



Mindfulness and the brain

“The neurons that fire together, wire together.”

— DONALD HEBB

Theme: Mindful awareness and focused attention create changes in the brain that help us regulate emotions.

Mindfulness engages parts of the brain that help us to regulate emotions and create a sense of safety. This happens by helping all parts of the brain work together as an integrated whole. A simple understanding of the brain can help us to understand what happens when we are in distress or feeling overwhelmed, and how we can respond to get these parts of our brain working together again.

The Triune Brain

We can think of the brain as having 3 main parts, each with different functions.

“Thinking Brain”

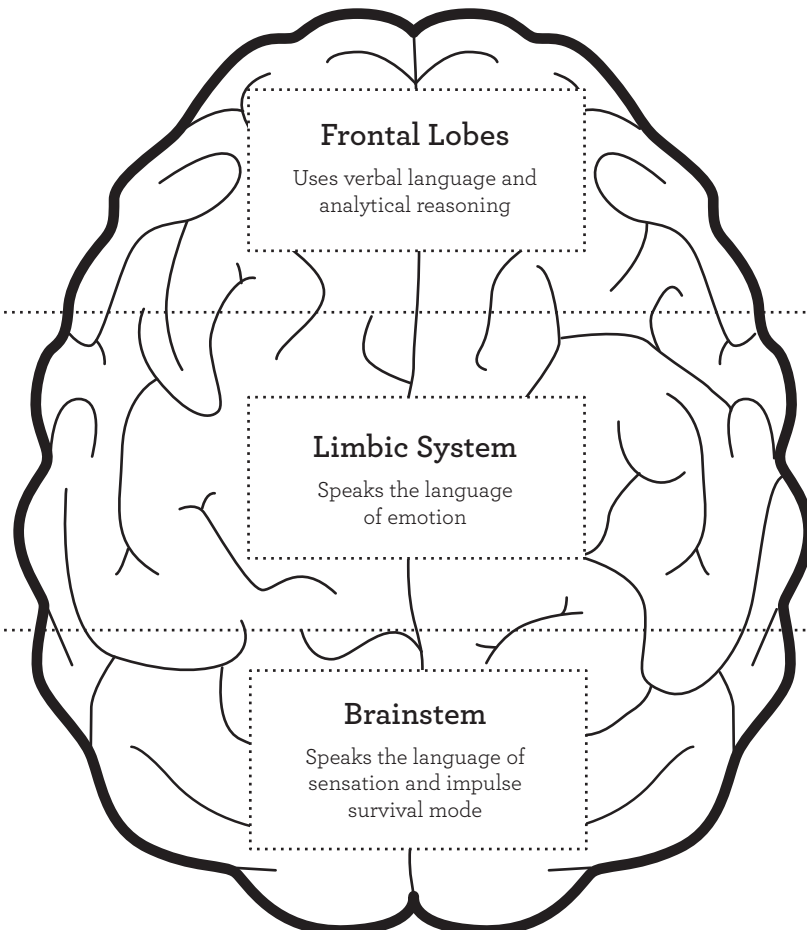
Problem-solving, language, regulatory abilities, reasoning, memories for events and facts

“Mammalian Brain”

Non-verbal, emotional and relational experience, feeling and ‘gut’ memories

“Reptilian Brain”

Instinctive responses, heart rate, breathing, body temperature



How the Brain Responds to Stressful Events

“Thinking Brain”

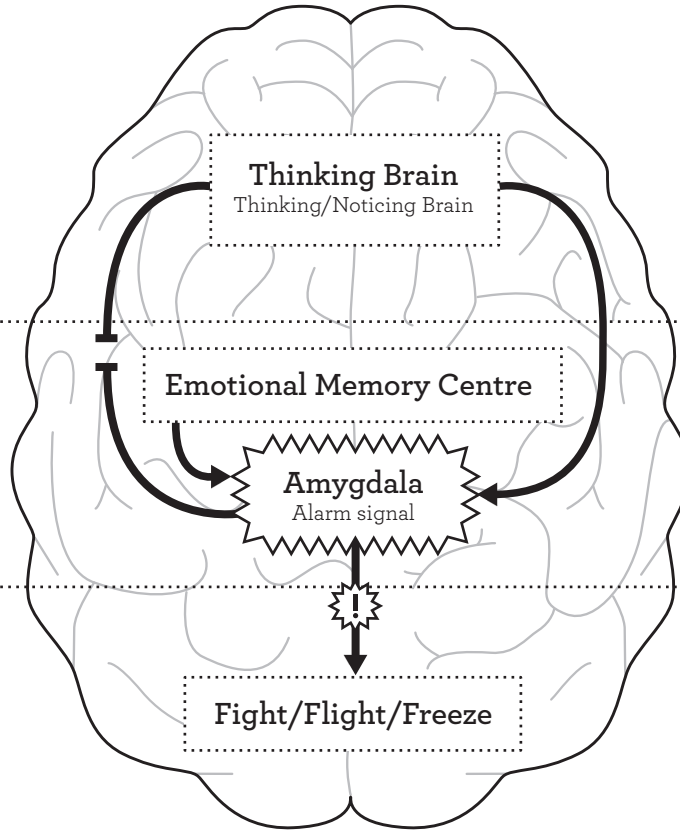
Outside our window of tolerance, this part of the brain shuts down. Observing mind no longer accessible. Loss of ability to regulate emotions, make decisions, response flexibility, moral reasoning, etc.

Amygdala: “The Alarm Signal”

Emotional memory center based on past experiences that signals when danger is present. Danger can be an external situation, thought or body sensation. Not useful when false alarm gets triggered too often.

“Reptilian Brain”

Reacts instinctively to the amygdala/ alarm to activate survival defenses: fight/flight/freeze. Sympathetic nervous system engages (muscles tense, breathing & heart rate changes). If life threatening - Feigned Death



How Mindfulness Helps You

“Frontal Lobes”

Thinking/observing brain can reengage and calm down the amygdala by bringing mindful awareness to body and emotions.

“Limbic System”

Amygdala calms down, stressful implicit memories lose strength, positive/ adaptive memories are laid down through neural connections in brain

“Reptilian Brain”

Survival defenses disengage, social skills come back online, parasympathetic nervous system (rest and digest) gets activated.

Mindfulness regulates the stress response by strengthening the noticing part of the brain in the frontal lobes.

The Negativity Bias of the Brain

The brain has a bias to pick up on negative events, rather than positive or neutral ones. This has helped us survive as a species - it also creates a lot of suffering if left unchecked. Mindfulness practice gives us skills so that we are not controlled by this bias.

Strengthening Neural Pathways through Daily Meditation Practice

The more you practice mindfulness, the more your brain will remember to engage all parts of the brain, even under stressful events. You are strengthening these integrative neural pathways every time you stop to sit down and pay attention. This week try a longer meditation practice, mindfulness of breath, and set an intention to do this 10 minutes a day.

Meditations to try:

- Mindfulness of breath (track 3)
- Mindfulness of sounds (track 4)

Fisher, J. (2010). *Psychoeducational aids for the treatment of psychological trauma*. Revised edition. Cambridge, MA: Kendall Press.

MacLean, P.D. (1990). *The Triune Brain in Evolution*. New York: Plenum Press.

Goldstein, E. (2012). *The Now Effect: How this Moment Can Change the Rest of Your Life*. Atria Books.

