



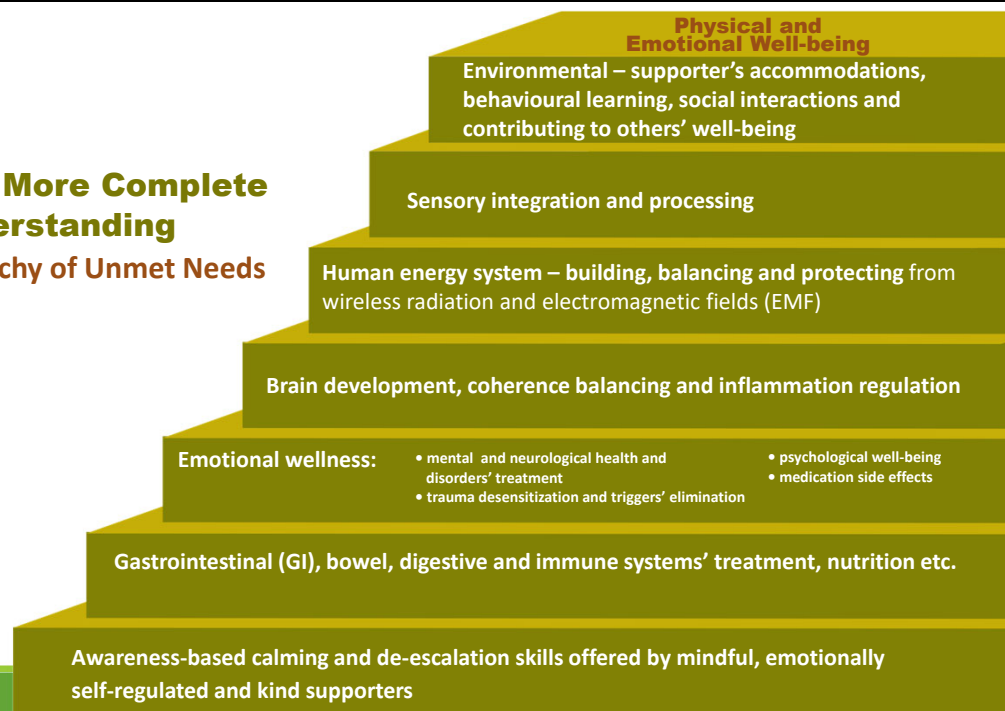
Week Four

Brain Development, Coherence & Inflammation Regulation

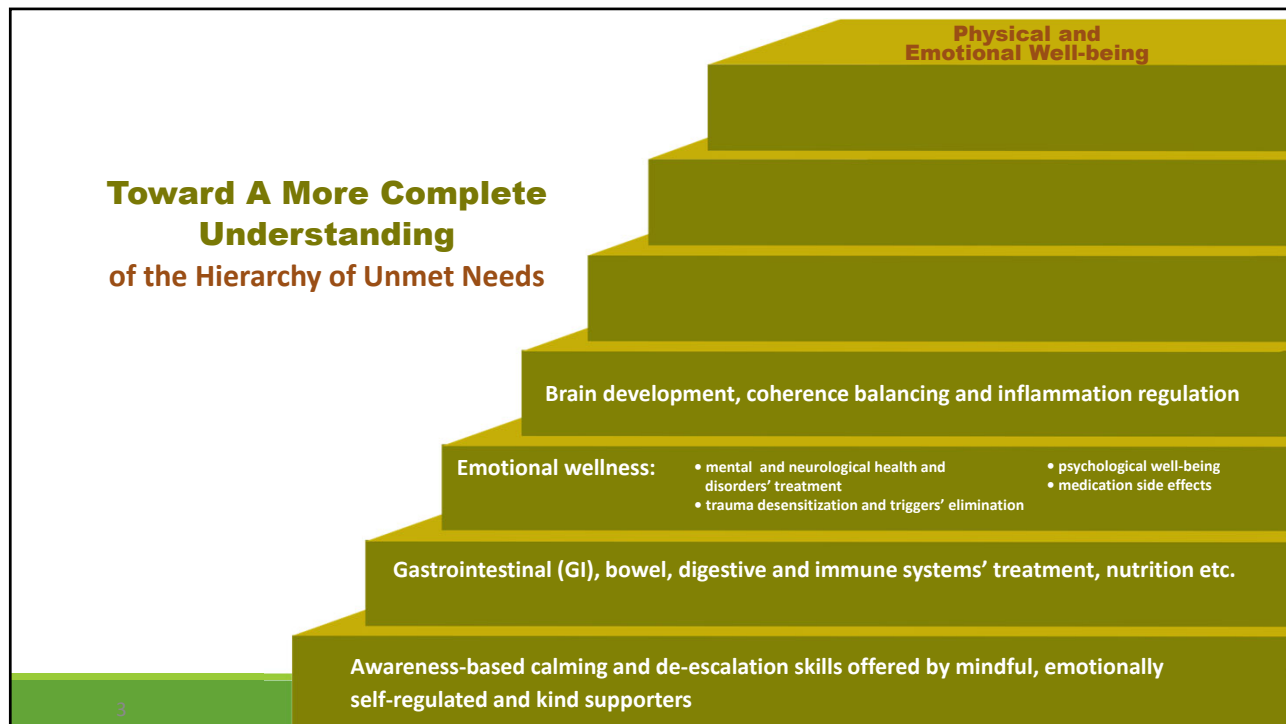


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Toward A More Complete Understanding of the Hierarchy of Unmet Needs



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The Story of Cameron Mott

In this scan of Cameron's brain, the blank space is where half of her brain has been removed.

The Results:
 Aside from some weakening on one side of her body, she is indistinguishable from her classmates. She is a good student and participates in sports.

(Reference D. Eagleman *The Brain*)

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“The idea that the brain can change (heal) its own structure and function through thought and activity is, I believe, the most important discovery of the brain since we sketched out its basic anatomy and the workings of its basic components, the neuron.”

Norman Doidge
The Brain That Changes Itself

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Through proven training and maintenance of a healthy brain, **enhanced brain functioning is possible** as a result of development in the following area:

- **Neurochemicals Production** i.e. endorphins, oxytocin, neurotransmitters like dopamine, serotonin and GABA.

Reference:
Ratey, J. & Manny, R. (2014). *SPARK*.

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- **Neurogenesis** i.e., promotion of the growth of new neuron cells
Ahlskog, J.E., et al. (2011); Siegel, D. (2007) *The Mindful Brain*
- **Neuroplasticity** i.e., the reformation of neuron networks to take on new and extra 'tasks'
Doidge, N. (2007). *The Brain That Changes Itself*; Doidge, N. (2015). *The Brain's Way of Healing Itself*
- **Neurostimulation** i.e., promoting motor function by exercising the brain
Perry, S. (2013). *Brain Science*, Mar 3(1) 101-122; Ratey, J. (2008). *SPARK*

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Brain Coherence and Balancing

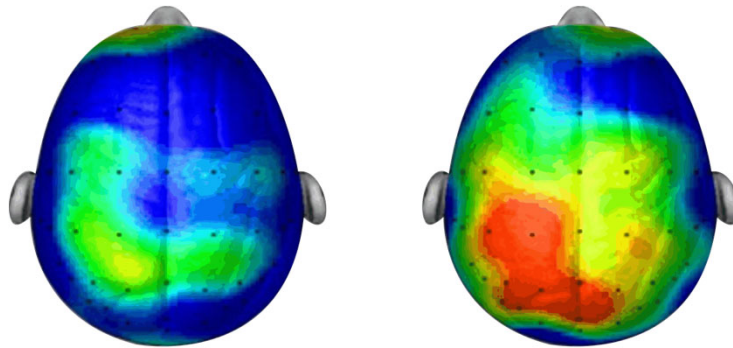


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Brain Coherence

i.e. Many Parts of the Brain 'Talking' to Each Other



(Brain MRIs before & after
20 minutes of exercise)

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Responses Related to Brain Balancing

In trying to satisfy their need for brain central coherence, individuals experiencing **problems associated with brain balancing** may **respond in reactionary and cognitively unintended ways**.

They may:

- **become angry.** Anger stimulates the brain to focus and in so doing organizes the individual's thoughts, and therefore offers the individual **relative calm**. For everyone, anger is a much less painful emotion than fear.

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- **obsess and become compulsive.** These behaviours **organize the individual's thoughts, create focus** and therefore calm the individual;
- **blame and even hit others.** This is one way that the individual can **self-medicate with anger.** These expressions of agitation and anger are magnified by a supporter's mindless fear and unknowing powerful communication of that fear.

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The proven potential for brain development and enhanced functioning is sadly, possibly the least appreciated and understood fact regarding needs in supporting individuals with developmental disabilities or autism.

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Neurodevelopment Influencing Emotional Self-Regulation

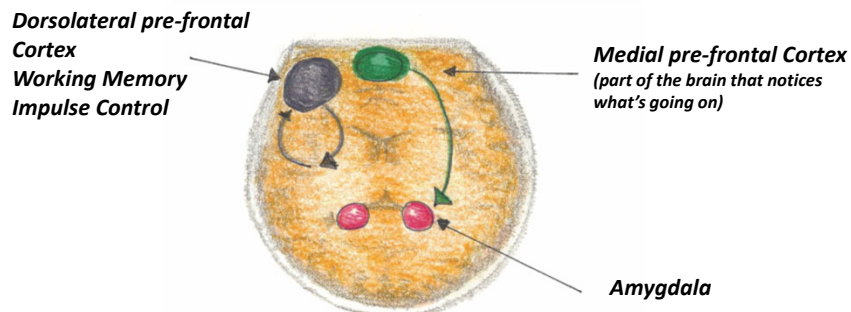


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Mindfulness to be Emotionally Self Regulated

The main way we can consciously access the emotional brain is through self awareness*, i.e. becoming mindful. Mindfulness increases connections in the medial pre-frontal cortex. This reduces anxiety for the Supporter and the Person Supported.



(*Research reference: J. LeDoux, "Emotion Circuits in the Brain", Journal of Neuroscience 33, no. 9 (2013) 3815-23)

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According to Dr. Daniel Siegel in *The Mindful Brain* (2007, pp. 42-43) the following brain, body and being functions correlate with the activity of areas within the medial prefrontal cortex:

- **Body regulation**
- **Attuned communication**
- **Emotional balance**
- **Response flexibility**
- **Empathy**
- **Insight or self-knowing**
- **Fear modulation**
- **Intuition**
- **Morality**

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Supporting Brain Coherence and Neurodevelopment



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Mindfulness and Awareness-Based Activities:

- Mindful Breathing, Movement, Eating, Mindful Walking
- Eye-Spy, Scavenger Hunts
- New Games, Puzzles, Building Blocks

Aerobic Exercise:

- Aim for twenty minutes twice a day of aerobic exercise;
- Establish a walking speed similar to someone in a hurry;
- As approved by a physician, use interval training twice a week. The pattern could be 20 seconds intense exercise followed by 10 seconds of rest repeated for 4 minutes.

Bouncing and Balancing:



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Gut / Brain Connection and Inflammation



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GI Considerations Relating to Brain Inflammation

Intolerance

Vitamins & Minerals

Glutathione

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Summary

- **Brain development**, coherence and inflammation prevention are **essential** to promote the well-being of children, youth and adults with ASD/DD.
- **Brain development and coherence** are proven to **absolutely be possible through mindfulness, physical exercise, nutrition** and other support initiatives (e.g., BB-ABC Practices/Tools).

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