# Introducing Trauma

## Handouts

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# Bottom-Up Brain Development

**Cortex**
Reasoning and Judging Centre
3-6 Years

**Limbic System**
Emotional Centre
1-4 Years

**Cerebellum**
Motor Centre
Birth-2 Years

**Brain Stem**
Basic Survival Functions
Pre-birth - 8 Months

**Cortex**
Reasoning and Judging Centre

**Limbic System**
Emotional Centre

**Cerebellum**
Motor Centre

**Brain Stem**
Basic Survival Functions

The brain is comprised of different structures that grow and develop at different rates and different times.

The **brain stem** area of the brain develops first and is responsible for basic functions that **keep us alive** such as heart rate, breathing and regulating our body temperature. The brain stem is fully developed at birth. It is the part of the brain that is 'hard wired' and least susceptible to change.

Connected to the brain stem is the **cerebellum** or motor centre of the brain. This area is responsible for **movement** and develops over the first few years of life. Development in this area is seen in babies gaining head control, sitting, crawling and walking. In the next few years, children will gain greater co-ordination, learn to skip, kick a ball, ride a bicycle, cut, draw and eat with cutlery.

The **limbic system** is the **emotional** centre of the brain and rules the lives of young children up to around four years. During the toddler years, the limbic system goes through a period of rapid development. This helps explain their bursts of irrational behaviour and tantrums. Toddlers need our help to manage their **strong** feelings. Young children **feel** then **act**, they **can't think** then **act**. This is due to the emotional centre of their brain developing before the cortex, or the thinking part of their brain. Young children basically view the world through an emotional lens.

The **cortex**, or thinking part of the brain, is the last part to develop. This is the part of the brain responsible for reasoning, planning and problem solving. This is the part of the brain that enables humans to **think** before they **act**. As children grow and develop, the cortex is gradually able to help us to pause when we are flooded by **strong** emotions, thus allowing us to **feel, think, then act.**

Unlike the brain stem, the limbic system and cortex are highly susceptible to change due to experience and the environment in which the child lives.

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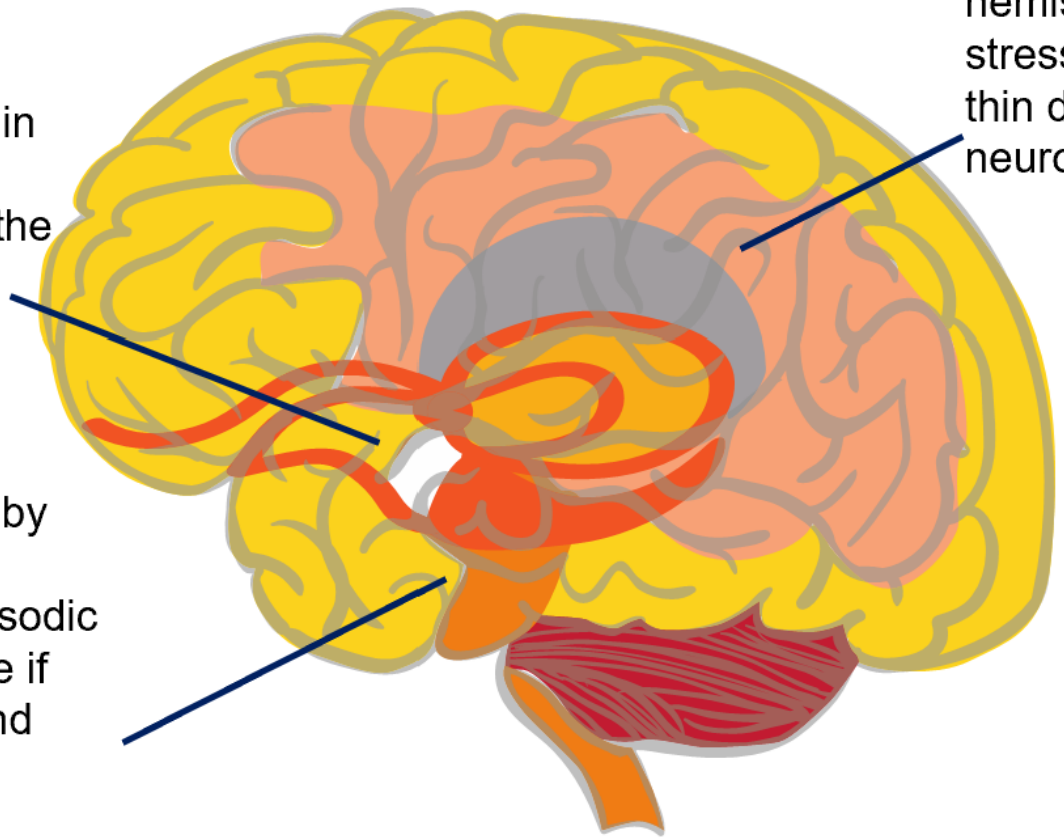
# Where trauma affects the brain

**Corpus Callosum**

Bridge between the 2 hemispheres. Chronic stress can damage and thin down this bundle of neurons

**Amygdala**

Survival response centre within the limbic lobe that becomes enlarged and more sensitive the more it is activated through responding to threats



**Hippocampus**

Consolidates memory by providing the context/ sequential data for episodic memories. Goes offline if trauma overwhelms and disrupts cortex.

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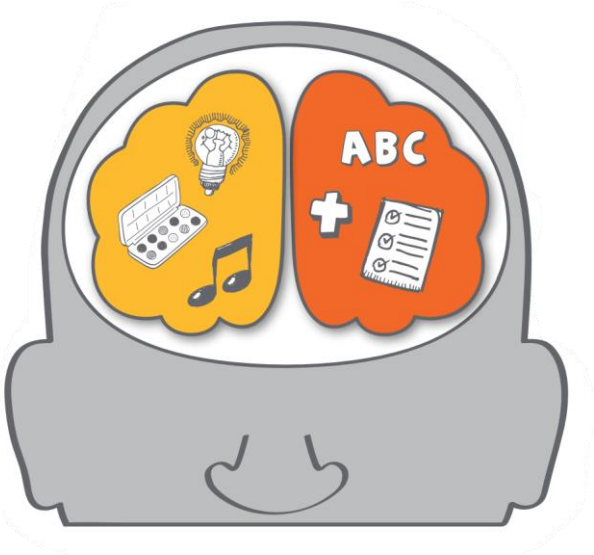
# Lateral brain development

**RIGHT**

- Ambiguous
- Non-verbal
- Big Picture
- Visual
- Emotions – like fear & disgust




**LEFT**

- Logical
- Linear
- Language
- Lists
- Literal
- Emotions – more positive

## Left Hemisphere

- Evaluates language content
- The optimistic hemisphere
- Understands beginning, middle and end
- Learns from the past and expects the future
- Looks for patterns

## Right Hemisphere

- Is orientated in the present moment
- Is non-verbal
- Grasps the whole/big picture
- The pessimistic hemisphere
- Relies on the non-verbal:
  - Eye Contact
  - Facial Expression
  - Tone of Voice
  - Posture
  - Gesture
  - Intensity

# Trauma and language

The left hemisphere is responsible for

- speech production and
- language comprehension

Under stress, areas in the left hemisphere shut down leaving the traumatised child:

- speechless in the face of terror and
- with impairments in recognising and understanding simple instructions

## The shift to the right hemisphere

- Traumatised child is left to respond to intense emotional sensations and experiences without language
- Trauma shifts processing of experiences to the right hemisphere
- Experiences of trauma are acted out in non-verbal communication
- Non-verbal strategies are required to resource change for traumatised children

# Transforming trauma

## Building right hemisphere/left hemisphere connection

- Any activity that enables you to cross the midline
    - cups games, hokey pokey, clapping chants, mirroring games and physical activity/sports

## Building right hemisphere

- Attunement and relationally based activities
    - mutual smiling, mirroring games based on facial expressions, voice copying

## Building left hemisphere

- Incorporating cognitive processes into calming or stimulating activities
    - counting for relaxation