



1



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Learning objectives

- Neurobiology of trauma
- Safety in the context of understanding and working with children in a trauma informed framework
- Creating safe environments
- Understanding self regulation
- The role of self care




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Understanding Brain Development

and the impacts of trauma



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I need connection to my CULTURE



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The Importance of Culture

A protective factor

- Safety: Belonging
- Relationships: Connection
- Meaning making: identity

Our culture influences our brain development. How has it influenced yours? Think about:

- Sense of safety
- Relationships
- Meaning making



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Brain development

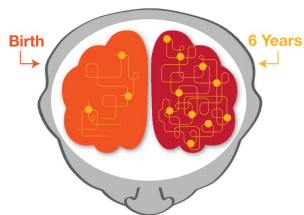
- The brain develops through a mix of genetics and environmental factors.
- Key to this development are relationships
- The brain develops sequentially from the bottom up



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Neuronal connections

- 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



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Neuronal development

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

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Neuronal development

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

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Sequential brain development – building blocks

The Thinking brain	3-5 Years
The Emotions and Memory Brain	- Birth to 4 years
The Movement Brain	Birth – 2 years
The survival brain	Pre birth to 8 months

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Infancy -0-12 months

- Critical functions being organised
- Regulation of
 - - arousal,
 - - sleep,
 - - fear states




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Brainstem - basic life functions

- Basic life functions
- First part of our brain to develop
- This is the most developed brain part at birth
- Responsible for our heart beat, breathing, sucking, temperature control, blood pressure

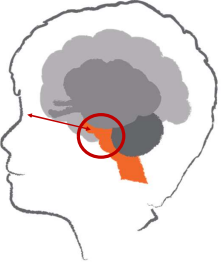


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Superior Colliculus

- Processes visual threats – looming objects identified by cells in the retina of the eye
- Retinal neuronal input received by Superior Colliculus which engages the body in **Avoidance and defensive behaviours**




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Cerebellum- movement and balance

- Helps us to know where our body is in space
- Helps us with our posture and balance
- Helps us not to fall over and to control our movements
- Has its own connective pathways between the 2 halves- cerebellar vermis



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Infancy-0-12 months

Primary developmental goal:

- State regulation
- Primary attachment
- Flexible stress response
- Resilience



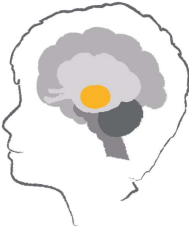
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Diencephalon - sorting & sending centre

- This area of the brain develops mainly after birth
- It sorts out messages coming into the brain and sends them
- It uses hormones to send signals to body
- Hormonal signals tell your body what it needs, eg. food, water, love



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Early Childhood- 1-3 Years

- Critical functions being organised:
 - Integration of multiple sensory inputs
 - Fine motor control
 - Emotional states
 - Social language; interpretation of nonverbal information

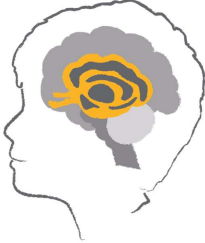


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Limbic lobe- emotional gateway

- The part of the brain that helps us attach an emotion to an experience or memory
- This part of the brain is particularly involved with the emotions of fear and anger
- Also heavily involved in attachment processes
- This area develops mainly after birth

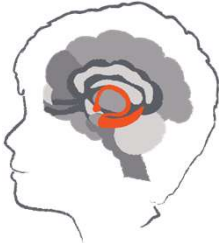


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Hippocampus – Brain’s historian

- Explicit memory system
- Develops approximately 2-3 years of age
- Provides context to memory and embeds long term memory




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Amygdala – smoke alarm

- Detects threat
- Develops from birth
- Learns by association
- Involved in implicit memory processes



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Neuroplasticity is hope

- The brain is at its most plastic in early childhood
- In early childhood, the brain is most vulnerable to harm, but also has the greatest potential for healing
- Neuroplasticity gives us hope




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Cerebral cortex- complex thinking

- The largest part of the brain
- Associated with higher brain function such as thought and action
- Examples of functions:
 - Reasoning
 - Logic
 - Judgement
 - Voluntary movement



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Pre-school


- Critical functions being organised:
 - Abstract cognitive functions
 - Socio emotional integration

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The prefrontal cortex- executive function

- Responsible for executive functions, such as judgement, reasoning, and self awareness
- Final part of the brain to reach maturity in one's mid 20s
- Under reconstruction in adolescents from the age of approximately 12 years

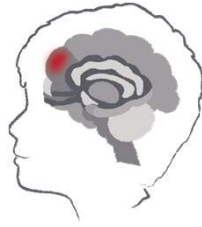


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Medial prefrontal cortex

- Associated with perceptions of self and similar others
- Known as centre for mindfulness
- Involved in maternal bonding – the parent child dyad and inter-subjectivity



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Hemispheric integration

Both hemispheres required for healthy development and functioning

Connected through corpus callosum

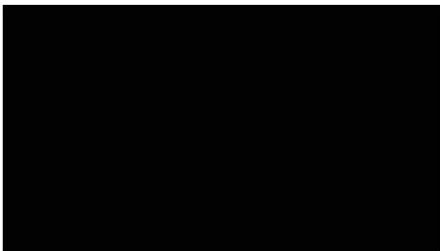
Good integration leads to coherent life narratives

Abuse and trauma causes disconnection - results in 1 hemisphere dominating



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Lateral Brain development



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Neurons-synaptogenesis & pruning

Brain's building blocks

At birth there are approximately 100 billion neurons;

However very few neural connections at birth

Child's brain – job is to lay down as many neuronal connections as possible

Adolescent brain – job is to strengthen those connections and increase processing speed

Neurons that fire together survive, those that don't, die (*use it or lose it*)

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BODY SYSTEMS

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Oxytocin

Role in regulating maternal care behaviours:

- Critical for maternal behaviour – motivates the parent to care for his/her infant
- In several mammalian species, facilitates physical proximity and nurturant care
- **Role in regulating maternal care behaviours:**
- **Critical for maternal behaviour – motivates the parent to care for his/her infant**
- **In several mammalian species, facilitates physical proximity and nurturant care**
- Oxytocin stimulates a broad range of maternal behaviours,

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The Parental Approach System: the role of hormones

oestrogen
prolactin
oxytocin

hypothalamus

self-defence system calmed

reward system sensitised

Dan Hughes

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Dopamine

- A neurotransmitter - plays a big part in **motivation and reward**
- **'Feel good'** hormone – nearly all pleasurable experiences come from a release of dopamine – eating, sex, etc

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Hypothalamic (Diencephalon) / Pituitary / Adrenal Axis

1. The hypothalamus secretes the hormone **corticotropin-releasing factor (CRF)**, which rouses the body.
2. CRF travels to the pituitary gland.
3. The pituitary gland secretes **adrenocorticotrophic hormone (ACTH)**.
4. ACTH circulates in the bloodstream, traveling to the adrenal gland.
5. The adrenal gland releases **cortisol**, another hormone.
6. Cortisol stimulates many reactions in your body, including a rush of energy and alertness.

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TRAUMA

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Discuss in pairs...

What do you struggle with most when considering your work with children who have experienced trauma?

Why does this work matter to you?

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Intergenerational Trauma

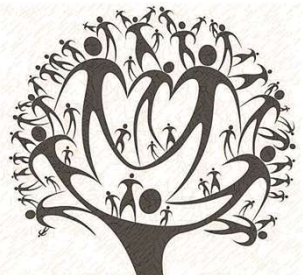
- The prefix 'inter' is from the Latin meaning between, or among, together or mutually together
- Inter-generational trauma is passed down directly from one generation to the next
- Inter-generational trauma occurs directly through experiencing the trauma or from seeing or hearing about it

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Transgenerational trauma

- Trans-generational transmissions are not spoken about
- They can be secrets; unspoken, kept quiet, hidden events which are sometimes banned even from thought – sometimes unthinkable. They can inhabit a descendant following a traumatic experience.

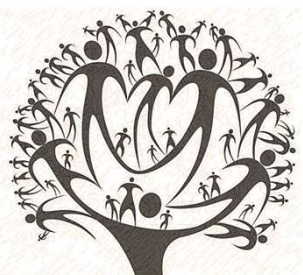


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Transgenerational trauma

- Sometimes they can be connected with unjust events
- They are often passed down from generation-to-generation without being thought about or assimilated, sometimes through parenting styles, parental mental health, culturally, spiritually

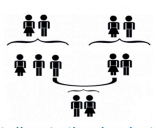


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Transgenerational trauma

- The prefix 'trans' is from the Latin word meaning **across or crossing, through, beyond or on the other side**
- **Trans-generational trauma is transmitted across a number of generations**



“This type of trauma occurs without direct stimulus but is instead transmitted from a parent who has experienced a traumatic event”
(Davidson & Mellor 2001 as cited in Goodman, West & Cicicic, 2008)

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Epigenetics

“The study of inheritable changes in gene function without the change in the DNA sequence”

Journal of Science

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Epigenetics

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Defining trauma

- ANY SINGLE, ONGOING OR CUMULATIVE EXPERIENCE WHICH:** (Icon: Clock)
- FEELS/IS OUTSIDE OUR CONTROL:** (Icon: Scales)
- OVERWHELMS OUR CAPACITY TO COPE:** (Icon: Bar chart)
- EVOKES A PHYSIOLOGICAL AND PSYCHOLOGICAL SET OF RESPONSES BASED ON FEAR OR AVOIDANCE:** (Icon: Brain)
- A RESPONSE TO A PERCEIVED THREAT; RESPONSE IS USUALLY BASED IN SURVIVAL:** (Icon: Mountain)


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Presentation of trauma

Trauma impacts

Trauma can impact all elements of a child or young person's development



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Understanding developmental trauma-safety

Developmental Trauma



An understanding of child development is pivotal in recognising and distinguishing the impact of trauma

Children & young people who experience chronic traumatisation frequently experience delays across their developmental spectrum including:

- > Cognitive skills
- > Language skills
- > Motor skills
- > Social skills

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Three Core Concepts in Early Development

3 Toxic Stress Derails Healthy Development

NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD
Center on the Developing Child HARVARD UNIVERSITY

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Sensory responses

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)

Vision Olfaction Gustation
Audition Somatosensory Vestibular Proprioception

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Vulnerabilities

Behaviours associated with an overactive limbic lobe and under-active pre-frontal cortex

- Overactive emotional reactions
- Trouble reading facial expressions
- Ill-attuned communication skills

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Summary of the impact of developmental trauma


- **Fear:** Sensitized to danger leading to distrust of others.
- **Hyper-vigilance:** External - scan for danger, anticipate abandonment or attack. Internal - I am bad, wrong. No spare energy for anything else. See danger where it doesn't exist. React to imagined dangers in ways that bring about situations that are feared.
- **Identity develops around shame.** Distorts experience of self and others. Feel flawed as a human being. Experience of badness can be kept out of consciousness because too painful to live with. Create barriers to relationships so others can't see what we see in self. Increases feelings of shame, isolation and loneliness.
- **Security of attachment is compromised.**
- **Safety is destroyed** and developmental attachment patterns become disorganized.
- **Intersubjective explorations are reduced and avoided.** They don't have the experiences that enable them to develop core beliefs or an internal working model that they are delightful, lovable and have a positive impact on the people around them.
- **Traumatic events are not explored and experienced in an integrative, coherent, intersubjective manner.** They are not assimilated into the autobiographical narrative.
- **Traumatic events can create dissociation,** as can subsequent memories or triggers of such events, thus causing rigid avoidance or "re-traumatization".

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Hemispheric functioning during fear event

- The child will struggle to process the content of our words (a left hemisphere task)
- The child may not be able to speak (a left hemisphere task)
- The child will be tuned into our tone of voice, not the content (a right hemisphere task)



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Hemispheric functioning during fear event

Monitoring	monitoring the intensity of our movements, primed to look for signs of threat
Acting	acting in the moment and won't have a strong grasp of future or past, therefore will not likely be able to grasp the potential consequences of their actions at the time
Processing	processing our postures and gestures, attuned for signs of danger
Registering	registering the way we try to use eye contact (e.g. demanding a young person look at us may escalate the situation)

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How trauma impacts the body



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Polyvagal theory and protective responses

by Stephen Porges

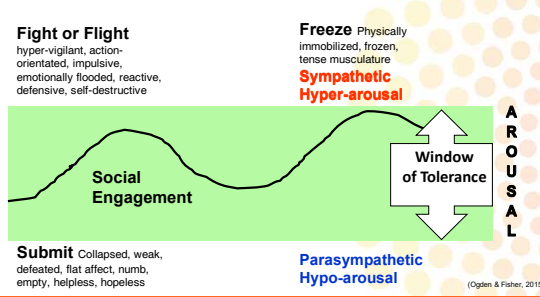
Behavioural Functions	Body Functions
Social Engagement Soothing and calming Indicates safety	<ul style="list-style-type: none"> • Lowers or raises vocalisation pitch • Regulates middle ear muscles to perceive human voice • Changes facial expressivity • Head turning • Tears and eye lids • Slows or speeds heart rate
Mobilisation Fight or Flight Active Freeze Moderate or extreme danger	Hyper-arousal <ul style="list-style-type: none"> • Increases heart rate • Sweats 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 Conserves metabolic resources Life threatening situations	Hypo-arousal <ul style="list-style-type: none"> • Slows heart rate • Constricts bronchi • Stimulates gastrointestinal function

(Porges, 2012)



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Regulated Arousal



Fight or Flight hyper-vigilant, action-orientated, impulsive, emotionally flooded, reactive, defensive, self-destructive

Freeze Physically immobilized, frozen, tense musculature
Sympathetic Hyper-arousal

Social Engagement


Submit Collapsed, weak, defeated, flat affect, numb, empty, helpless, hopeless

Parasympathetic Hypo-arousal

Window of Tolerance

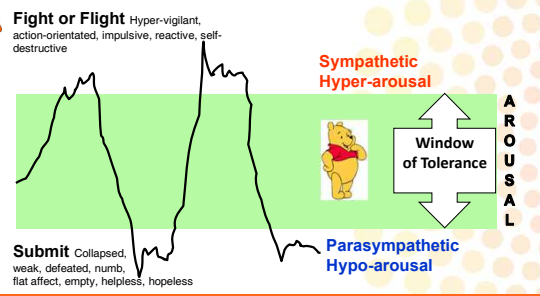
A R O U S A L

(Ogden & Fisher, 2015)



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Dys-regulated Arousal



Fight or Flight Hyper-vigilant, action-orientated, impulsive, reactive, self-destructive


Sympathetic Hyper-arousal

Submit Collapsed, weak, defeated, numb, flat affect, empty, helpless, hopeless

Parasympathetic Hypo-arousal


Window of Tolerance

A R O U S A L



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Stress



Consider: What do you see when children have too much energy? What do you see when there is not enough energy? Where is the calm in our centre/home? What helps us to get back into our window of tolerance?

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Stress



1 Stand up
• Stand up. Write your first name with your right foot. Write your last name with your left foot ...

2 Walk
• Walk once around your table without lifting your feet off the floor.


3 Follow
• Follow the leader tapping tempo

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Importance of relationship



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The right hemisphere in infancy

- Normatively develops in an integrated fashion through healthy attuned, co-regulatory relationships in the primary years of life.

Attunement Exploration
 Responsiveness/Modulation Self-regulation
 Acknowledgement/Validation Self-awareness

Another's self experience Relational experience Self experience

Connection

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The right hemisphere in relationship

These primary relationships contribute to:

- stored internal working models of primary relationships recorded in the right hemisphere
- the perception of emotion in self and others, enabling empathy and humour.

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Mindfulness and co-regulation

Pre-Frontal Cortex
 (the centre of Mindfulness/
 Self awareness)

Right Orbitofrontal Cortex
 (Regulation of Arousal)

- Mindful awareness/ meditation de-activates the amygdala
- Quality co-regulation de-activates the amygdala

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Creating Safety

A young person's cortical capacity is impaired by trauma-as a result subcortical functioning becomes dysregulated

In order to regain cortical capacity, essential for learning, we must restore emotional regulation.

How do we create:

- Regulation (calm)
- Engagement
- Connection
- Control



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Activity

What makes you feel safe at work/in the group?

How do you know when you create safety for the group or the child?

What are the things that work for you?

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Transforming trauma

Relational (safe)

- **Relevant** (developmentally-matched to the individual)
- **Repetitive** (patterned)
- **Rewarding** (pleasurable)
- **Rhythmic** (resonant with neural patterns)
- **Respectful** (of the child, family, and culture)

Bruce Perry, as cited by <https://attachmentdisorderhealing.com/developmental-trauma-3>



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What is needed

Choose three words that describe what you believe is essential for a safety and choose three words that are not helpful in your role and creating safety. Add your own words as they come to mind.


safe authentic flexible serious detailed patterns privacy
 sensory noisy retreat confidential freedom
 calmness soft colours bright colours usually noisy disorder
 messy space fun windows artwork views
 outside movement
 concealed secluded legroom breathing space playful shapes
 special realm soft

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Safety and listening the child

- Model attunement
- Ensure that the child is seen and kept in focus throughout the assessment and that account is always taken of the child's perspective
- Are they ready-how long can you sit and wait
- Validate what the child is feeling
- Check meaning
- Make sense of what is happening for the child
- What will have meaning



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Regulation Developmental continuum

Stage	Child	Caregiver/Educator
Behavioural	I need to show you	Sensory motor
Language	I need to/can tell you	Narrative/emotional literacy building
Metacognition	I can start to figure it out with support	Guiding/role modelling

Hechhausen & Dweck (1998). Life Skills 4 Kids

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Key considerations

- There is no magic wand!
- It takes time and patience: persistence and repetition is a must
- You matter in this work!
- Your relationship with the child is key
- Each child is individual which adds to the complexity
- Trial and error is common
- A titrated approach is important



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Environment

- Children relate to space in a manner which articulates their own sense of safety and their psychological states.
- The manipulation of non-fixed physical features can be used to communicate safety, messages and psychological issues or states, which can be used to derive safety, empowerment and sense of agency.
- A natural mind-space, a natural, physical space which is accessed visually and occupied only by the mind.

"I've never been asked if I would like to rearrange stuff. That would be so empowering and especially if their arrangement is how I would feel the most uncomfortable."

Stephanie Liddicoat 2018

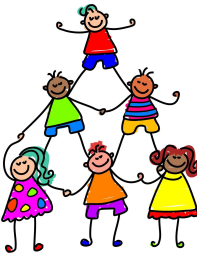


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Expectations

- Children, young people and parents need to have a greater sense of confidence about your capacity to protect them
- Staff require increased knowledge, confidence and skills to implement child safe practices in their work.
- Clear understanding of personal behavioural expectations are established in effectively guiding interactions with children
- Have tools in place to capture and reflect the child's voice.



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Respect diversity in cultures and child rearing practices while keeping child safety paramount

Respecting diversity should be taken to mean 'having the same aims for people's wellbeing and safety but finding different ways 'to achieve them' that are more appropriate to the person's different perspective.

- Being child-safe respects cultural difference:
- thinks about safety and wellbeing concepts from a cultural perspective
 - takes steps to develop cultural competence to respond in a culturally appropriate manner
 - takes guidance from experienced others (for example, seek advice from recognised Aboriginal or Torres Strait Islander organisations in regards to the needs of children from these backgrounds), and
 - approach family cultural contexts with sensitivity.



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Are we doing enough?

- How do we keep the child at the centre of the work we do?



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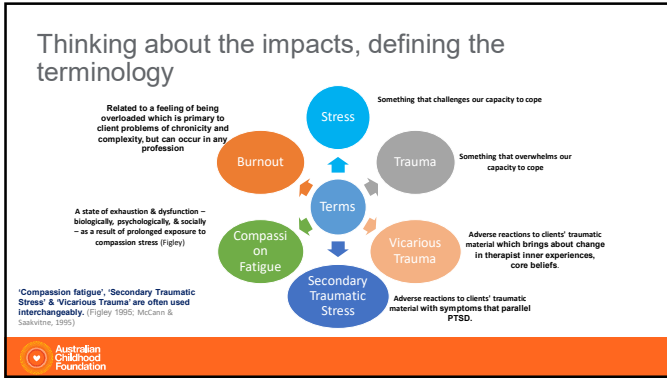
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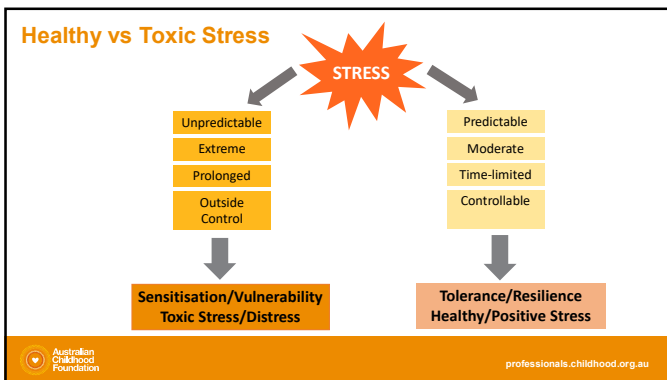
Self-care



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Vicarious Trauma - Possible indicators

Multidimensional:

- Physical
- Sensory
- Emotional
- Cognitive
- Relational

Can include:

- Fatigue
- impaired immune system
- sleep and appetite disturbances
- Anxiety
- hyper vigilance/control issues
- decreased self esteem
- loss of interest in tasks
- Avoidance – avoiding client contact or supervision

Not all indicators in isolation will determine vicarious trauma. However, experienced collectively, these can have a significant impact on the individual, the team and organisation.

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Impact of working with trauma

Signs and symptoms

How this might look at work:


- Decreased communication- staff putting notes up to advise of things
- Decreased ability to accept change or adapt- holding information
- Decreased ability to try new things/explore
- Increased sick days, late to work
- Decreased focus on tasks
- Memory issues
- Avoidance working with traumatic material



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Wellbeing – The River of Integration (Dan Siegel)



Adapted from - Siegel, D. (2009). Mindsight - The New Science of Personal Transformation. NSW, Australia: Scribe Publications.

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Importance of supervision

- Compared to case conferences, one-on-one supervision better supports the critical reasoning required for child safety (Munro 1999)
- Reflective regular supervision promotes staff well-being
- Reduces staff turnover
- Identify specific and ongoing training
- Formal and informal supervision provide space and permission for workers for workers to reflect on emotional responses to the work
- Peer supervision and support enable the reduction of isolation, promotes safety and develops greater transparency to identify risk and opportunity
- Models of supervision

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Prevention: Personal level

- Maintaining self care and prioritising healthy lifestyle/personal wellbeing
- Life outside of work incorporates: social, relaxing, spiritual, fun aspects
- Supportive and healthy relationships
- Work-life balance : maintaining healthy boundaries
- Personal & professional values align with the work
- Personal wellbeing plans are well-integrated & effective



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Thank you and questions



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Resources

Winkworth, G., & McArthur, M. (2006). *Principles for Child-Centred Practice: Timely, developmentally appropriate, participatory and collaborative*. Canberra: Institute of Child Protection Studies, ACU.

Associated publications

Winkworth, G., & McArthur, M. (2006). *Being 'child centred' in child protection: What does it mean?* Children Australia, 32(4).

Warrington C (2016) 'Child sexual exploitation: young people's perspectives on professional support', practice guidance published by Community Care Inform online at: www.cciinform.co.uk/practice-guidance/young-peoples-perspectives-on-professional-support-for-child-sexual-exploitation/ Wastell D and White S (2012)

'Blinded by neuroscience: Social policy, the family and the infant brain', Families, Relationships and Societies, 1 (3) 397-414 Wethington H, Hahn R, Fuqua-Whitley D, Sipe T, Crosby A, Johnson R et al (2008)

The effectiveness of interventions to reduce psychological harm from traumatic events among children and adolescents', American Journal of Preventive Medicine, 35 (3) 287-313.

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