

WHEN CHILDHOOD HURTS

The Lifelong Impact of Adverse
Childhood Experiences (ACE's)
on Mental and Physical Health

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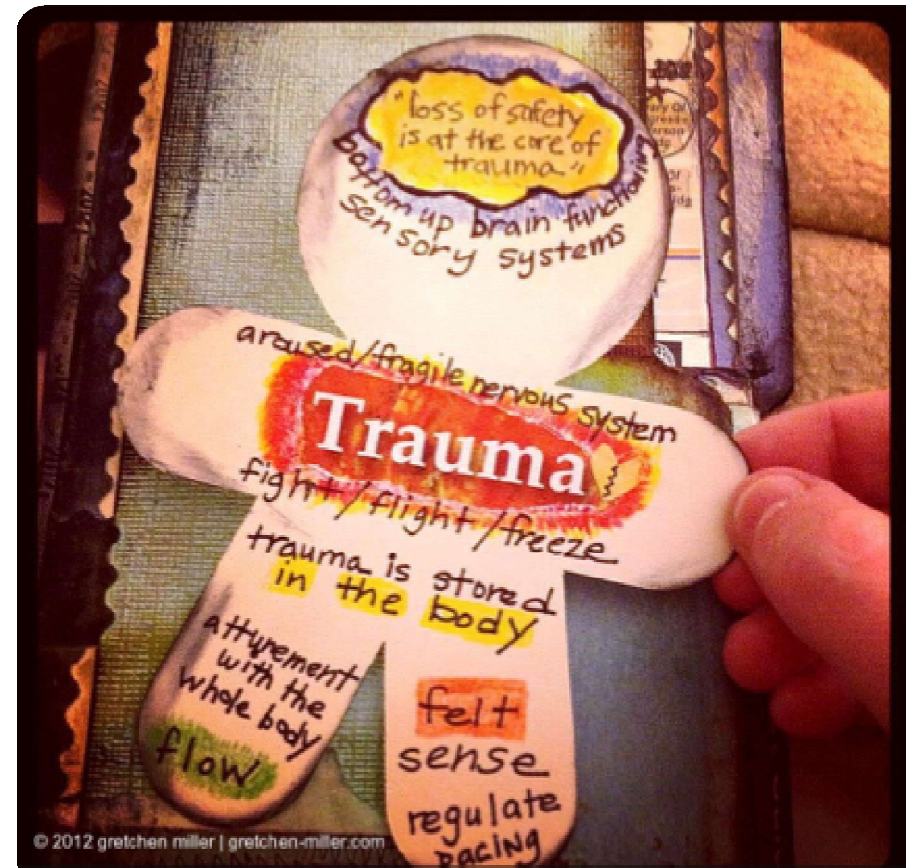


WHY ACE's MATTER IN PAEDIATRICS?

- 67% of children report at least one ACE
- 1 in 8 experience ≥ 4 ACEs
- Childhood adversity is a **public health** crisis.
- *Developmental, psychiatric, and physical health consequences*

‘What’s experienced in childhood may be carried in the body for life.’

Dr Nadine Burke Harris



WHAT ARE ACE's?

- Original CDC-Kaiser ACE Study (1998): 10 categories
- **Abuse:** physical, emotional, sexual
- **Neglect:** physical, emotional
- **Household dysfunction:** domestic violence, substance use, mental illness, incarceration, divorce
- **Expanded ACEs:** community violence, poverty, racism, bullying, foster care, loss of a caregiver



ADVERSE CHILDHOOD EXPERIENCES INCLUDE:



ADVERSE CHILDHOOD EXPERIENCES HAVE BEEN LINKED TO:



ACE's IN SOUTH AFRICA

High prevalence of multiple adversities:



Violence exposure, orphanhood due to HIV/AIDS, poverty, parental substance use



ACEs are not evenly distributed-most common in under-resourced, high-trauma communities



ACE research remains underrepresented in African data, but local evidence aligns with global trends



THE ACE PYRAMID
(CDC FRAMEWORK)

Childhood adversity → disrupted
neurodevelopment →
social/emotional/cognitive impairment →
risky behaviours → disease, disability,
early death



Emphasises lifelong trajectory and
intergenerational impact





HOW TRAUMA AND ACE'S IMPACT THE DEVELOPING BRAIN

'TRAUMA CHANGES THE BRAIN'

TRAUMA CHANGES BRAIN ARCHITECTURE

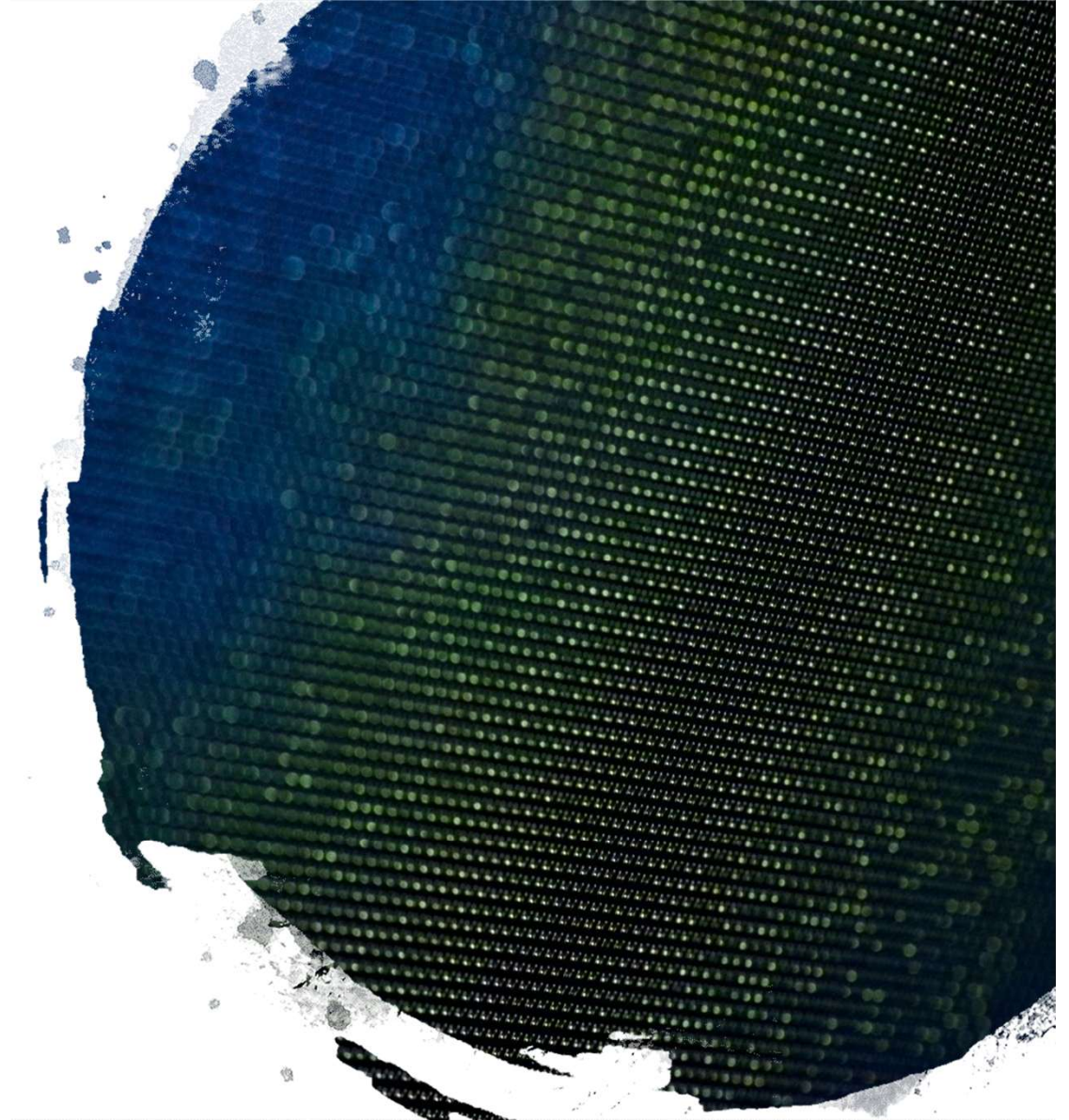
Children's brains are *highly plastic* and shaped by experiences

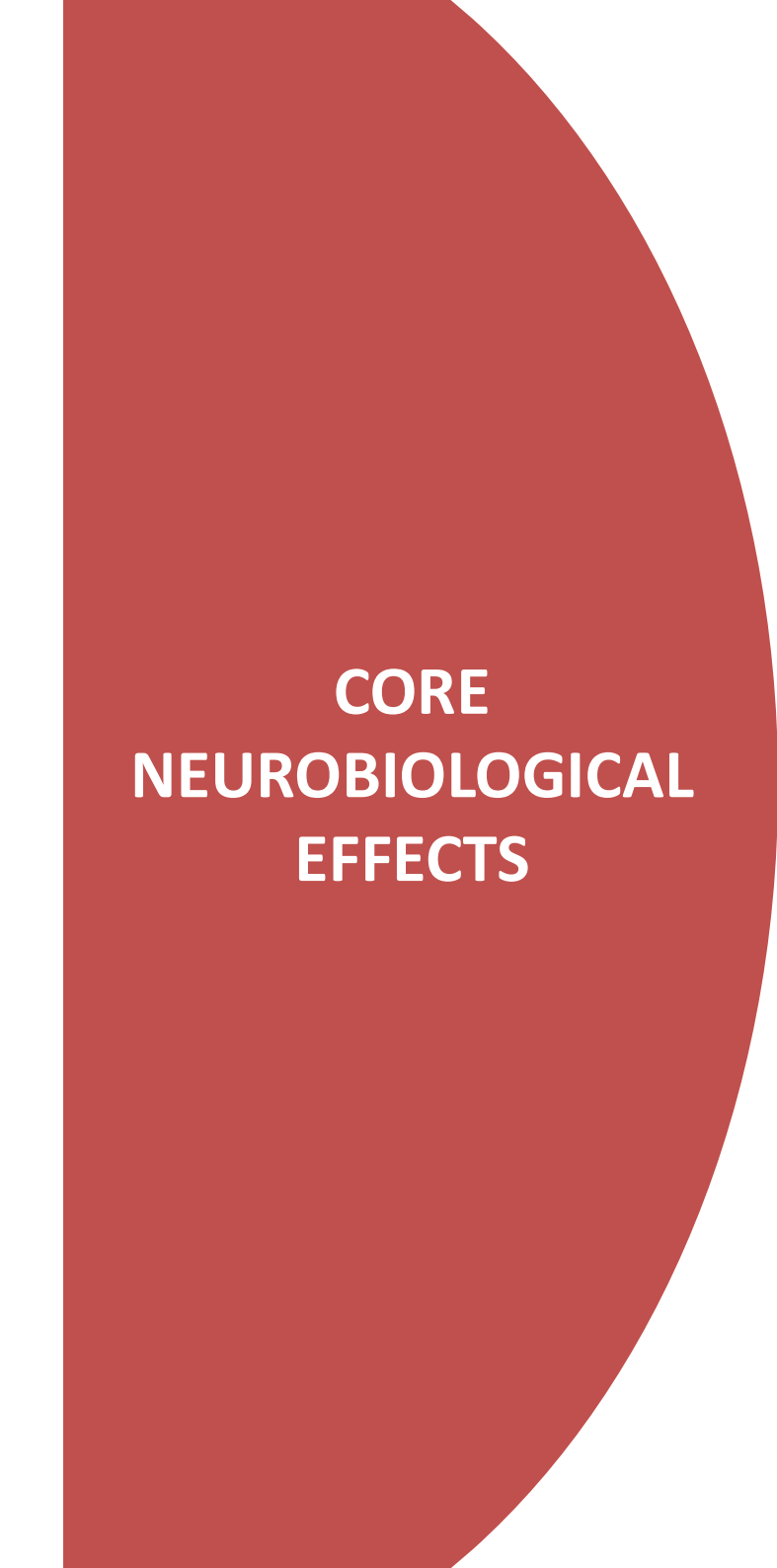


Chronic or toxic stress from ACE's disrupts neurodevelopment



Especially in the first 1000 days of life





CORE NEUROBIOLOGICAL EFFECTS

1. Amygdala (Fear/Threat Centre)

- Becomes ***overactive***
- Leads to ***heightened fear response***, emotional reactivity, hypervigilance
- Child may appear 'aggressive', 'impulsive' or 'defiant', but is stuck in survival mode

2. Hippocampus (Memory and Learning)

- Reduced volume in children exposed to trauma
 - Impacts ***working memory***, learning, and contextualising experiences
 - These children may struggle academically and have difficulty processing trauma narratives
- 

CORE NEUROBIOLOGICAL EFFECTS

3. Prefrontal Cortex (Executive Function)

- Development is delayed or disrupted
- Impairs *impulse control, attention, decision-making*, and *emotional regulation*
- Child may struggle with planning, regulating mood, or socially appropriate behaviour

4. Corpus Callosum

- Connectivity between hemispheres can be reduced
- Leads to difficulty integrating emotion and language- 'acting out' rather than verbalising distress

HPA AXIS DYSREGULATION



Chronic stress from ACEs leads to **dysregulation of the Hypothalamic-Pituitary-Adrenal (HPA) axis**



Elevated cortisol levels → toxic to neurons over time



Results in **immune dysregulation**, inflammation, and vulnerability to physical illness

NEURODEVELOPMENTAL DISRUPTION = MISDIAGNOSIS RISK

- Children exposed to trauma may be misdiagnosed with ADHD, ODD, learning disorders, or bipolar disorder, when the root issue is chronic dysregulation due to toxic stress.
- *The brain becomes wired for survival, not learning.*
- In unsafe environments, the brain prioritises fight/flight/freeze
- This shifts resources away from growth, learning, and exploration
- Trauma teaches the brain that the world is unsafe, relationships are unpredictable, and the child must be hyper-alert to survive



A TRAUMA-AFFECTED BRAIN IS NOT BROKEN , IT'S ADAPTIVE

*'Their behaviour is
communication, not pathology.'
Bruce Perry, The Boy Who Was
Raised as a Dog*



How Trauma and ACEs Impact Brain Development

Amygdala (Fear Centre)

⚠ Overactive
→ Hypervigilance, fear, aggression

Prefrontal Cortex (Regulation)

📉 Underdeveloped
→ Impulsivity, poor decision-making

Hippocampus (Memory)

📉 Shrinks
→ Learning problems, poor memory

Corpus Callosum (Integration)

📉 Reduced connectivity
→ Difficulty linking thoughts and feelings

HPA Axis (Stress Response)

📉 Cortisol overload
→ Chronic stress, illness risk

"The brain becomes wired for survival, not learning."

MENTAL HEALTH CONSEQUENCES



Strong dose-response relationship between ACEs and:

Depression
Anxiety
PTSD
ADHD
Substance use
Suicidality



Early trauma affects attachment, emotional regulation, and identity formation

PHYSICAL HEALTH CONSEQUENCES

Strong links with:

- Cardiovascular disease
- Diabetes
- Autoimmune disease
- Asthma
- Obesity
- Early mortality

Mechanisms:

Chronic stress → immune dysregulation, inflammation

Risk behaviours: smoking, poor diet, physical inactivity

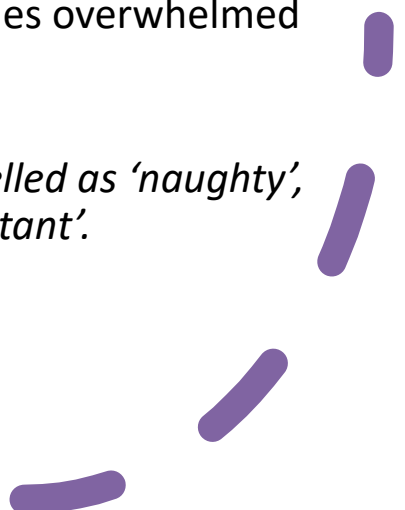
KEY STUDIES AND EVIDENCE

- Felitti et al. (1998): ≥ 4 ACEs-12 $\times$ risk of suicide attempts
- Anda et al. (2006): ACEs linked to heart disease, cancer, stroke
- Perry and Pollard (1997): Maltreatment disrupts neural development
- South African ACE studies: Link to academic failure, behavioural problems, HIV risk behaviours
- Mathews et al. (2020): ACEs and academic failure in South Africa

CASE REFLECTION: SIPHO'S STORY

- **Sipho**, an 11-year-old boy from Alexandra township, is referred to your clinic for 'poor concentration' and 'aggressive outbursts' at school. He has already been suspended twice. Teachers suspect ADHD.
- **On further assessment:**
- His father was killed in gang violence when Sipho was 5.
- His mother works long hours and has untreated depression.
- Sipho witnessed a home robbery at age 8.
- He often goes to bed hungry and has been physically punished by an older cousin who helps with caregiving.
- **Observations:**
- Easily startled, avoids eye contact, fidgets constantly.
- Displays 'shutdown' behaviour during assessments, with moments of sudden aggression when challenged.
- Struggles to verbalise emotions and becomes overwhelmed easily.

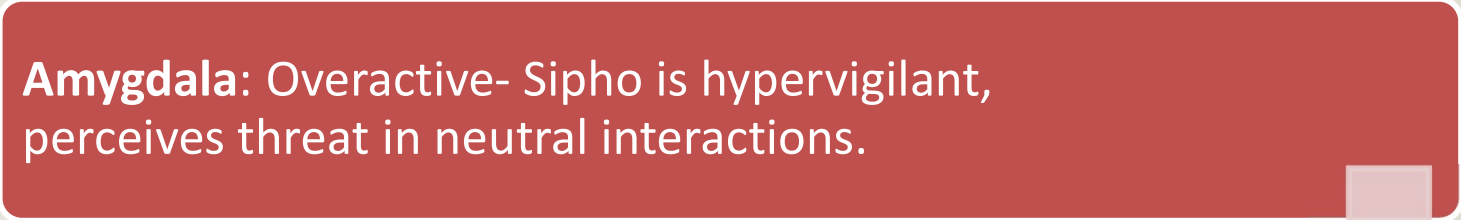
Without trauma-informed care, he may be labelled as 'naughty', 'non-compliant' or 'treatment-resistant'.



CLINICAL INTERPRETATION

(Link to Brain Development)

Amygdala: Overactive- Sipho is hypervigilant, perceives threat in neutral interactions.



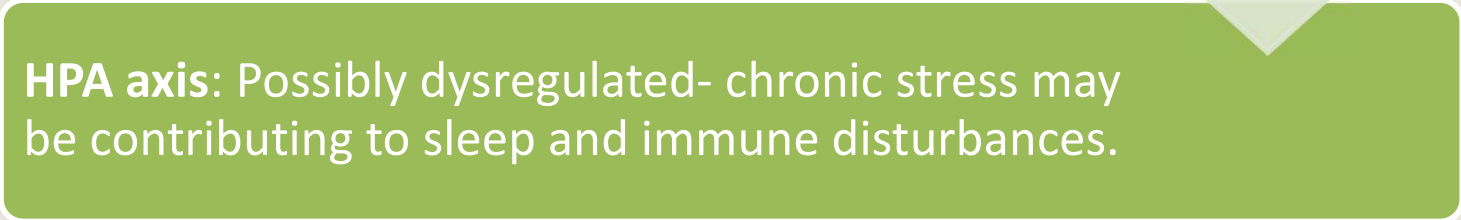
Hippocampus: Struggles with memory recall and academic learning.



Prefrontal cortex: Difficulty regulating impulses and modulating emotions.



HPA axis: Possibly dysregulated- chronic stress may be contributing to sleep and immune disturbances.



THE ACE SCORE IS NOT DESTINY



ACEs are a **risk factor, not a diagnosis**



Resilience, relationships, and protective factors mitigate the impact



Trauma-informed systems shift the question from:



*‘What’s wrong with you?’
to ‘What happened to you?’*

RESILIENCE AND NEUROPLASTICITY

Brain is not broken, it's adaptive

Protective factors: relationships,
routine, regulation, community support

Early intervention can rewire the brain
toward healing

CLINICAL IMPLICATIONS FOR PAEDIATRICIANS

- **Screen for ACEs** with sensitivity and safety
- Integrate **trauma-informed care** into paediatric settings:
- Predictability
- Empathy
- Regulation strategies
- Work closely with psychologists, social workers, schools
- Advocate for **upstream prevention**: parenting support, community safety, mental health access

WHAT CAN WE DO?

1

At the bedside:

Recognise trauma symptoms, not just pathology

2

In the clinic: Build relationships as therapeutic tools

3

In the system:

Support teacher wellness, parental mental health, social protection programs

KEY TAKE-HOME MESSAGES

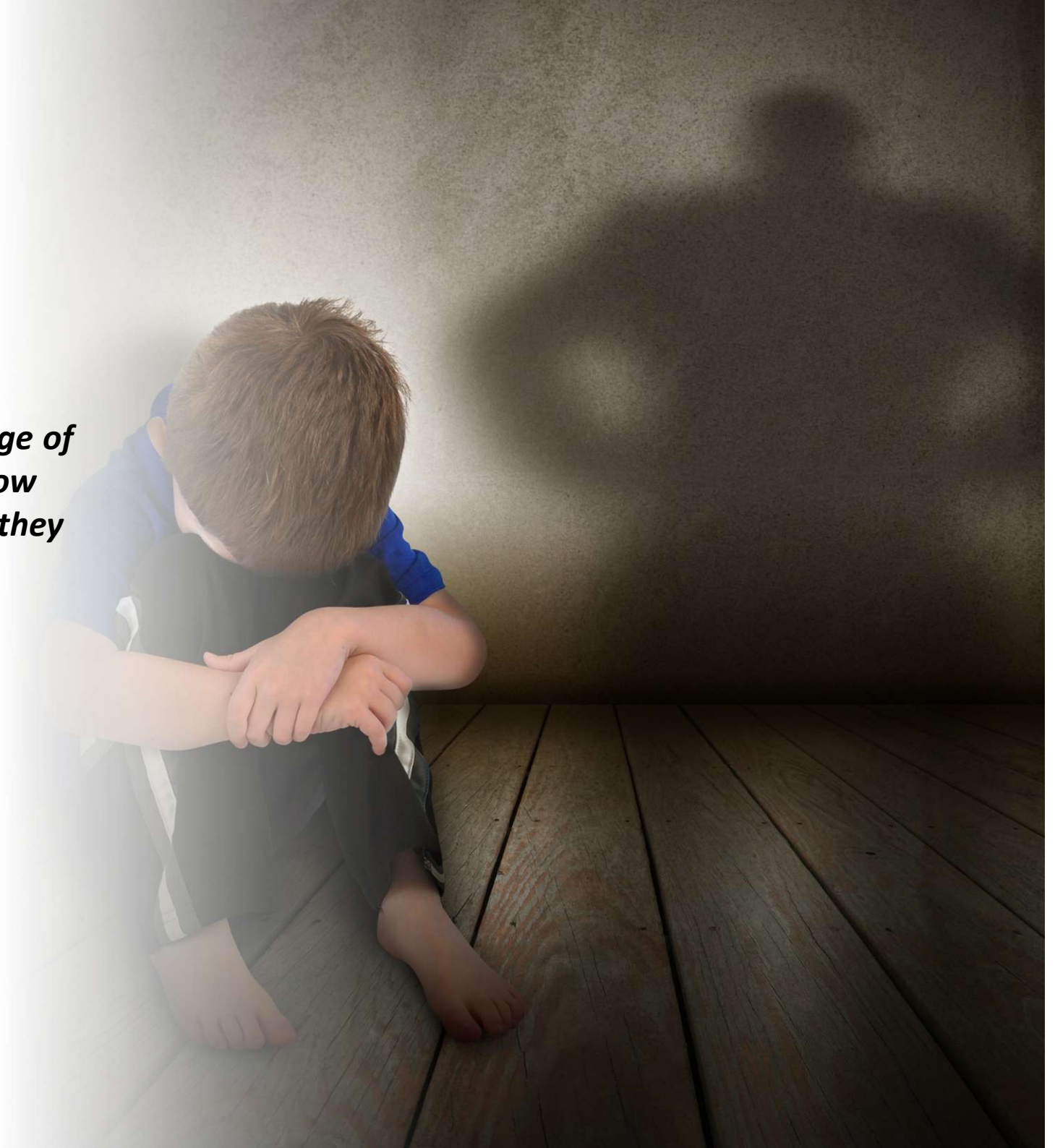
ACEs have lifelong physical and mental health impacts

Trauma changes the brain-but relationships and resilience can heal it

Paediatricians are in a powerful position to **intervene early, advocate, and empower families**

THE END

'Behaviour is the language of trauma. Children will show you before they tell you they are in distress'



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