



1




2



3

Brain development

- The brain develops through a mix of genetics and environmental factors.
- Key to this development are relationships
- The brain develops sequentially from the bottom up




Australian Childhood Foundation professionals.childhood.org.au

4

Key Principles of Neurodevelopment

1. The brain is organized, and develops, in a hierarchical sequence that is connected to the body.
2. Neurons and neural systems are designed to develop and change in a use-dependent function. The more we use a connection the stronger it becomes.
3. The brain develops most rapidly early in life. Childhood is a critical period of brain development.
4. Neural systems (or neuronal connections) can be changed, but some systems are easier to change than others. This is the concept of neuroplasticity.
5. The human brain develops best in connection with other human brains. Relationships and connections are critical to development for all of us.



Australian Childhood Foundation professionals.childhood.org.au

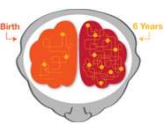
5

Neuronal connections

- Neurons – cells in our brain interact and communicate with other neurons
- The neural system has the ability for one neuron to communicate with up to 10,000 other neurons
- The newborn brain has approximately 100 billion neurons

Neuroplasticity refers to the brain's capacity to:

- Grow new nerve cells
- Strengthen connections between nerve cells
- Sprout new connections between different cells




Australian Childhood Foundation professionals.childhood.org.au

6

8 senses

1. Visual
2. Auditory
3. Olfactory (smell)
4. Gustatory (taste)
5. Tactile System (touch)
6. Vestibular (sense of head movement in space)
7. Proprioceptive (sensations from muscles and joints of body)
8. Interoception (awareness of basic primary functions – hunger, toileting, breathing)




Australian Childhood Foundation Professional Education Services professionals.childhood.org.au

7

The Importance of Culture

A protective factor

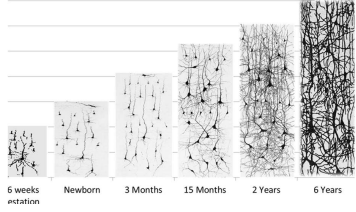
Safety: Belonging
Relationships: Connection
Meaning making: identity



Australian Childhood Foundation professionals.childhood.org.au

8

Neuronal development



- Rapid growth occurs from birth to 6 years
- **Critical period** of development
- Healthy neuronal development occurs through **relationships, regulation, repetition**

Australian Childhood Foundation professionals.childhood.org.au

9

Neuronal development

- Early years – period of **rapid growth**
- Followed by onset of puberty in which **synaptic pruning and formation of new neurons** occurs.

Australian Childhood Foundation professionals.childhood.org.au

10

Sequential Brain Development

Australian Childhood Foundation professionals.childhood.org.au

11

A brain development metaphor - My Brain House

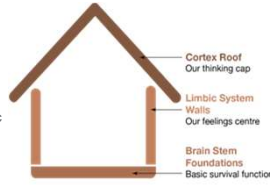
- We build our brain from the bottom to the top- like building a house
- We reinforce parts of our house as we grow, with our roof continuing to develop into our mid 20s.
- In times of great stress bits of our brain house can come down and require repair. This is achievable and our brain house can stand strong again.

Australian Childhood Foundation professionals.childhood.org.au

12

A brain development metaphor - My Brain House

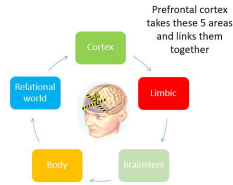
- Our brain house can experience adversity. This can effect its structural integrity. If we get rattled our thinking cap roof can come off, leaving our feeling walls exposed. This can lead to strong emotions coming out without our thinking cap to help us contain our feelings.
- When this happens we can struggle to find words to communicate as our words flew off with our thinking cap roof.
- If we are deeply shaken our roof and walls might come down and leave only our foundation. Our foundation is very strong and reliable. In these times we have our basic life functions to focus on to get us through- eg. our breathing, our heart beat.
- Everyone's rooves blow off from time to time. Given we have all built our own brain houses, we are all equipped to support each other to repair our houses together.



13

Adolescents - The remodelling brain: Pruning & myelination in the teenage brain

- Adolescence is a remodelling phase of development. Brain is pulling all individual parts into functioning whole.
- A great deal of pruning goes on – brain lets a number of systems go if they are not being use
- Brain undergoes massive remodelling between 12th and 25th years
- Renovation not Construction (e.g. house reno – keep what is still needed, pull out the rest, re-do to suit tailored needs. Some circuits might be affected during the process
- Drives efficiency, tailored to its environment
- The remodelling creates *INTEGRATION* – the key to well-being that allows us to efficiently perform complex tasks from applying words to feelings to riding a bike



14

Risk taking and impulse control

Heightened novelty seeking and risk taking during adolescence is biologically driven and normative to an extent. Pubescent hormones influence young people to look for edgy activities while their underdeveloped pre-frontal cortex doesn't help them to hold the potential negative consequences of these activities in mind and control their impulses.





Photo credit: iStock

They are primed to think outside the box, push boundaries, to seek out novel experiences and become more integrated (efficient) at regularly used processes amongst many other changes!

15

professionals.childhood.org.au

Impacts of trauma on the developing brain

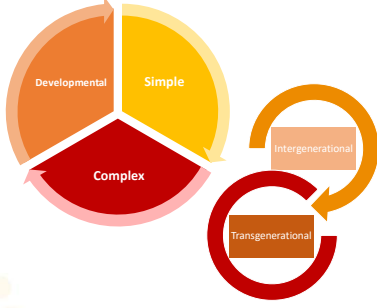




16

Defining trauma

Any single, ongoing or cumulative experience which:

- is a response to a **perceived threat**, usually to survival
- **overwhelms** our capacity to cope
- feels/is **outside our control**
- often evokes a **physiological** and **psychological** set of responses based on fear or avoidance

professionals.childhood.org.au

17

Development Trauma

- Trauma that occurs during the crucial stages of brain development – in utero through to late adolescence
- Usually relational in nature – the trauma happens in relationship (through abuse, neglect, domestic violence, toxic stress etc) and therefore is healed in relationship.



Photo credit: iStock



professionals.childhood.org.au

18

Trauma impacts



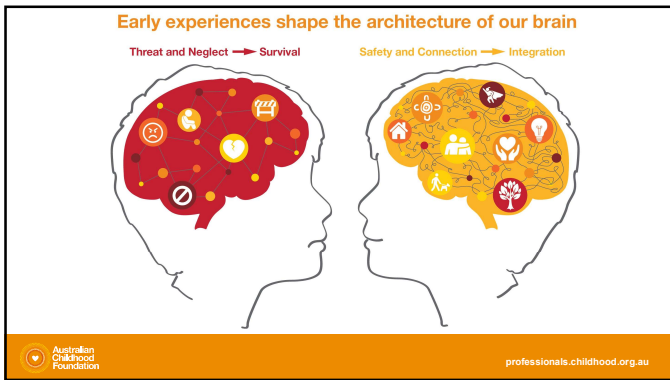
Trauma can impact all elements of children's development: brain, body, memory, learning, behaviour, focus, emotions, relationships.

Australian Childhood Foundation
professionals.childhood.org.au

19

Early experiences shape the architecture of our brain

Threat and Neglect → Survival Safety and Connection → Integration



Australian Childhood Foundation
professionals.childhood.org.au

20

Trauma response patterns

- To cope with trauma children use initial adaptive responses to survive
- This is reasonable as a once off occurrence, but, if they continue they can become maladaptive patterns of behaviour
- These responses will be different for an individual child at different developmental stages
- Often a combination of appropriate developmental behaviours and maladaptive patterns of behaviour emerge

Australian Childhood Foundation
Professional Education Services
childhood.org.au/training

21

What might it look like?

- Difficulties coordinating cognitive processes such as planning & working memory
- difficulty with voluntary movement tasks – walking or writing
- becoming overwhelmed and not able to sort incoming sensory information
- Can't place memories in time or place – flooding & flashbacks
- Working memory, retention and recall (retrieval) capacity severely impacted
- Difficulty in emotional regulation
- Difficulty in reading facial expressions
- Constantly perceiving threat where there is none
- Might be unable to use foresight and anticipation, focus or sustain attention and focus, plan, organise or prioritise or make decisions well, reflect or have self-awareness, be enthusiastic, motivated or persist with activities, use impulse control



Photo credit: iStock

Australian Childhood Foundation
professionals.childhood.org.au

22

Arousal - Affect dysregulation

We might see extremes of affect state:

- **Terror** replaces fear
- **Despair** replaces sadness
- **Rage** replaces anger




Photo credit: Wana Kullbwa

Australian Childhood Foundation
Professional Education Services
professionals.childhood.org.au

23

Safety principles

Safety is embedded in our physiology

Safety is a relational experience


Child abuse is a deep violation of a child's sense of safety

Australian Childhood Foundation
professionals.childhood.org.au

24

**Neuroception –
'detection without awareness'**

- Familiarity is perceived as safe
- Finding that which is dangerous to be safe
- Finding that which is safe to be dangerous



Neuroception

Our nervous system listens to what's happening inside our bodies. It scans our environment and pays attention to the messages others send us.

When it senses safety, it automatically moves us to a state of connection. When it senses a threat, it moves us into a state of protection to keep us safe.

Image credit: Beacon House


Professional Education Services
professionals.childhood.org.au

25

Polyvagal Theory and Protective Responses

by Stephen Porges

Behavioural Functions	Body Functions
Social Engagement Soothing and calming Indicates safety	• Lowers or raises vocalisation pitch • Regulates middle ear muscles to perceive human voice • Changes facial expressivity • Head turning • Tears and eyejaks • Slows or speeds heart rate
Mobilisation Fight or Flight Active Freeze Moderate or extreme danger	Hyper-arousal • Increases heart rate • Sweat increases • Inhibits gastrointestinal function • Narrowing blood vessels - to slow blood flow to extremities • Release of adrenaline
Immobilisation Collapse or submission Death feigning Increased pain threshold Conserve metabolic resources Life threatening situations	Hypo-arousal • Slows heart rate • Constricts bronchi • Stimulates gastrointestinal function


 Australian Childhood Foundation

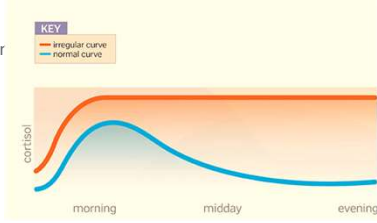
Professional Education Services
childhood.org.au/training

26


Cortisol

Can help:

- your body respond to stress or danger – **fight, flight, freeze, submit response**
- increase your body's metabolism of glucose
- control your blood pressure
- reduce inflammation

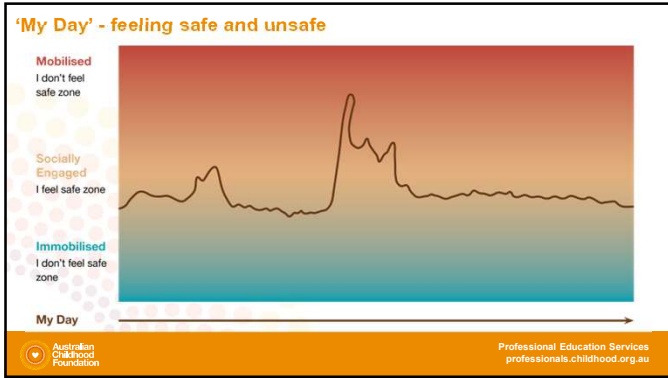


KEY:
— irregular curve
— normal curve

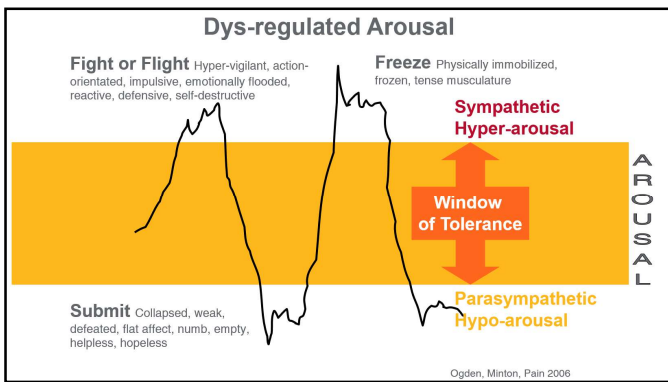

 Australian Childhood Foundation

Professional Education Services
professionals.childhood.org.au

27



28



29

Regulation of child's state using modulation approach

Can I pick....

- Where both me and the child/ young person are in our nervous systems using indicators such as body movements, muscle tension, voice etc?
- How to use this knowledge to modify my attunement/ communication /activities to be self-regulating and co-regulating?

Photo credit: Stock

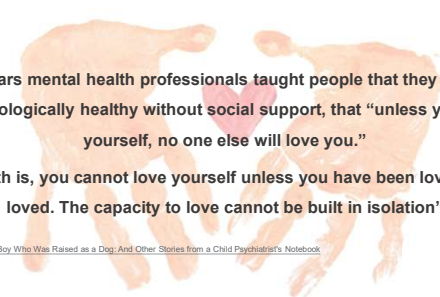
Australian Childhood Foundation
Professional Education Services
professionals.childhood.org.au


30

“For years mental health professionals taught people that they could be psychologically healthy without social support, that “unless you love yourself, no one else will love you.”

...The truth is, you cannot love yourself unless you have been loved and are loved. The capacity to love cannot be built in isolation”

Bruce D. Perry, *The Boy Who Was Raised as a Dog: And Other Stories from a Child Psychiatrist's Notebook*



 Australian Childhood Foundation professionals.childhood.org.au

31

Using our relationships therapeutically....

Accompaniment is an experience for a child that offers emotional reciprocity, validation, care and comfort. In this experience they feel heard, met, felt and understood

“Children internalize the people who understand and comfort them, so that they often have the felt sense of accompaniment when they are alone”

Bonnie Badenoch

- Share meaning making experiences
- Understanding that the challenging behaviors result from their specific vulnerabilities and needs
- Focusing on and amplifying the child's strengths and talents
- Using consistent and positive reinforcement



 Australian Childhood Foundation Professional Education Services
professionals.childhood.org.au

32

Awareness of how we present to create safety...



Posture and gestures



Environment



Tone of voice



Proximity



Facial expressions



Eye Contact



 Australian Childhood Foundation professionals.childhood.org.au

33

PACE- Dan Hughes

- **P**layful
- **A**ccepting
- **C**urious
- **E**mpathic

Handout: Five steps to helping children manage big feelings

Australian Childhood Foundation professionals.childhood.org.au

34

Meaning making

How children understand and make meaning of their world often occurs through what is reflected back to them through their interactions with significant adults.

If adults respond to the child's behaviour in a punitive way, it reinforces negative schemas and stories that the child has developed about themselves.

So how we experience a child and reflect that back to them influences how they come to understand themselves and build their identity.

Australian Childhood Foundation professionals.childhood.org.au

35

Self Concept: Internal working models

	Positive internal working model	Negative internal working model
View of self	I am lovable I am worthy	I am unlovable I am unworthy
View of the world and relationships	Others are responsive Others are loving Others are interested in me Others are available to me The world is relatively safe	Others are unavailable Others are neglectful Others are rejecting Others are unresponsive The world is unsafe

Australian Childhood Foundation Professional Education Services professionals.childhood.org.au

36

Behavioural – narratives of trauma

- Behaviour tells a story!
- Traumatized children's behaviour can be difficult and complex for parents, teachers and carers to understand, manage and shape
- However, it is functional and almost always makes sense given their specific experiences of trauma
- Children's behaviour is the manifestation of the impacts of trauma outlined in the previous sections

Sometimes when we are angry, there are other emotions under the surface

Icebergs are giant floating pieces of ice found in the coldest parts of the ocean. What you can see from above is just a tiny part. Most of the iceberg is hidden under the surface.

Anger, Straight Ahead!

Watch Out!

Embarrassed Annoyed Rejected Scared Guilt Alone Grief Insecure Disappointed

Shame Med Let's go deeper!

Australian Childhood Foundation

37

Be curious about the behaviour and the meaning it holds

1. What is the function behind the behaviour = meeting an unmet need?
2. Developmental stage of the child?
3. Current state of the child's nervous system? (hypersensitized, under responsive?)
4. Survival/protective response – fight, flight, freeze, dissociate
5. Coping strategy (that no longer works)
6. Structural changes in the brain
7. How is this problem the child's solution?
8. Trauma induced thinking and conditioning (the world is an unsafe place, adults cannot be trusted, there is no hope of change, it is not safe to show vulnerability...)

Australian Childhood Foundation professionals.childhood.org.au

38

Considerations for our....

Working environment

Supports for students

Session structures and content

Collaborating with schools

Safety – physical and felt

Relationships with students

Photo credit: iStock

Australian Childhood Foundation professionals.childhood.org.au

39

WHERE TO FROM HERE?

Jot down where to from here for you as an individual.

Now what are some next step actions for the group?

Photo credit: iStock

Australian Childhood Foundation
professionals.childhood.org.au

40

References

- NCIB: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3968319/>
- Working Together 2015: Adapted from Swan and Raphael 1995
- *The Brain on Fear: Scientists uncover the neurons in the mouse brain responsible for linking the sight of a looming object to scared behaviour.* By Ruth Williams | June 25, 2015
- *Deep Systems: The Psychotherapist's Essential Guide to the Brain* 2017
- NCBI: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4123787/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3319675/>
- What really is safety for traumatised children and young people? Joe Tucci, Jan 2019 ACF Prosody Blog
- Porges (2017) *The Pocket Guide to the Polyvagal Theory*, page 68, Norton
- Intersubjectivity: Centre for Family Development: <https://www.center4familydevelop.com/Intersubjectivity.pdf>

Australian Childhood Foundation
professionals.childhood.org.au

41

Professional Education Services
professionals.childhood.org.au

support@childhood.org.au

Find additional resources at:
<https://professionals.childhood.org.au/resources/>
<https://professionals.childhood.org.au/covid-19/>

Australian Childhood Foundation

42
