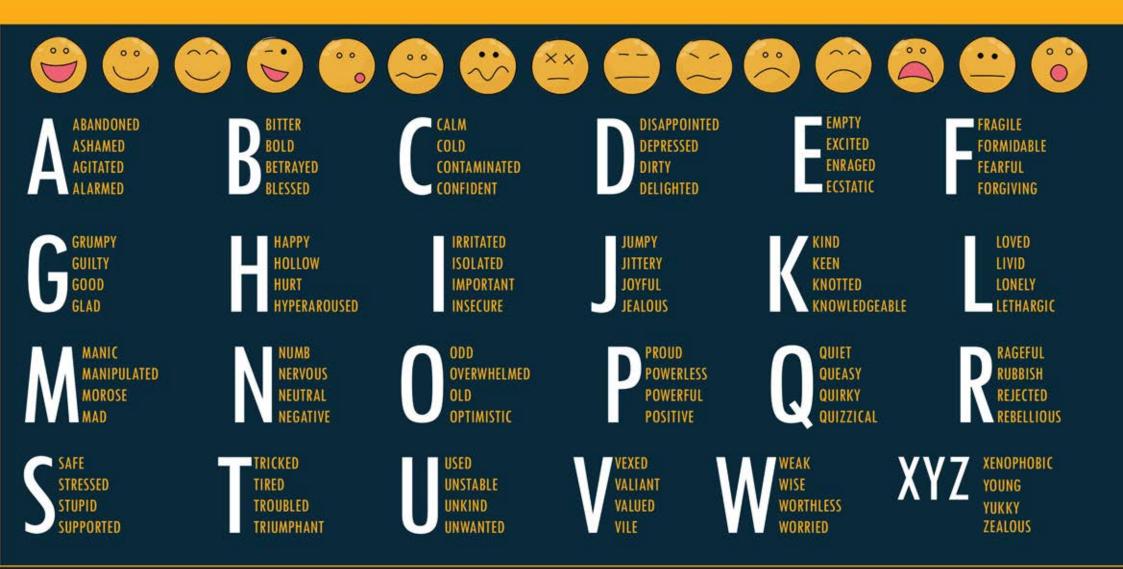
ALPHABET OF EMOTIONS



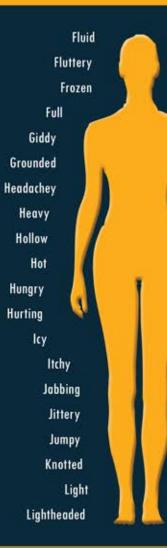


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BODY SENSATION WORDS

Achy Airy Bloated Blocked Boiling Breathless Bruised Bubbly Burning Bursting Butterflies Buzzy Calm Clenched Closed Cloudy Cold Comfortable Congested Constricted

Contracted Cool Dark Dehydrated Disconnected Dizzy Drained Dry-mouthed Dull Empty Energetic Energised Exhausted Expanded Expansive Faint Flexible Floating Floaty Floppy



Limp Nauseous Nervy Numb Open Parched Pounding Pressure Prickly Pulsing Queasy Quivering Radiating Ravenous Raw Relaxed Released Rigid Saggy Satiated

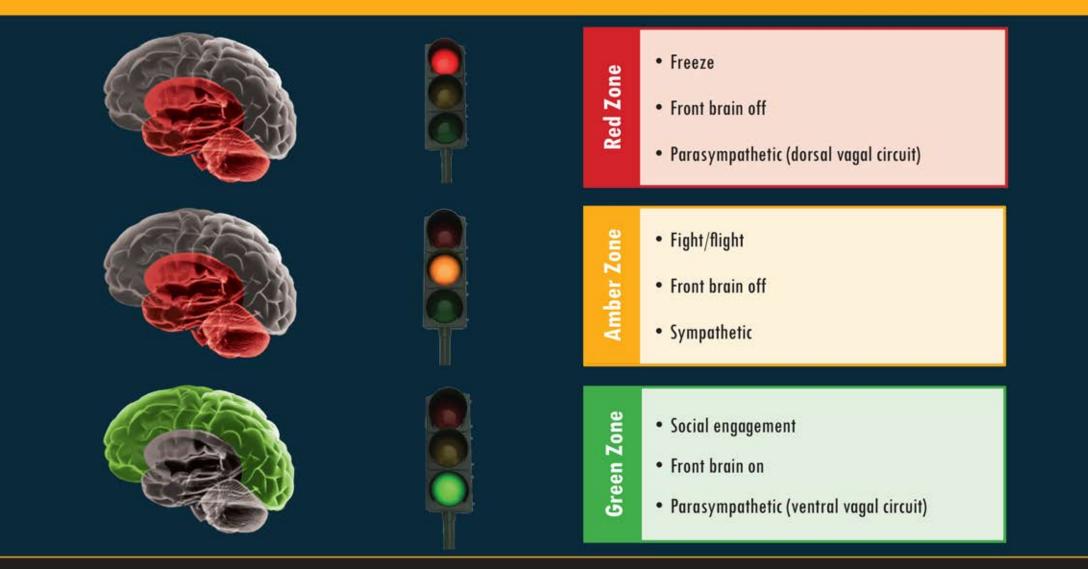
Satisfied Sensitive Shaky Shivery Short Short of breath Shuddering Sick Sore Spacey Spacious Spongy Squashed Squirmy Stabbing Stinging Stretchy Stuffed Suffocated Sweaty

Tall Taut Tearful Teary Tense Thick-headed Throbbing Tickly Tight Tingling Tingly Tired Trembly Twitchy Uncomfortable Vibrating Warm Wet Wobbly Woozy





FRONT/BACK BRAIN AND THE TRAUMA TRAFFIC LIGHT





DEFENSIVE RESPONSE CYCLE

The way we respond to threat is not random and we don't choose it at the time. Instead, our body and brain follow a predictable sequence of responses outside of conscious thought. We are traumatised when the threat is so overwhelming that we end up in stage 7 and we are not able to successfully move through stages 8 and 9.





EMERGENCY BOX





SAFETY KIT: EMOTIONAL THERMOMETER

70°

60°

50°

40°

My unsafe feelings/behaviours

Svicidal ideation	100°
Self-harming actions	90°
Fugue	80°
Urge to self-harm	
Feeling out-of-control or unaware of self	60°
'Screaming' feelings	50°
Panicky and hyperaroused	40°
Racing thoughts	30°
Getting a bit stressed and anxious	20°
 Withdrawing	10°
Restless and can't relax	0°

This is an example of how we can identify how safe we are feeling and how that looks on a scale of 0–100°. We can then figure out in advance some ideas of what we can do to cope.



Seek social support or be around people

Physical exercise

You can print out your own blank emotional thermometer to fill in and personalise at <u>www.carolynspring.</u> com/erg-downloads.



FLASHBACKS

FLASHBACKS

A FLASHBACK is a sudden, involuntary re-experiencing of a past traumatic event as if it is happening in the present.

FLASHBACKS take me from the here-and-now to the there-and-then.

FLASHBACKS pass more quickly if:

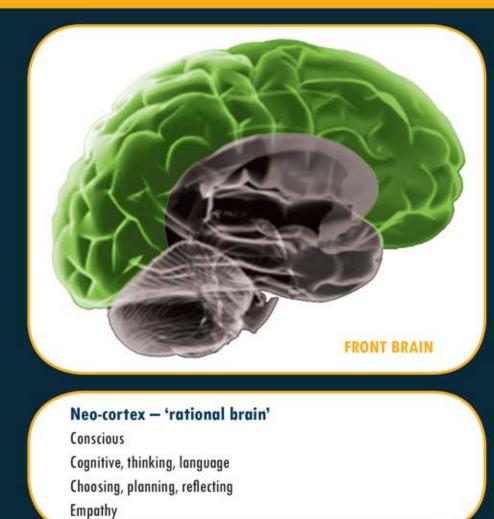
- I ground myself back in my body.
- I bring my front brain online by thinking and talking myself through it.
- I don't beat myself up, but am soothing and compassionate towards myself.

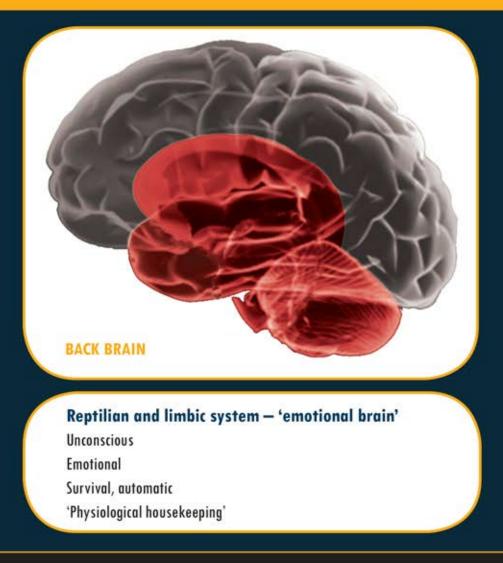






FRONT AND BACK BRAIN







GROUNDING: GETTING BACK IN THE BODY

ACTIVATE YOUR SENSES

- Breathe in to the count of four, breathe out to the count of six.
- Focus attention on the breath and breathe into the tummy.

BREATHE

MOVE

- Focus on the sensation in the body of the lungs filling and emptying.
- Move the body out of a freeze response.
- Stand up straight and feel how tall you are.
- Stretch out your arms and take up a 'power pose'.
- Focus on feeling strong and powerful in your posture.
- Alternatively, move around, perhaps rhythmically.
- Concentrate your attention on how you are free to move and get away if you want to.

- Focus your vision on what you can see around you. Where are you? What can you see? How many circular objects can you see? How many green objects?
- Find something soft and comforting to touch and stroke, or explore objects for their texture. Focus in on how they feel against your skin.
- Listen in to all the sounds in your environment.
 Can you hear your breathing? Can you hear noises in the distance?
- Find something soothing or distinct to smell a piece of clothing, a satsuma, handsoap, or anything in the here-and-now. Focus your attention in on the smell and describe it with words.
- Find something nice to eat or drink. Concentrate on the taste. Zoom in on its flavour and texture. What positive things does it remind you of?



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THREE PARTS OF THE BRAIN: IMPAIRMENTS DURING THE 'SUICIDAL MODE'

Front left brain DESPAIR

- Impaired timekeeping
- Impaired problem-solving
- Impaired sequencing and planning
- Impaired memory (e.g. for what helped in the past)
- Impaired impulse control
- Loss of reference points for what's normal (e.g. reality testing, evaluation of others' intentions, expectations of outcomes)
- Impaired speech and language

Front middle brain DISSOCIATION

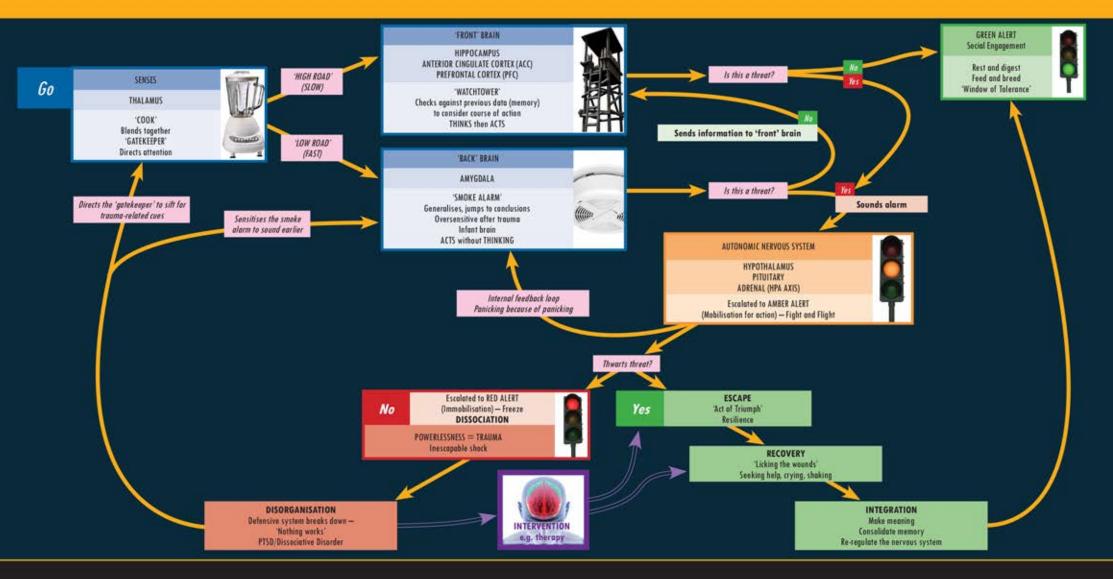
- Lack of grounding and centeredness experiences of dissociation
- Sense of body as 'other' (e.g. out of body experiences)
- Failure of mindsight to 'just notice' thoughts and feelings
- Failure to mentalise reflective function (see yourself from the outside-in and others from the inside-out)
- Loss of empathic capacity
- Impaired ability to execute a plan

Front right brain DISENGAGEMENT

- · High levels of emotional distress
- Hyperarousal (amber zone)
- Emotional states experienced somatically rather than verbally ('wordless terror')
- Mental state is overwhelming to both self and others
- Breakdown of effective care-seeking strategies (e.g. stuck in 'flight' or 'fight')



WHAT HAPPENS AT THE MOMENT OF TRAUMA?





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RECOVERY TRIANGLE: HOW TO BECOME AN EMOTIONAL ATHLETE



of the number of the second of

purposeful engagement to apply the skills to develop expertise

FROMI RIGHT and



RISK OF SUICIDE/SELF-HARM





SPECTRUM OF RESPONSES TO DID

DENYING	AFFIRMING	REIFYING
DENTING		
"DID doesn't exist"	Understanding of trauma leading to structural dissociation	Parts as separate people rather than parts of the same person
Misdiagnosis, e.g. borderline	Diagnosis of trauma-related dissociation	Emphasis on 'multiplicity'
"Don't talk to parts"	Engage with the client as a whole person with many parts	Predominantly talk to parts
Work only with ANPs and deny existence of EPs	Work appropriately with each type of part	Work only with EPs and fails to support ANPs
Increase conflicts between parts	Identify and resolve conflicts between parts	Increase conflicts between parts
Collusion with avoidance and denial	Encourage co-operation between parts and resolution of trauma	Collusion with multiplicity and dissociation
Focus on phase 3 work but ineffective	Effective phased work with incremental gains	Focus on phase 1 work but ineffective
Client is abandoned	Client is empowered	Client is rescued
Therapist in control	Client in control, with support of the therapist	Parts in control
More common with cognitive approaches	More common with trauma-informed approaches	More common with person-centered approaches
Insecure-avoidant attachment played out	Building of earned secure attachment	Insecure-ambivalent attachment played out



THE BRAIN ON TRAUMA

ATTENTION

... is directed towards threat cues and cannot discriminate relevant from irrelevant.

THREAT RESPONSE

... is directed by the oversensitised and overreactive amygdala (smoke alarm) which does not relinquish decision-making to the front brain (prefrontal cortex and hippocampus).

ALTERED STATES OF AROUSAL

... dominate the body, triggering it from the green state of social engagement into the amber state of fight and flight or the red state of freeze, affecting relationships, and flooding the body with toxic levels of stress hormones.

TIMEKEEPING

... is ineffective with the dorsolateral prefrontal cortex impaired, leading to difficulties in discriminating past from present or being able to imagine a future.



MEMORY

... systems are hijacked by the amygdala, taking control from the hippocampus, leading to flashbacks, stuck automatic patterns of behaviour and inhibited learning.

SELF-AWARENESS

... circuits are shut down, including the insula, anterior cingulate cortex and medial prefrontal cortex, leading to difficulties with sensing emotions and responding appropriately to them, and changes in identity and selfperception.

INTEGRATION

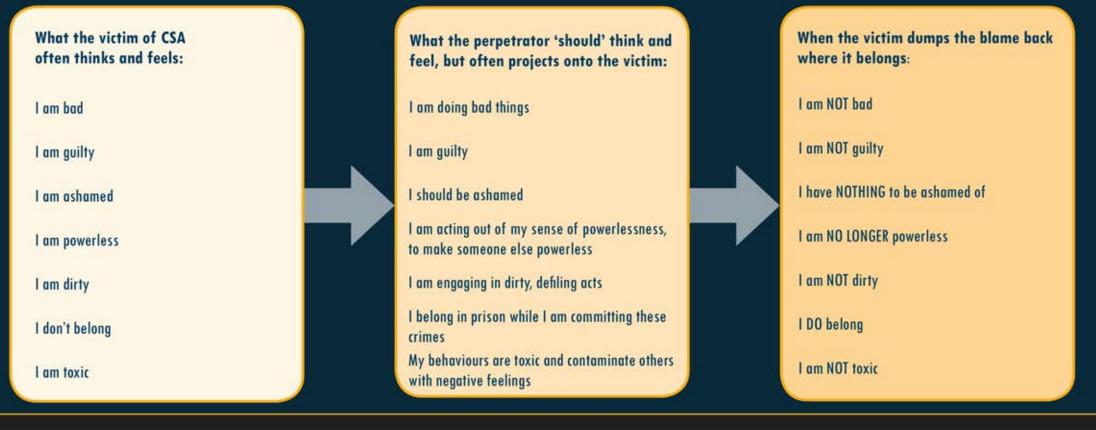
... difficulties abound, between the front and back brain, the right and left brain, the body and mind, the past, present and future, and across self-states.

... how we focus more on DANGER than DAILY LIFE ... and how our BACK BRAINS dominate our FRONT BRAINS



THE GREAT EXCHANGE

The power of child sexual abuse lies largely in the perpetrator's ability to blame-shift onto the victim. As children being abused, we have no choice but to accept this projection, as our view of our 'self' is formed by the adults around us. Much of the psychological damage comes from us internalising these beliefs about ourselves, which is a way for the perpetrators to evade taking responsibility for their actions. One of the things we need to do to recover is to 'exchange' the guilt, blame and shame that was dumped on us back onto our perpetrators — where it belongs — and be able to see that we were made to feel bad, not because we are bad, but as a way of the perpetrator being able to avoid feeling bad for what they were doing. Mentalising, and reflecting on our beliefs — where they came from and why they are there — is a really helpful exercise in recovery from child sexual abuse.

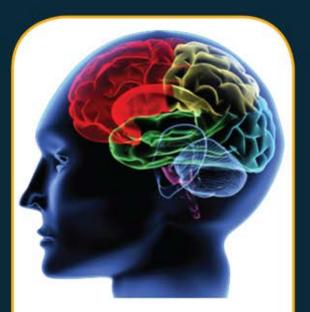




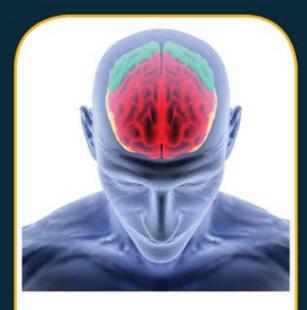


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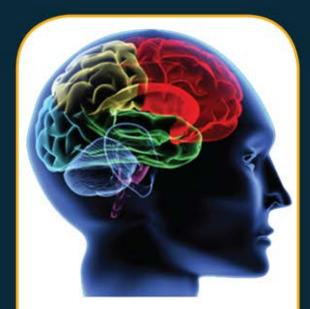
THREE STRATEGIES FOR GROUNDING



front left brain get myself thinking (puzzles, words, work, journalling, reading)



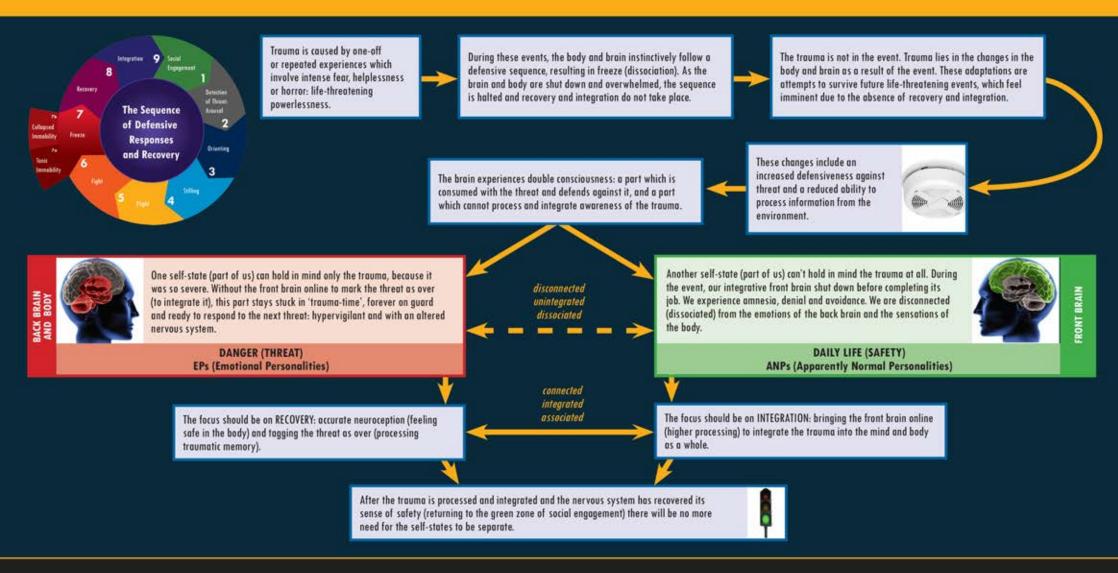
front middle brain get myself noticing (turn my attention inwards and just be curious)



front right brain get myself connected (to an attachment figure, e.g. partner or therapist)



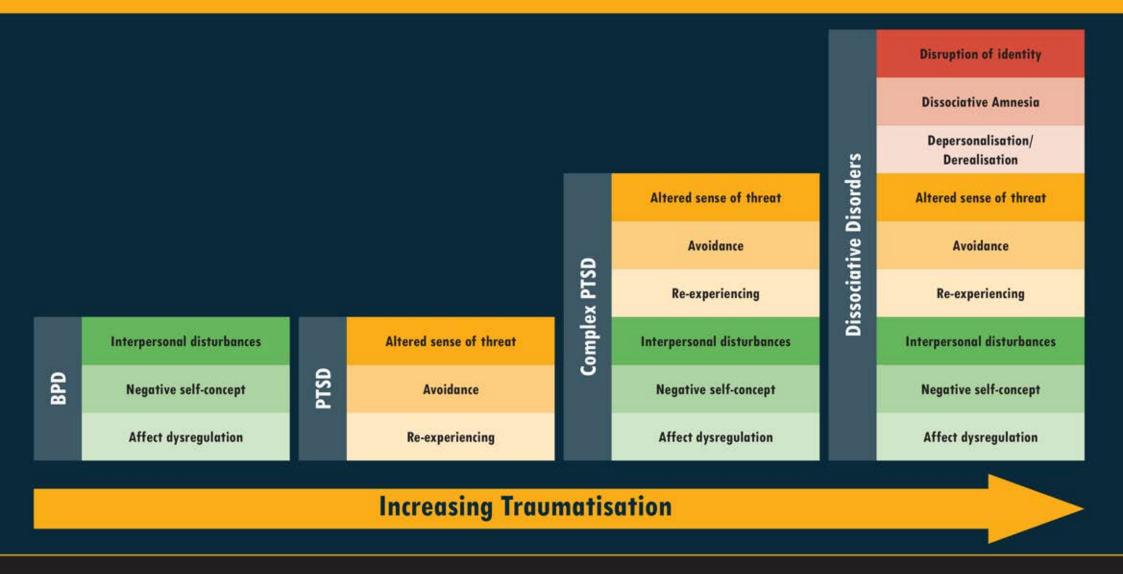
HOW TRAUMA LEADS TO DID





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TRAUMA, SYMPTOMS AND DISORDERS





THE TRAUMA TRAFFIC LIGHT

Red

(parasympathetic, dorsal vagal)

- overwhelming threat
- immobilisation
- freeze



Amber

(spinal sympathetic)

- threat in the environment
- mobilisation
- fight and flight



Green

(parasympathetic, ventral vagal)

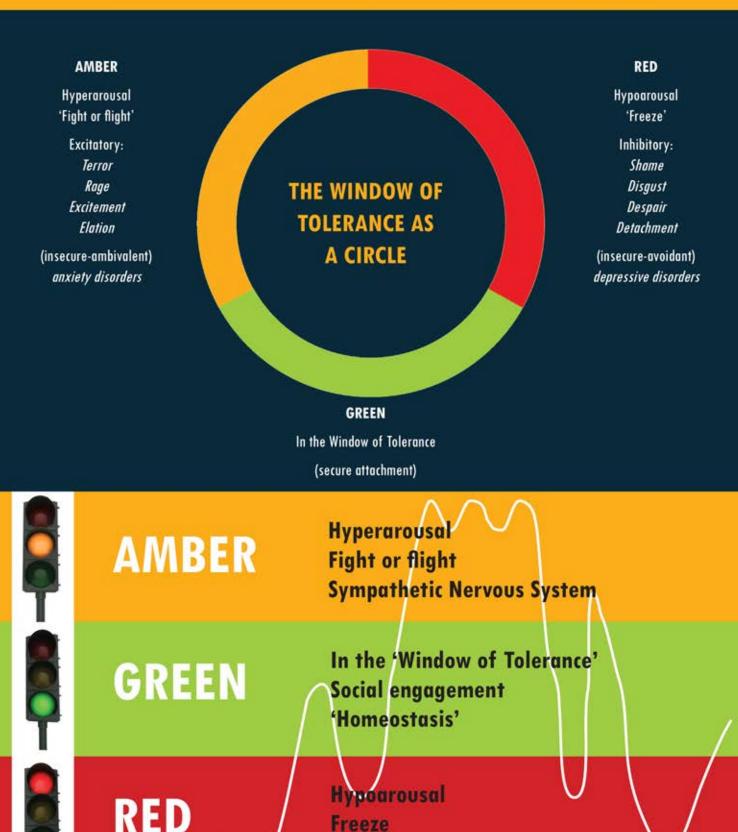
- safe environment
- social engagement
- feed and breed/rest and digest



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GROUNDING

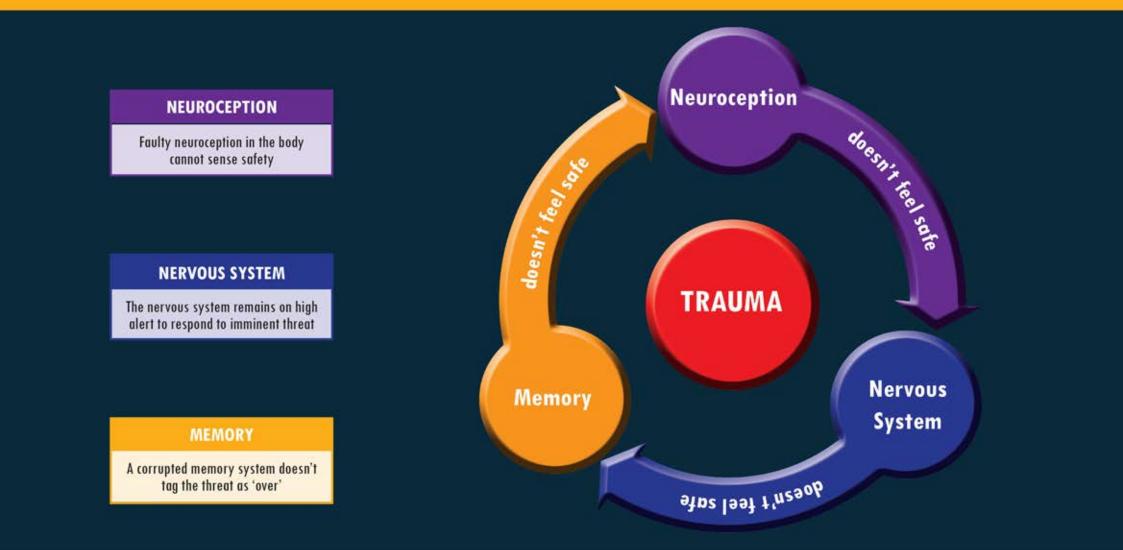
THE TRAUMA TRAFFIC LIGHT MEETS THE WINDOW OF TOLERANCE



Parasympathetic Nervous System



THE TRAUMA VICIOUS CYCLE





THE VICIOUS CYCLE OF SELF-HARM



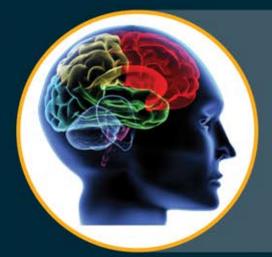


THE VIRTUOUS CYCLE OF SOOTHING





SHAME: STATE, STANCE, STORY



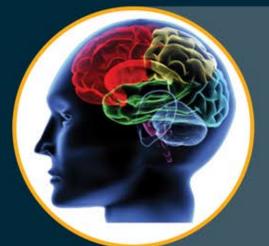
front right brain compassion from others

CHANGE THE STATE



front middle brain self-compassion

CHANGE THE **STANCE**



front left brain compassion for others

CHANGE THE STORY



PHYSIOLOGY OF THE TRAUMA TRAFFIC LIGHT

Zone	Green — social engagement	Amber — fight and flight	Red — freeze
ANS Circuit	Ventral vagal cicuit	Spinal sympathetic	Dorsal vagal
<u>u</u>			Decreased heart rate
Heart rate	Normal heart rate with good heart rate variability	Increased heart rate	
Blood pressure	Normal blood pressure	Increased blood pressure	Decreased blood pressure (sometimes leading to syncope/faint)
Energy/metabolism	Normal	Increased, e.g. restlessness, can't wind down or relax, agitated	Decreased, e.g. shutdown, exhaustion, chronic fatigue, sleepiness
Location	Above the diaphragm	Along the spine and HPA axis	Below the diaphragm
Phylogeny	Mammals	Vertebrates	Reptiles
Muscles	Relaxed	Tense and tight	Floppy, low tone
Facial expression	Flexible, nuanced	Blushing, tout and inflexible expression	Pallor, facial muscles lengthen and lack expression
Voice	Prosodic	Monotonous, strident	Lack of tone and prosody
Volume of voice	Normal and appropriate	Louder	Quieter
Hearing	Can tune out background naise and focus on human voice	Auditory mis-sensitivity — cannat focus on human voice; sounds are overwhelming	Auditory mis-sensitivity — cannot focus on human voice; sounds are not registered
Digestion	Normal (rest and digest)	Appetite affected; digestion slowed; salivation reduced	Loss of bowel control





WHAT IT FEELS LIKE IN DIFFERENT ZONES

	Safe	Grateful	Wanted	Unflustered
oving & loved	Open-hearted	Positive	Good	In the flow
Calm	Engaged	Hopeful	Curious	Satisfied
iecure	Curious	Warm	Appreciative	Okay
lelaxed	Playful	Empathic	At peace	Encouraged
Belonging	Funny	Attuned	Chilled out	Competent
Angry	AMBER ZON			Scared
	Belligerent	Ruptured	Het up	
Angry Fearful Confrontational	Belligerent Annoyed	Ruptured Edgy	Het up Terrified	On edge
Fearful Confrontational	Belligerent Annoyed Distressed	Ruptured Edgy Panicked	Het up Terrified Victimised	On edge Tormented
Fearful	Belligerent Annoyed	Ruptured Edgy	Het up Terrified	On edge

- Helpless Numb Empty Powerless Ashamed Depressed
- No energy Despairing Not here No motivation Unreal Low
- Futile No drive Blank Non-existent Disconnected Blank
- Shut-down Abandoned Lost Zoned out Unloveable Invisible
- Alone Exhausted Cold Dissociated Rejected Unworthy





STAYING SAFE: RELATIONAL STRATEGIES

SAFE GREEN ZONE

Mutuality Be friendly Honesty

Be helpful

Appropriate expression of emotion **Pro-social behaviours** Ask for help and receive it Contribute and receive from the group

If I've done wrong, apologise and put it right Communication

> Be supportive and supported Engage socially

Give help when asked

DANGEROUS AMBER ZONE

Enforce boundaries Threaten Run away if possible Demand Ramp up emotions Scream Seek attention Kick up a fuss Fight to defend territory or integrity Signal with emotions for help Avoid if possible Shout

LIFE THREAT RED ZONE

Submit Grovel Lie low Be the bad one Don't resist Be silent Don't try to run Apologise for everything Don't do anything Just take it Don't retaliate or fight back Take the blame Be one-down Be the victim Self-sacrifice/martyr Be helpless Numb emotions (show you're not a threat





COMMUNICATING SAFETY OR NON-SAFETY THROUGH THERAPEUTIC PRESENCE

IN THE ENVIRONMENT

Lighting	Does dim lighting trigger fear? Does bright lighting feel exposing, oppressive or even interrogational?
Sounds	Are there competing sounds? What register do they appear in? Are they evocative of threat (high-pitched screech, low-pitched roar)?
Distractions	Is there anything that is distracting attention away?
Intrusions	Is someone likely to burst in? How to be sure not?
Location	Are there threats outside the room, or outside the building? Is this a safe area? Is it safe in the building?
Time of day	Does the time of day (for example, evening/night-time) have certain connotations, or may it trigger? What physiological stress demands are there at this time of day?
Context	What is this place associated with? What feelings does it trigger?
Familarity -v- novelty	Same room, same time, same furniture, same routine? Or does the brain have to assess for threat each time because it changes?
Entry and exit	Is it easy to escape if necessary? Is it shameful to walk past people to come in or leave? Is there a sense of being trapped in this room?
Objects	Pictures, ornaments, décor — does it reflect value, or does it say worthless? Is anything inherently unsafe-feeling?

NON-VERBALLY	
Breathing	Is your breathing normal and natural? Or is fast and shallow? Or slow and suffocating?
Heart rate	Is your heart rate normal and natural? Or is it rapid and anxious? Or slow and sleepy?
Posture	How are you sitting? Aggressive, face-on? Slumped, defeated? Bored, disinterested? Engaged, open, attentive, curious?
Body attitude	Are you turning towards, or turning away? What message is your body giving out?
Position	Are you too near, or too far away? Are you being asked to lean in, or give more space?
Eye contact	Are you paying full attention with your eyes? Is it a threatening stare, a disinterested look, or a warm unthreatening gaze?
Touch	Is touch welcome or unwelcome? How could welcome touch be safe and comforting, and communicate compassion?
Clothing	What is your clothing saying about you? Is it distracting, suggestive, full of attitude? What effect does it have? Does it have any connotations?
Vocal prosody	Does the pitch, rhythm, timbre, register and tone of your voice communicate safety, warmth and acceptance?
Attention	Are you paying full attention with your whole body? Or are you demanding attention by talking?
Hands	What are your hands doing? Are they fidgeting, distracting? Are they ready to give care if requested?

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Openness	Are you asking open questions? Are you genuinely curious about the answer? Or do you feel you already know what's going to be said?
Explanations	Are you explaining and reframing to increase a sense of safety and security, or to show how clever and powerful you are?
Reactions	Are you showing shock, disbelief, disgust, doubt, disapproval, shame? Or can you respond non-judgmentally and supportively?
Engagement	Can you keep concentrating? Can you engage emotionally, with full open-heartedness, or are you being triggered by your own stuff and withdrawing?
Respect	Are your responses respectful of the space and the boundaries between you, and the other person's autonomy, or are you being intrusive?
Sound	Are you responding with non-verbal sounds and gestures to show that you're listening and are engaged? Or are you blank and unresponsive?
Clarity	Are you communicating clearly what you mean? Or are you inscrutable, poker-playing? How can you be unambiguous to lower the sense of threat?
Resonance	Is what you are saying true? Or are you trying to minimise pain, smooth things over, and dismiss reality? Are your responses resonant and can they be trusted?





TRAFFIC LIGHT STATES: COURAGE AND VULNERABILITY





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THE SPECTRUM OF SELF-CONSCIOUS EMOTIONS

Zone	Green	Green to Amber	Into Amber	Amber	Red
ANS circuit	Ventral vagal circuit (parasympathetic)	Sympathetic system to motivate reparative action	Sympathetic system to motivate reparative action	Sympathetic system to motivate reparative action	Dorsal vagal circuit (parasympathetic)
What I feel	Connected	Guilt	Embarrassment	Humiliation	Shame
Response	Safe "I feel okay"	Discomfort "I feel bad or guilty"	Flight "I want to get out of here"	Fight "This makes me angry"	Freeze "I am bad"
Story	"I'm doing okay"	"Like other people, I make mistakes and I'm sorry"	"I'm embarrassed, but I'm not the only one to do this"	"This is wrong — I don't deserve this"	"I am the only one in the world like this"
Action	"I can focus on others as well as myself"	I will talk about it: apologise and make reparation	l will talk about it: perhaps laugh about it	l will talk about it: sound off about it	l will be silent about it: keep it secret



There aren't words big enough to describe this feeling. It is a sense that I would rather be anyone other than myself. It is a belief that I am fundamentally and impossibly flawed, that I will never change, that there is no-one in the universe as unacceptable as me. It is an expectation that I must cling to the edge of the room because if I dare to take my place in the world, to show my face, to announce my arrival, I will be rejected. I am only allowed here as long as no-one notices me, as long as I don't get in the way, as long I don't need or demand anything. And here I am, in therapy, the centre of attention, full of neediness, grasping for connection, disclosing my feelings, daring to be. It is dangerous and mortifying and delicious all at the same time.

All my life, I have believed that I am too much. All my life, I have despised my neediness. All my life, I have been scared of having feelings. I have never understood how to relate to people. I have never understood what it means to reach out to people in need, and have that need responded to. And this, always, has been the source of my shame: a need expressed that goes unmet.

UNSHAME

Your shame kept you alive. You can't afford to hate the people who hurt you, or failed to love you, so you had to hate yourself. When your needs weren't met, you couldn't afford to get angry that they weren't being met, so you concluded that you were wrong to have needs instead. Your shame prevented an uprising.

Shame is a two-person emotion.

I'm no longer ashamed of being ashamed. Shame kept me alive.

Shame is an interpretative framework for the world, a lens through which we can superimpose meaning and intention and feeling and blame, derived solely from our innate defectiveness. The world stops being a complex matrix of interconnecting elements, a million 18-55mm 1:9556 VR contributory factors feeding into every single outcome, and is reduced instead to the simplest of formulae: this thing has happened only because of me, and only because I am bad.

> UNSHAME Carolyn Spring www.carolynspring.com/unshame-book

Mikon

True compassion isn't trying to get you to get rid of your feelings. True compassion feels your feelings with you. True compassion has a sense of wanting to relieve your suffering, but by sitting with you in it, not by wiping it away. **True compassion validates** every ounce of pain you're feeling, and gives you hope that it can be soothed.

UNSHAME

Shame is the sense that we don't belong. It's a conviction that we are intrinsically defective, even in a way that we cannot identify. We believe there is something wrong with us, and so we are excluded and unwanted. We are outside the group, with no way in. We don't belong.

Your needs are not shameful. They're not wrong. They won't get you in trouble. You won't be rejected, or humiliated, or hurt. Your needs are what make you human. Your needs are essential for proper human connection. Your needs are the essence of you. And your needs are acceptable here. UNSHAME

I have the capacity for compassion, because I am a human being, and to be human is to be compassionate.

Shame is, by its very nature, paradoxically self-obsessed: we both want to obliterate ourselves and also place ourselves at the centre of everything, the sole cause, the sole effect, the sole intervening variable. "I am bad," we cry, "and my badness has caused everything that is bad in the universe to happen."

Shame is your boss. It tells you who you are, how to feel. It defines your identity. It abuses you.

You wouldn't tolerate being treated like that by anyone else, so why by your own shame?

It is not the critic who counts. It is not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly.

THEODORE ROOSEVELT

FOUR WAYS TO BETTER SLEEP

PLEASE

DISTURB

1. GET SOME RHYTHM

To sleep well, we need to be in sync with our circadian rhythm. This is a naturally-occurring cycle that runs at around 24 hours, and helps to signal when we should be awake and when we should be asleep. Trying to sleep (apart from napping) during the 'awake' phase of our rhythm is nearly impossible — as we can experience in jetlag. Our circadian rhythm has a natural tendency to either run a bit shorter or longer than 24 hours, a pattern which is genetically inherited and determines our chronotype, meaning that we are either larks (preferring to rise early) or owls (preferring to stay up late). We reset our circadian rhythms every day when light signals hit our suprachiasmatic nucleus (SCN) and a cycle begins again of ideally 16 hours of wakefulness followed by 8 hours of sleep. Timing of mealtimes also entrain our circadian clock. For optimal health and sleep, therefore, we should get up and go to bed at exactly the same time every day, and stick to regular routines during the day. This impacts not just our sleep but every aspect of our health, as every cell in our body, and even the bacteria in our gut, operate according to a circadian clock.

2. EMBRACE THE DARK SIDE

Our bodies are designed for extremes of light (during the day) and darkness (during the night), but in modern life we rarely get enough light during the day (we tend to be indoors under dim light) and we get too much on an evening (with artificial lighting). This has a major impact on our sleep. Sunlight enables us to synthesise vitamin D, which is essential for positive mood, and also to produce melatonin. Daylight is rich in light from the blue end of the spectrum and signals to our brains to produce a protein called melanopsin, which increases alertness and wakefulness. But on an evening, LED lamps and screen-based gadgets also emit blue-wavelength light. This continues to produce melanopsin, keeping us awake. At the same time, melanopsin delays the release of the day's build-up of melatonin, which is a hormone that signals to the brain and the body that it is time to sleep. Not only does melatonin help to initiate sleep, but it is also a powerful antioxidant and anti-inflammatory and one of the body's best defences against cancer. Too little light during the day and too much at night therefore has serious consequences not just for our sleep, but for our overall health.



We fall asleep at the intersection between greatest sleep rhythm (when our circadian clack is signalling the right time) and greatest sleep pressure. Sleep pressure involves

the build-up of a molecule called adenosine, which increases the longer we have gone without sleep. Ideally sleep pressure peaks after around 16 hours of wakefulness, initiating 8 hours of sleep during which adenosine is flushed from the brain. Getting up at the

same time every morning ensures that our sleep pressure is at a maximum by bedtime — which should also be at the same time every night. We can reduce sleep pressure, at least temporarily, with caffeine, which blocks adenosine receptors in the brain. Caffeine has a half-life of 5-7 hours, so any consumption after midday may significantly reduce sleep pressure come bedtime and make it much harder to fall asleep, especially if we miss the magic 'intersection' point of sleep pressure and sleep rhythm. Exercise and mental stimulation, especially involving novelty, also increase sleep pressure, so a day out and about exploring new places or social contexts will leave us feeling more sleepy come bedtime compared to a quiet day in at home.

4. TRAIN THE BRAIN TO SLEEP

As newborn babies, we are not very good at falling asleep — over many months we have to be helped and trained to go to sleep. Trauma can disrupt this learning in many ways, and our brains can simply get out of the habit of knowing how to fall asleep. Nobody then trains adults to sleep again. But that is exactly what we need to happen. Just as with infants, a bedtime routine is key, to signal to the brain that it is now time to sleep. This simple, repeated behaviour initiates a cascade of release of neurotransmitters and hormones that prepare our brains and bodies for sleep. We can help the transition by cooling the body (keeping the bedroom at 17-18°C), diffusing the aroma of lavender, only using the bedroom for sleep and sex and in particular ridding it of devices such as TVs and phones which emit disruptive electronic waves, and making it so dark that we cannot see our hand in front of our face. There should also be a gap of several hours between our last meal and bedtime, as food is a strong signal to the brain that it is time to be awake.





NEUROTRANSMITTERS IN SLEEP AND WAKE

Neurotransmitter	Sleep (⊅) or Wake (♡) promoting	Example drugs
GABA	٦	Alcohol (for sleep) Benzodiazepines (e.g. diazepam) Z drugs (e.g. zolpidem, zopiclone)
Melatonin	D	Melatonin supplements
Adenosine	D	Caffeine (antagonist)
Noradrenaline	٥	Alcohol (for wake) Caffeine Amphetamines Cocaine MDMA (ecstasy)
Serotonin	۵	SSRIs (e.g. fluoxetine) MDMA (ecstasy) Mirtazapine (tricyclic antidepressant) Amitriptyline (tricyclic antidepressant) Olanzapine (atypical antipsychotic)
Histamine	¢	Promethazine (antihistamine)
Acetylcholine	¢	Nicotine (e.g. cigarettes, patches)
Orexin	¢	Suvorexant (sleep medication)

Effect of psychoactive drugs on spiders spinning webs





Marijuana



Normal (no chemical) Amphetamines





Sedatives





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HOW DOES LIGHT AFFECT OUR MOOD?

LEVELS OF LIGHT ILLUMINANCE (LUX) EXAMPLES

0.0001	Moonless, overcast night sky	
0.002	Moonless clear night sky with airglow	
0.05-0.3	Full moon on a clear night	
3.4	Dark limit of civil twilight under a clear s	
20-50	Public areas with dark surroundings	
50	Family living room lights	
80	Office building hallway/toilet lighting	
100	Very dark overcast day	
150	Train station platforms	
320-500	Office lighting	
400	Sunrise or sunset on a clear day	
1000	Overcast day	
10,000-25,000	Full daylight (not direct sun)	
32,000-100,000	Direct sunlight	



DOES THE AMOUNT OF LIGHT MATTER?

Light is nature's anti-depressant. For positive mood, good sleep and health, we need bright light during the day and darkness at night.

TOO MUCH LIGHT AT NIGHT

- activation of melanopsin (signal to the brain that it is day, despite it being night)
- delays release of melatonin (making it harder to fall asleep)
- suppresses sleep
- disturbs metabolism (increases hunger and weight gain , and reduces glucose tolerance)
- increases cancer risk
- ideally at night we should experience less than 0.3 lux

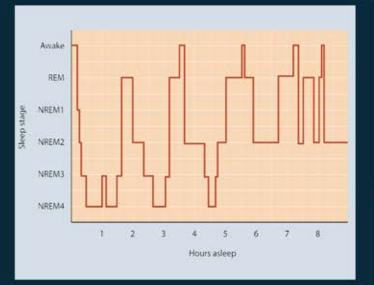
TOO LITTLE LIGHT DURING THE DAY

- · low activation of melanopsin (does not signal that it is day)
- low production of melatonin (reducing its availability and release at night)
- reduces alertness
- lowers mood and promotes depression
- ideally during the day we should experience over 1000 lux

*



SLEEP STAGES



NREM1

- Light sleep
- · Won't always know we've been asleep if we wake up
- Blood pressure falls
- Very light sleep
- Very easy to arouse
- May experience hypnic jerks (vestigial reflex to prevent falling from tree branches — more common in people with irregular sleep habits)
- May carry on 'thinking' (adding to the illusion that we haven't been asleep)

NREM2

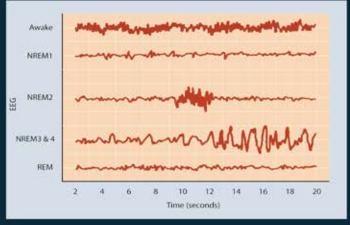
- Regular sleep
- Relatively easy to arouse
- Heartrate falls
- Metabolic slowdown
- Most associated with memory consolidation
- We spend most of the night in NREM2 (45%)
- Contains sleep spindles and K-complexes
- Low amplitude, mixed frequency brain waves

NREM3&4

- Slow wave sleep (aka delta sleep)
- Typically first occurs 35-45 minutes after falling asleep
- Blood pressure falls
- Deep, refreshing sleep
- Difficult to rouse unresponsive to external stimuli ('dead to the world')
- Is followed by 5-10 minutes of NREM2 ('Transition to REM' TTR), often signalled by body movements, and then REM sleep
- May be disoriented on waking
- Mostly experienced in early part of night; may disappear altogether from latter hours
- High amplitude, low frequency waves
- Decreased by caffeine
- Reduction in sympathetic nervous system
- Growth hormone released to stimulate tissue growth and muscle repair

REM

- 'Paradoxical sleep' (dream sleep)
- Increased heartrate, respiration and blood pressure
- Most associated with emotional processing
- Will often recall dreaming if roused
- Rapid eye movements
- Increased metabolism
- First REM episode usually lasts around 10 minutes and begins about 90 minutes after being asleep; final REM episode may last an hour
- · Mostly experienced in latter part of night
- Low amplitude, high frequency waves similar to wakefulness
- Decreased by alcohol and many medications
- Muscle atonia and paralysis (to stop us acting out our dreams)





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REM SLEEP (RAPID EYE-MOVEMENT SLEEP)

WHAT IS REM SLEEP?

- REM stands for 'rapid eye movement' sleep. It is a stage of sleep during which the eyes jag left and right under closed eyelids.
- It is often called 'paradoxical sleep' because our brain is very active but our body is paralysed.
- REM is the stage of sleep during which we are most likely to dream.
- Brainwaves during REM sleep are very similar to those when we are awake, showing how active the brain is.

WHAT HAPPENS DURING REM SLEEP?

- The emotion and memory processing areas of the brain become more active (e.g. the amygdala, hippocampus and anterior cingulate cortex).
- The visual and motor cortexes also light up (the 'vision' and 'movement' of dreams).

- The 'associational cortex' is also highly active this helps us integrate new experiences across existing ones.
- But at the same time, parts of the front brain responsible for logic, reason and censoring/editing are switched off, allowing us to 'free-associate' without rules in our dreams — hence the bizarre nature of them.
- The locus coeruleus goes very quiet. This normally is responsible for pumping out noradrenaline. The lack of this stimulating neurotransmitter provides a soothing balm of low emotional arousal.

WHY DO WE NEED REM SLEEP?

- During REM sleep, the brain replays and integrates emotions and memories, making connections and sense of our experiences.
- The brain's smoke alarm, the amygdala, which is heavily involved in emotion, is turned down or 'reset' overnight during REM sleep, making us much less emotionally reactive the next day.

 The 'what happened' during the day is consolidated in memory but the 'how it felt' (the 'sting' of distressing events) is removed during REM sleep, allowing us to feel much less distressed the next day.

WHAT AFFECTS REM SLEEP?

- Alcohol.
- Many antidepressants such as SSRIs (e.g. fluoxetine, sertraline) and TCAs (e.g. amitriptyline).
- Hypnotic sleeping medication ('Z'-drugs, e.g. zolpidem, zopiclone).
- Night-time wakenings (e.g. due to warm temperatures, loud noises, sleep apnea).
- Stress (high levels of noradrenaline continue to circulate in the brain, potentially leading to nightmares).
- Lack of sleep opportunity (most REM sleep occurs in the last quarter of the night, requiring 8 hours to feel the full effect).





PARASOMNIAS NIGHTMARES, NIGHT TERRORS, SLEEPWALKING AND SLEEP PARALYSIS

NIGHTMARES

- Distressing dreams often with detailed recollection
- Occur during REM sleep when emotion and memory centres are active but so is the normally-quiet stress centre (the locus coeruleus)
- More common in later part of the night

SLEEP PARALYSIS

- Temporary inability to move or speak upon waking
- Often experienced as being pinned down and unable to move, and the presence of evil or shadowy figures
- Occurs upon waking from REM sleep when muscle atonia (paralysis to prevent us acting out our dreams) persists into wake

SLEEPWALKING

- Walking or carrying out complex activities while not fully awake
- Arises during NREM slow wave sleep
- May have no recall of the episode later
- May cause harm to self, or even (rarely) to others
- More common in earlier part of the night

NIGHT TERRORS

- Episodes of screaming or intense fear etc while still asleep
- Often occur alongside sleepwalking
- Arise during NREM sleep when there is a sudden shift from slow wave sleep (stages 3 & 4) to wakefulness, without the usual Transition to REM (TTR) stage
- May have no recall of the episode later
- More common in earlier part of the night

WHY DO THEY OCCUR?

- Parasomnias like these are caused by temporary glitches in transitions between sleep stages and are very common across the entire population
- They are more frequent when sleep is disrupted, we are sleep-deprived, or we are stressed
- Having nightmares may put us off wanting to sleep, but avoiding sleep will actually make them worse
- Nightmares are rarely true replays of events the content of dreams is bizarre and highly associational

HOW TO DEAL WITH PARASOMNIAS

- Parasomnias are distressing, but they are not harmful and they will pass — don't over-interpret them, or get stressed by them (which will make them more likely to occur)
- Give yourself a full 8-hour sleep opportunity every night at the same time — parasomnias are decreased by regular sleep patterns and increased by sleep deprivation
- Keep the bedroom cool parasomnias are often related to excess body temperature
- Keep the bedroom quiet and free from distractions they occur when sleep is disrupted
- Reduce daytime stress to switch off the locus coeruleus during REM sleep

WHAT TO SAY TO YOURSELF

- "This is just a nightmare. My brain is trying to process memory and emotions but my locus coeruleus is still online. That's all, It's just a glitch."
- "This is just sleep paralysis. My brain is awake but my body is still stuck in sleep. It will pass in a moment. I'm safe."



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INFLAMMATION AFTER TRAUMA

1. WHAT IS TRAUMA?

Trauma is not just about something 'bad' having happened which we can't 'get over' and put in the past. Trauma involves major changes to the way that our brains and bodies function by default. In particular, trauma provokes changes in our immune system and autonomic nervous system. This is the physical flipside of feelings of powerlessness, hopelessness and depression.

2. AN IMMUNE RESPONSE

Inflammation is a response of our physical immune system to the perception of threat. 'Being traumatised' involves being in a state of perpetual readiness to respond to threat. It is therefore not surprising that chronic stress and trauma lead to systemic ('sterile') inflammation.

3. CYTOKINES

Inflammation involves the release of chemical messengers called 'cytokines'. They signal throughout the brain and body to cells that there is a threat present. As well as causing widespread cell damage, cytokines provoke a response in the body known as 'sickness behaviour'. This is what we feel when we have, for example, a virus. We have no energy or motivation and may want to stay still or sleep, we feel 'yuk' and miserable, and we may withdraw from people. Depression may be a form of sickness behaviour and can be provoked simply by the presence of cytokines. So depression and inflammation are strongly linked.

4. REDUCING INFLAMMATION

We can support recovery from trauma not just through the 'regulation and integration' work of therapy but by reducing anything in our lifestyle or environment which increases pro-inflammatory cytokines, which have such a disabling impact on our mood and motivation. Sleep (8 hours per night, at the same time every night, in total darkness) is the best thing we can do to reduce systemic inflammation. A standard Western diet, typically high in sugar, vegetable oils, processed foods, and typically low in fibre and essential micronutrients such as magnesium, vitamins and omega-3 fats, is the biggest factor in increasing inflammation.

5. RECOVERY

Trauma affects so much more than just our mind (our thoughts, feelings and beliefs). It affects our entire body and in ways that dysregulate basic functions such as sleep, energy, immunity and hormones. Therefore we need to do whatever we can to support our bodies, as well as our minds, to bring them back into balance after trauma. Sleep and diet don't solve trauma on their own but they are both impacted by trauma, and we cannot recover from trauma without tackling them. Trauma is a supremely physical phenomenon and recovery from it is a supremely physical process.



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HOW DOES OUR GUT HEALTH AFFECT OUR MOOD?

INFLAMMATION

A Western diet (high in sugars, vegetable oils and processed food) can increase the permeability of the intestine ('leaky gut'). This causes an immune reaction and the release of pro-inflammatory cytokines which can lead to depression.

SYNTHESIS

A healthy gut microbiome that is diverse and balanced synthesises a number of essential vitamins (especially B12) and neurotransmitters, including serotonin, which is implicated in positive mood. Our gut bacteria also ferment fibre to produce short-chain fatty acids (SCFAs) which can help control blood sugar levels (avoiding 'hanger' = hunger + anger).

DEFICIENT NUTRIENTS, DEFICIENT SLEEP

A diet lacking in key micronutrients means that we don't have what we need for positive mood and sleep: magnesium deficiency can reduce sleep, for example.

BAD BACTERIA

Studies suggest that an unhealthy microbiome is associated with increased anxiety and depression.

FASTING OR FEASTING

'Any time eating' has been shown to affect circadian rhythm and sleep, whereas 'time-restricted eating' (TRE or fasting) has been shown to decrease anxiety and depression.

