxytocin and the VIPAG/DRN).
- It's OK. It's alright. I can go out; I'll be alright.

# Attachment wounding: hypotheses

Rather than try to fit into a window of tolerance model which is based in an autonomic nervous system model of peripheral change – when the key systems for change in activation and arousal are mesocorticolimbic – the DBR focus is on:

- The preaffective/previsceral shock and pain,
- Affects – which are expressed through muscle tension changes, opioid and non-opioid analgesia, and activations and deactivations of the sympathetic nervous system – and
- The mesolimbic dopamine system – negatively or positively valenced.

# Negatively-valenced SEEKING states

- Examples of negatively valenced SEEKING states, that is, states that make drive and motivation feel unpleasant:
- Relational – protest, despair, detachment, disconnection, pointlessness, meaninglessness, isolation, abandonment.
- Traumatic – chronic vigilance, submission, helplessness, dysphoric activation, aggression, pervasive sadness, toxic shame.
- Medical models that have only two distress states, namely depression and anxiety, can often be dealing with prolonged SEEKING states that carry GRIEF/PANIC or FEAR.

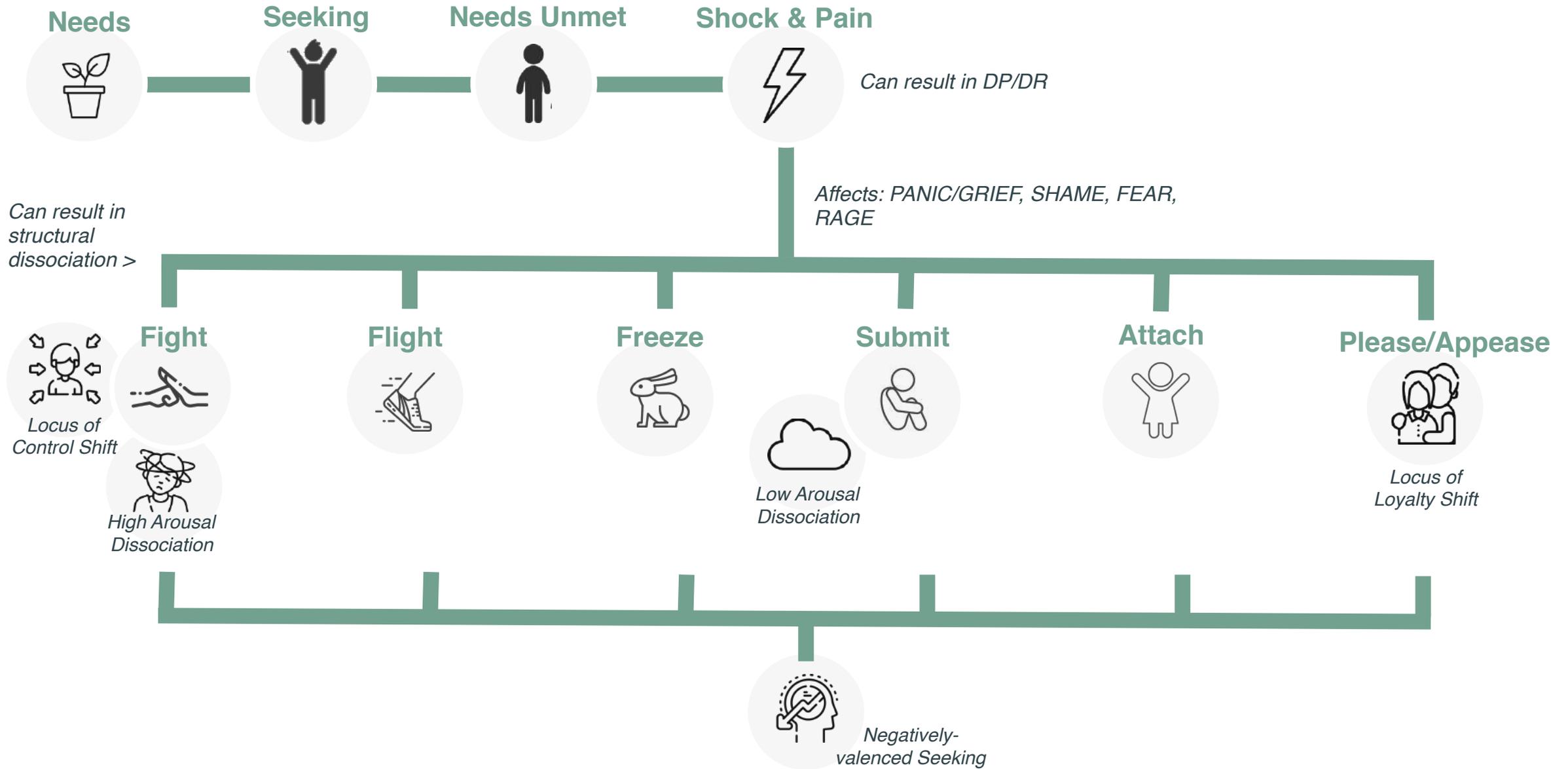
# Bringing together the different components

- Awareness of need being unmet – midbrain as integrative hub when deep pain engages multiple brainstem and limbic regions.
- Orienting to painful disconnection with sensory stimulus – superior colliculus (SC).
- Orienting tension – SC.
- Shock/horror/covert pain – locus coeruleus (LC).
- Affective and defensive responses – periaqueductal gray (PAG).
- Social isolation pain – ventrolateral PAG/dorsal raphe nucleus (vIPAG/DRN).
- Compass of pain responses (PAG).
- Change in SEEKING system – valence of mesolimbic dopamine system (ML-DA)
- Does the (pre)visceral nociception of the unmet need become conscious?

# What is the painful response to the unmet need?

- What happens when there is a transition from positive seeking to shock, horror, or other distress?
- What is the internal stimulus – how does it register in the body?
- Is it so ephemeral in its impact that it is “previsceral”?
- A preaffective pain?
- What shock or horror from the disconnection of the unmet need leads to PAG activation and emotional distress?
- The SEEKING system becomes activated – and that activation is negatively valenced.
- In DBR, we aim to slow down significant responses to allow us to sense the impact and “see” why external events have the impact they have.

# Attachment Wounding Sequence



# Connection and loss

- The SEEKING system may return to positive valence after a loss.
- That is, there may be an ongoing sense of connection that feels good when the underlying pain has been processed.
- What you need to hold on to and what you want to let go of.
- Clearing the attachment pain and the associated negative affects allows positive affects to emerge more easily in connection and attachment.
- Seeking attachment can then be positively valenced – warm, loving, optimistic, curious . . . .

# Deep Brain Reorienting and the emergence of a New Perspective

- The ultra-slow attention to the components of the original implicit trauma memory allows processing to a physiological mismatch state.
- The emergence of the mismatch creates a healing dissonance.
- The New Perspective arising from the changes in the Collicular Self's view of the event/experience solidifies the new learning and its impact on the valence of the self.

# The triune brain and the brainstem

- “The “neomammalian brain” may be defined as the **neocortex and structures of the brain stem** with which it is primarily connected.”
- “. . . . there is abundant evidence that in its evolution, the neocortex, **together with its brain stem and neocerebellar** connections, has afforded a progressive capacity for problem solving, learning, and memory of details.”
  - Paul D MacLean, Triune Brain, Comparative neuroscience and neurobiology, pp126-128, 1988.

# The SC and PAG as functionally supracortical

- The turning towards or turning away from the contents of consciousness represents a most basic capacity to disconnect from the emotional experience of something horrifying or terrifying or agonising.
- The SC has the apparatus to elicit shock before there is any affective or defensive response through the PAG.
- Effective therapy with DBR can involve the turning towards the unbearable so needs to be a collaboration that is paced for safety and tolerability.

# Core aloneness pain and conflicted SEEKING

- Orienting Tension: the muscles around the eyes.
- I am so alone. Extraordinary grief. Constrictions in the heart. The worst pain imaginable
- I still melt when people are kind to me. So many bad relationships.
- Longing for closeness and dreading their bad behaviour. Never any happiness.
- What will it feel like if it is not there anymore?



Deep Brain  
REORIENTING

**Thank you for your  
attention and interest**

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