



# Brain Development and Impact of Trauma and Stress on Children

SEPT Nursing Conference  
2016



**Dr Alex Hassett**  
**Senior Consultant**  
**Principal Lecturer**

**Salomons Centre for Applied Psychology**

# Overview of Session

- Understanding human brain development and the importance of positive brain development in early years
- Impact of trauma and stress on children and the developing brain
- Contextualising trauma and neglect
- Focusing on the role of the relationship in recovery

# Caution!!!!

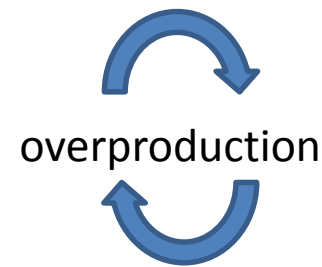
- **New** discoveries—research is still in its **infancy**
- Do **NOT over-interpret** or interpret too **simplistically**
- Some research has been conducted on **animals** — we assume the information transfers to people
- Behaviour is the result of **complex interactions** among individual, environment, genetics, situation, cultural expectations, and numerous other factors

# Brain Circuitry

- Neurons  
“communicate” by  
transmitting electrical  
impulses along their  
axons
- Axons send messages  
across a **synapse** to  
the receiving **dendrite**  
of the target neuron

# OVERPRODUCTION AND PRUNING

- Brain development occurs in 2 basic stages—  
growth spurts/overproduction of neurons and  
pruning
- Critical phases: in utero  
0-3 years  
10-13 years
- Overproduction results in significant increase  
in the number of neurons and synapses
- Exuberant growth during these 3 phases gives  
the brain enormous potential



# PRUNING

- These 3 critical phases are quickly followed by a process in which the brain *prunes and organises* its neural pathways
- **LEARNING** is a process of creating and strengthening frequently used synapses (brain discards unused synapses)
- Brain keeps only the most efficient and “strong” synapses
- Experience determines which synapses flourish and which are pruned away

# PRUNING

- **“USE IT OR LOSE IT”**– Reading, sports, music, video games, x-box, hanging out—whatever a child/teen is doing—these are the neural synapses that will be retained
- How children/teens spend their time is **CRUCIAL** to brain development since their activities guide the structure of the brain

**Brain development happens in a  
social context**



- Positive predictable interactions with nurturing caregivers profoundly stimulate and organize young brains.
- The quality of early caregiving has a long lasting impact on how people develop, their ability to learn, and their capacity to both regulate their own emotions and form satisfying relationships.

# The attachment bond shapes an infant's brain

- The infant brain is profoundly influenced by the attachment bond.
- When the primary caretaker can manage personal stress, calm the infant, communicate through emotion, and see the infant as separate, the young child's nervous system becomes "securely attached."
- The strong foundation of a secure attachment bond enables the child to be self-confident, trusting, hopeful, and comfortable in the face of conflict. As an adult, he or she will be flexible, creative, hopeful, and optimistic.

# Regulation

- one of key tasks of infancy is learning to co-regulate and self-regulate bodily and emotional states
- Infants learn to manage their impulses and affect in conjunction with main carers who holds them in mind, reflect on their intentions accurately – picking up on cues and do not overwhelm them.....

(Shonkoff and Phillips 2000).

# IMPACT OF NEGATIVE LIFE EXPERIENCE ON BRAIN DEVELOPMENT AND FUNCTIONING

# Impact of ongoing stress

- Chronic stress, and neglect sensitize certain neural pathways and **over-develop** certain regions of the brain (limbic region) involved in anxiety and fear. This often results in the **under-development** of other regions of the brain (frontal lobe)
- Chronic stress from fear, violence, abuse, hunger, pain, etc. focuses the brain's resources on **survival** and other areas of the brain are not "available" for learning social and cognitive skills

# Stress and Trauma: Impact

- The organising brain *requires* patterns of sensory and emotional experience to create the patterns of neural activity that will guide the neurobiological processes involved in development.
- In the face of interpersonal trauma, all the systems of the social brain become shaped for offensive and defensive purposes.
- A child growing up surrounded by trauma and unpredictability will only be able to develop neural systems and functional capabilities that reflect this disorganisation.

# Toxic Stress

- Persistent threat is a form of toxic stress.
- The components of the fear response become sensitised, putting the child in a *persisting* fear state (*a state becomes a trait*) that causes exaggerated reactivity.
- He or she may become hyperactive, over-sensitive and hypervigilant, and move quickly from anxiety to terror.
- It also negates the capacity for rational thought.

# The dissociative continuum

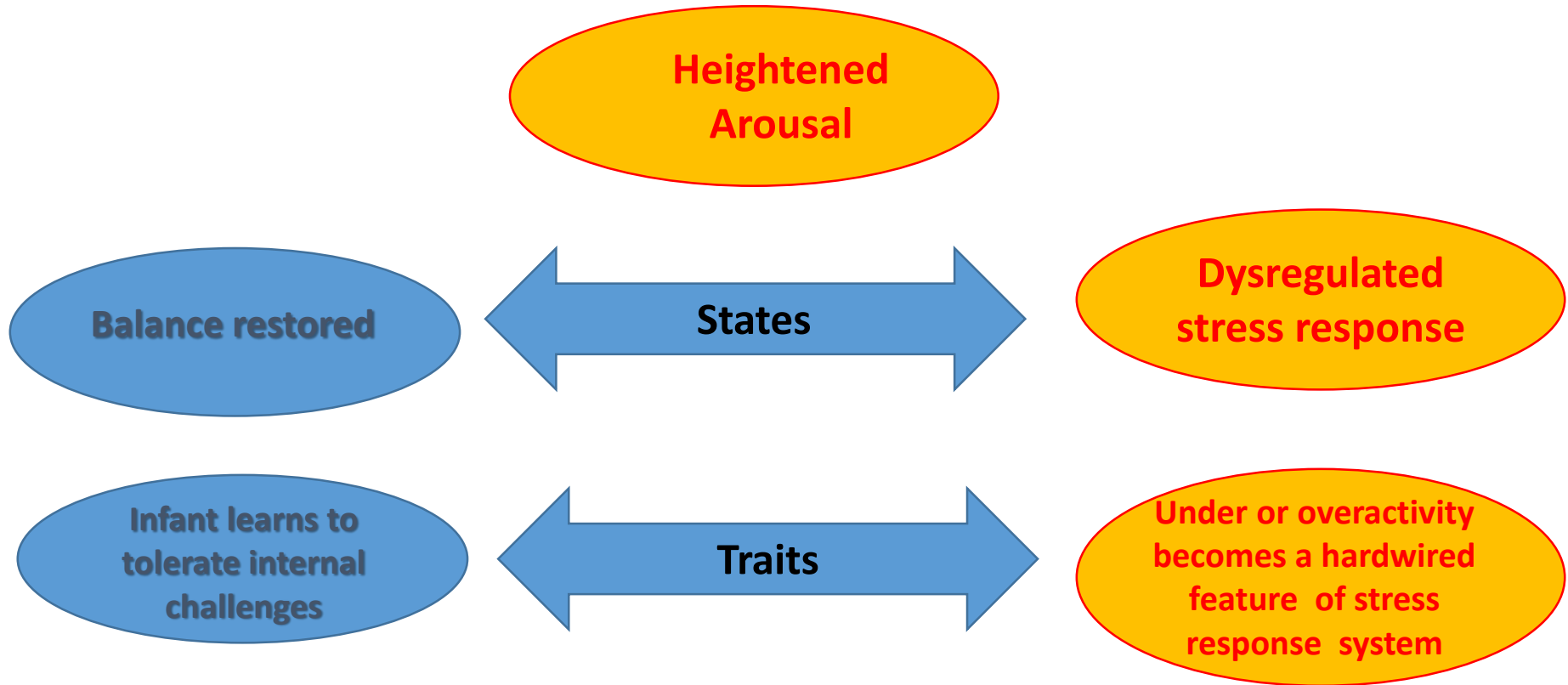
- This comprises the freeze, or surrender, response.
- The parasympathetic system is the 'rest and digest' branch of the *autonomic nervous system*, concerned with self-maintenance and conserving bodily resources.
- When over-activated it leads to a 'freezing' reaction that slows the heart and breathing, shutting down the body rather than mobilising it.
- Babies and toddlers can neither fight nor flee. In the stage of early alarm the infant can only use his limited repertoire of behaviour to attract the attention of the caregiver.



# The dissociative continuum

- If this strategy is ineffective, so there is no soothing response, the child will abandon the early alarm response which will then be extinguished.
- Such a defeat response of 'learned helplessness' is common in neglected & abused children.
- In the face of persisting threat the only 'escape' may be to dissociate and physically and cognitively freeze. Such mental mechanisms of defence involve disengaging from the external world and only attending to stimuli from the internal world, thus becoming disconnected from reality. Again, *a state may become a trait.*

# Stress



# Contextualising Trauma and Neglect

What can lead to mental health problems in young people?

# Contextualising Trauma and Neglect

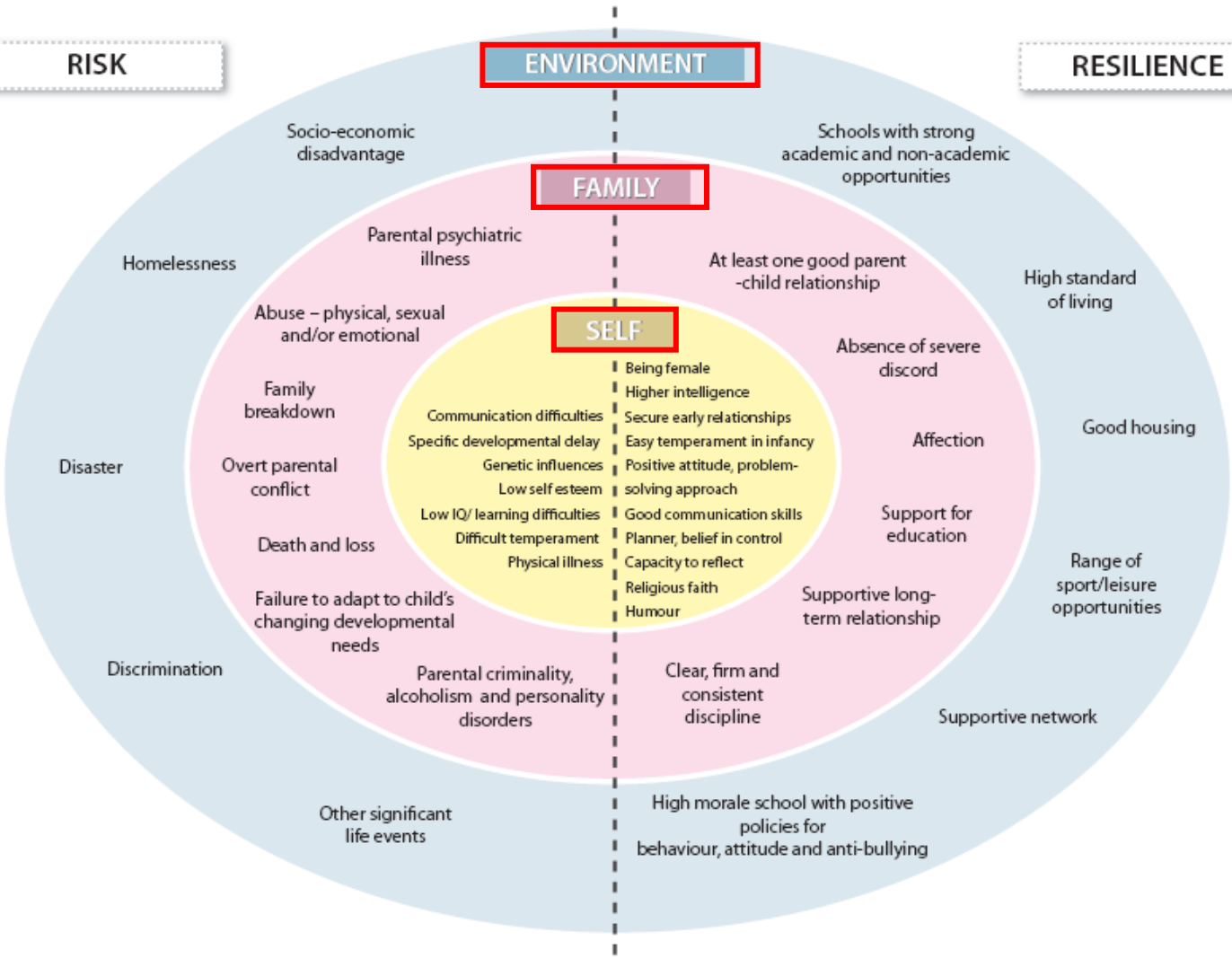
The impact of trauma and neglect will be determined by a combination of factors:

- Risk
- Resilience
- Protective
- Adversity

RISK

ENVIRONMENT

RESILIENCE

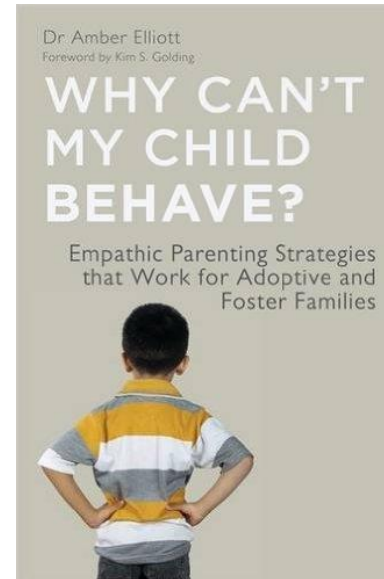
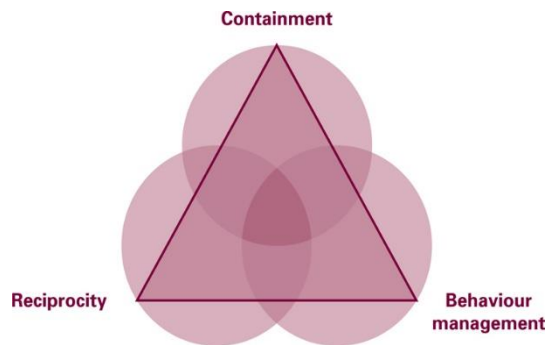


# **Working with the Relationship:**

**The Role of Containment,  
Attunement and Co-regulation in  
Working with Young People Who  
Have Experienced Trauma**

# Based on ideas from:

## The Solihull Approach



Elliott, A. (2013) Why can't my child behave: Empathic parenting strategies that work for adoptive and foster families.

# **What can we learn from early development**

- How does the baby learn to manage in the world, to self-regulate?
- What can we learn from early development to help us when this doesn't happen?



# Babies need to feel their emotions and needs are understood

## Mirroring

the infant experiences that the emotion he or she is feeling is closely reflected (*but not replicated*) in the carer's mind.


(Fonagy et al., 2004)

## Containment

the way in which one person can take on board the powerful feelings of another and, by communicating with touch, gesture and speech, make them more manageable

(Bion, 1962)

# From Physical to Emotional Containment



Progressive move by mother **from physical to mental and emotional** containment from pregnancy into early years, affecting bonding and attachment

# Containment

- Containment is where a person receives and understands the emotional communication of an other without being overwhelmed by it and communicates this back to the other person.

# Containment

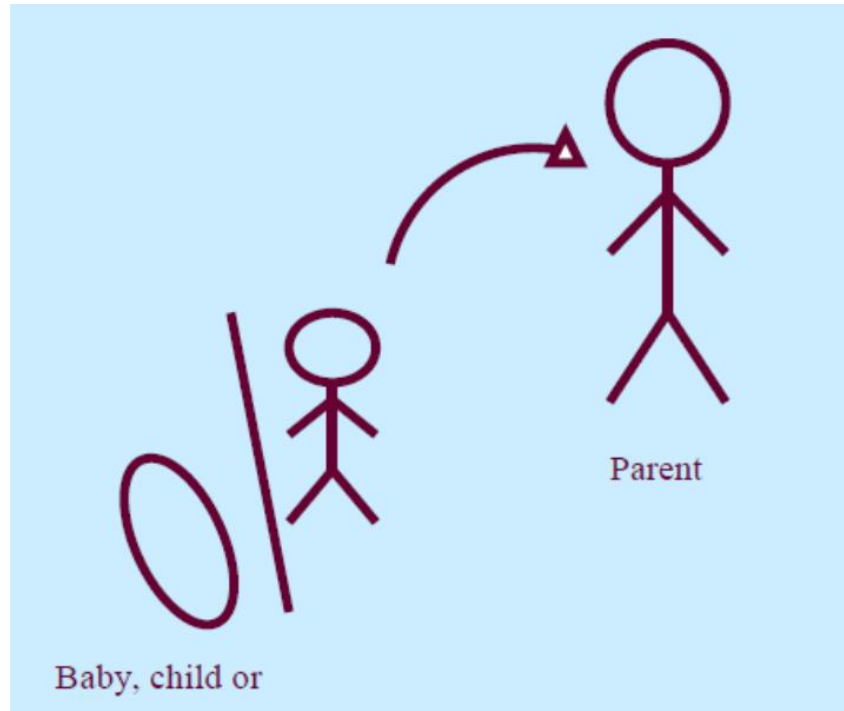
- In this way containment is a two-way process – that which ‘contains’ and that which is ‘contained’.
- As a result the other person no longer feels overwhelmed themselves, this restores their capacity to think about the situation as well as their ability to process their emotions. In this way containment is a two-way process – that which ‘contains’ and that which is ‘contained’.

# Containment

A person good at Containing others is:

1. Receptive
2. Able to hold on to another persons difficult feelings without being overwhelmed by them themselves
3. Makes calm and thoughtful attempts to understand the problem
4. Can convey a feeling that what the other person is feeling is tolerable and meaningful... and manageable.

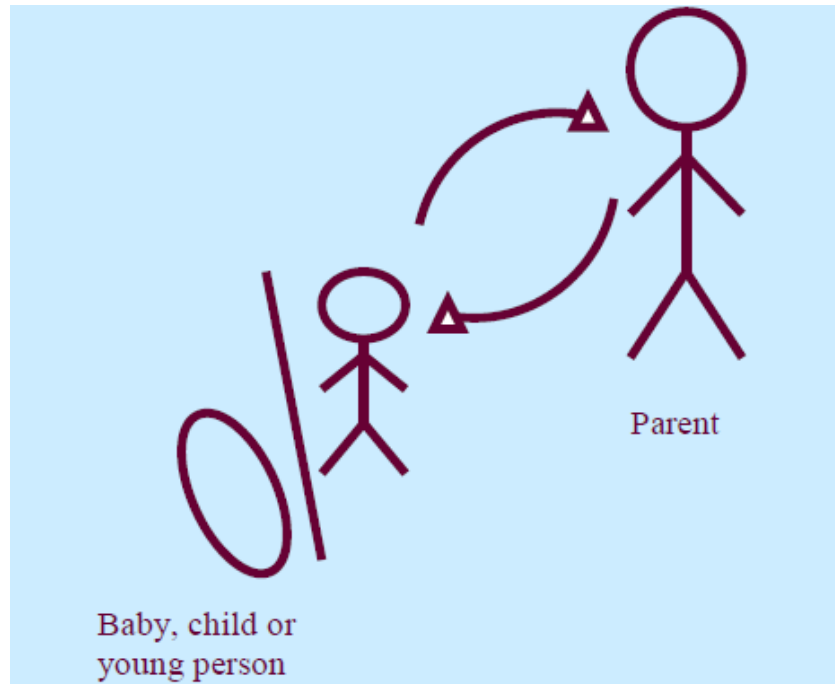
# Containment and the brain



**Young person**

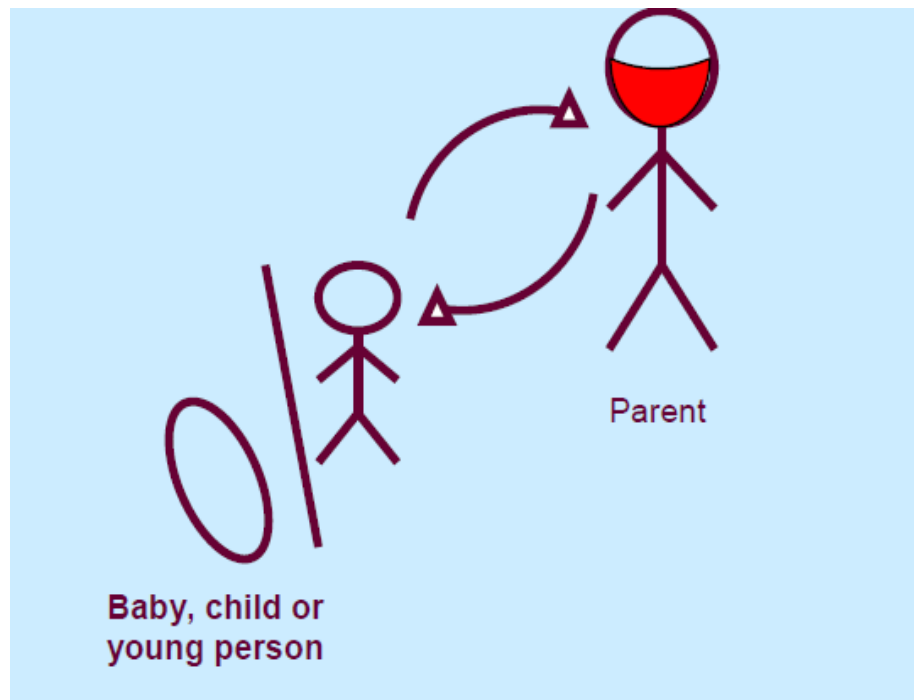
# Containment and the brain

- Received/understood



# Containment and the brain

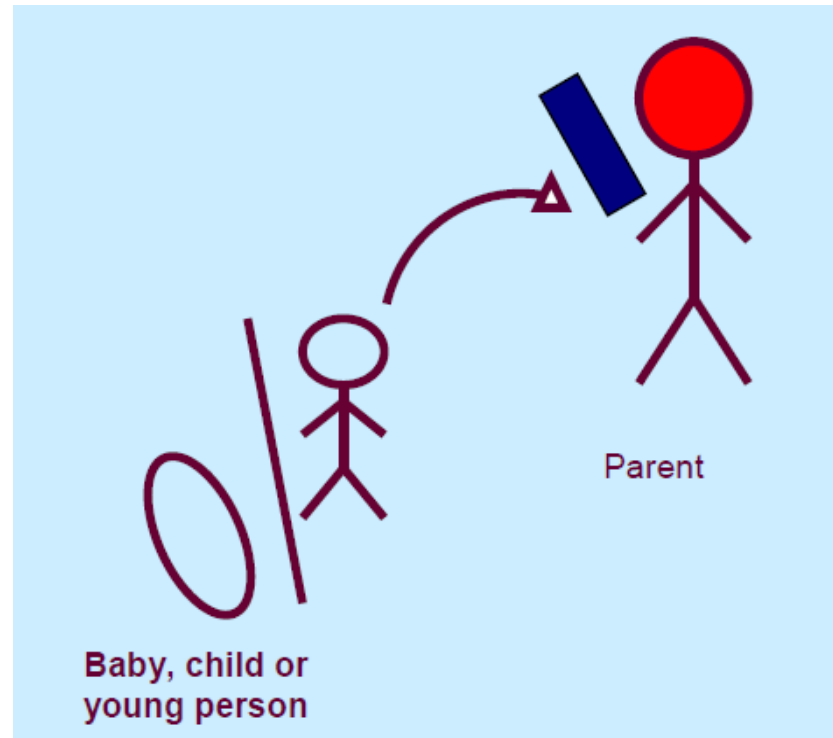
- Head full





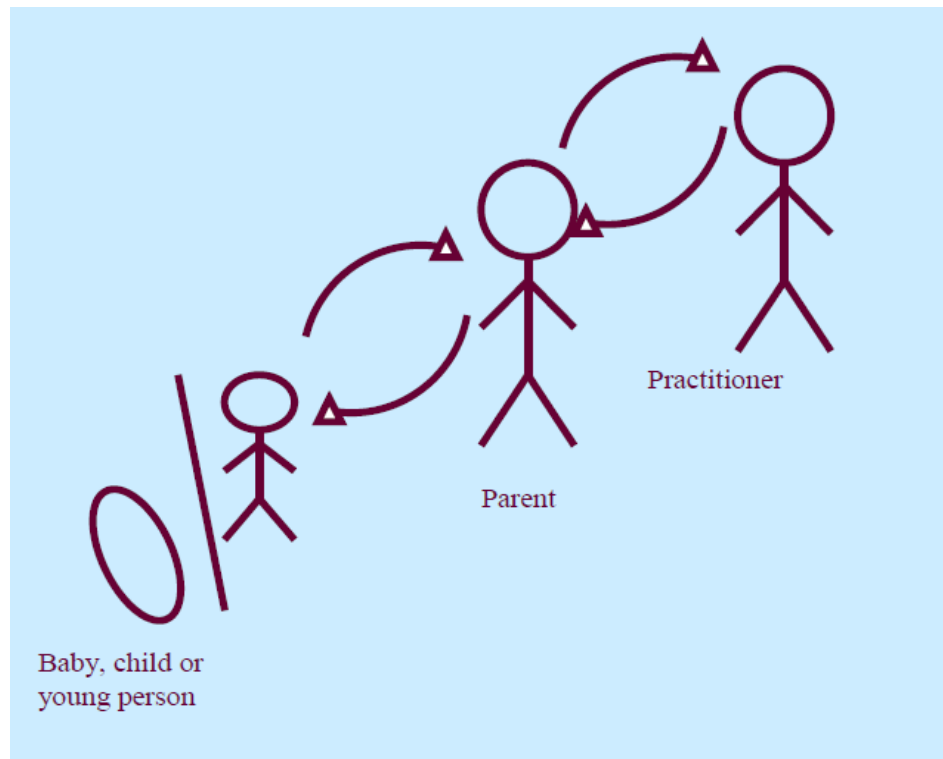
# Containment and the brain

- Head full



# Containment and the brain

- Parallel process



# Babies need to feel that these needs will be responded to:

## Attunement

- an empathic responsiveness between two individuals which subtly conveys a shared emotion
- attuned adults will be able to acknowledge the infant's current emotional state and symbolise it in verbal and non-verbal interaction
- Attuned interactions help infant develop emotional regulation

(Stern 1985)

## Reciprocity

Describes the sophisticated interaction between a baby and an adult where both the baby and the adult are involved in the initiation, regulation and termination of the interaction.

(Brazelton, 1975)

# RECIPROCALITY

Describes the sophisticated interaction between a baby and an adult where both the baby and the adult are involved in the initiation, regulation and termination of the interaction.

Reciprocity also applies to the interaction between adults and can also be used to describe the interaction within all relationships.

This is a two-way flow of communication. From the first moments outside the womb (and perhaps even before birth) the mother and baby learn how to interact with each other. Even for a simple activity like feeding, something like a dance occurs in a normal mother-child relationship.

# Reciprocity

- The need for each person in a relationship being able to affect, and be affected by, the other.
- If this does not happen the child will not develop a sense of agency (having an impact or power within their environment).
- Equally, if a child is allowed to feel too much in control, without regulation by parents the child will not internalise a sense that they can manage and regulate their own feelings and responses.

# The “dance” of reciprocity

- Initiation
- Orientation
- State of attention
- Acceleration
- Peak of excitement
- Deceleration
- Withdrawal or turning away

# Look Away

- Brazelton identified four strategies that babies used to withdraw from too much stimulation from the other person or inappropriate stimulation for example, being too intrusive to the baby:
  - Turning or shrinking from it
  - Rejecting it by pushing it away
  - Decreasing its power to disturb by withdrawing attention
  - Signalling behaviour, by crying, fussing, laughing, yawning
- Look away similar to 'Take up Time' – thinking time for pupil to process information, except look away describes baby's attempts to self regulate as well as process information

# Chase and Dodge

- Generally viewed as negative
- Occurs when the mother does not pick up the signal that the baby is overwhelmed and needs to withdraw and becomes intrusive in her interaction to try to engage the baby
- The baby increases his efforts to get away
- The mother becomes more intrusive resulting in the situation deteriorating.
- Chase and dodge interferes with child's ability to learn



# Rupture and Repair

## Beatrice Beebe

- Researched the rhythms of interactions between parents and children and showed the pattern of 'disruption and repair'
- Rupture and repair refers to the process of getting out of step in the dance of reciprocity, but then being able to adjust to each other to get back in step with each other i.e. repair the rupture

## Allan Schore

- Re- experiencing positive affect following a negative experience may teach the child that negativity can be endured and conquered
- Resilience emerges as a result of the quality of the interactions between the mother and infant and later other adults in which the adult and child move from a positive to negative and back to a positive affect

**Resilience in the face of stress is an ultimate indicator of adaptive mental health.**

# Rupture and Repair

Getting out of step in the dance (RUPTURE) but adjusting to get back into step (REPAIR) = Normal

We experience that things getting difficult in a relationship but can still get back on track

**Repeated rupture *WITH* repair**



Develop hope, optimism, belief things get better, self esteem, self worth, trust in others

**Good quality relationships**

**Repeated rupture *WITHOUT* repair**



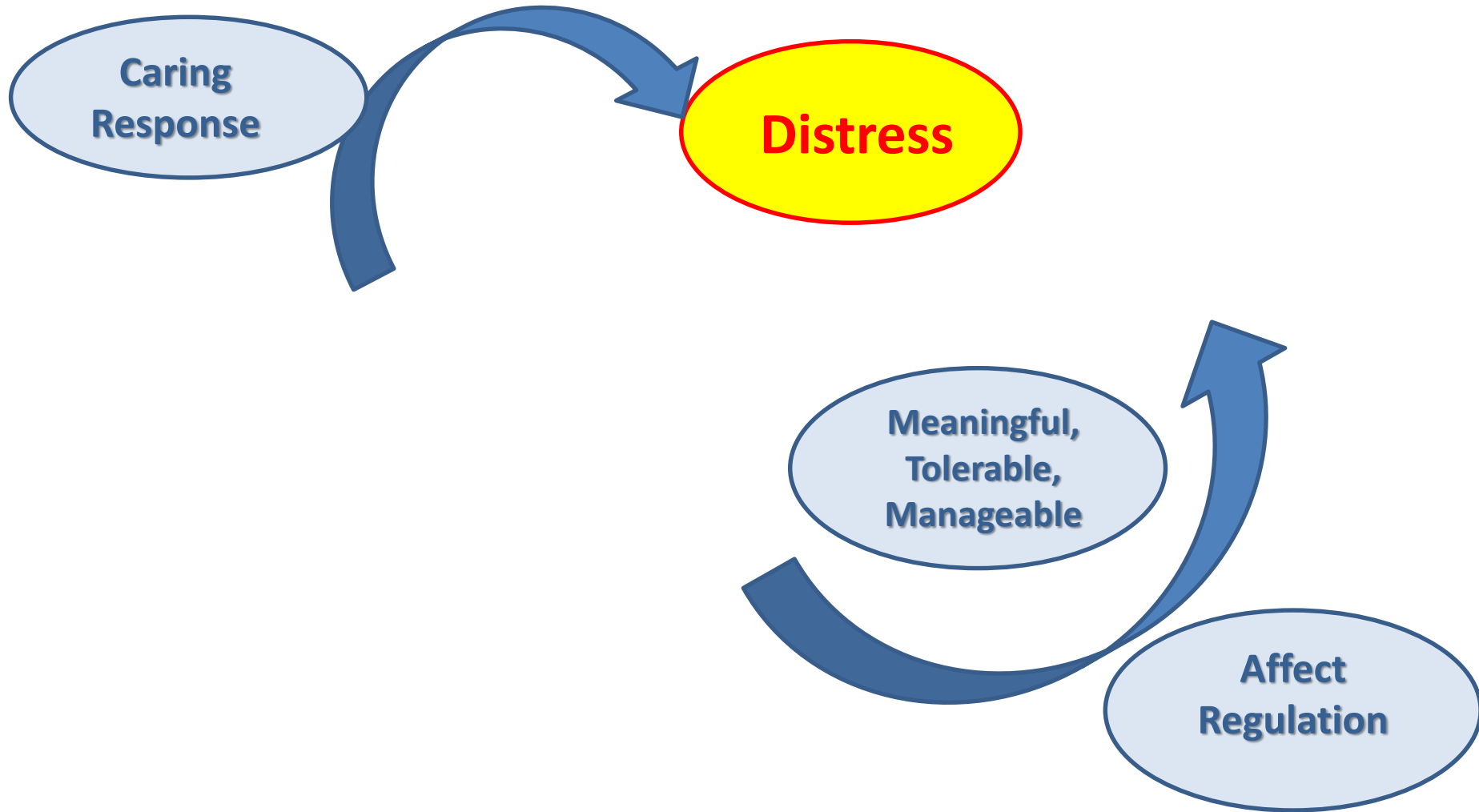
Don't develop self worth, self esteem or trust in others

**? Quality of relationships**

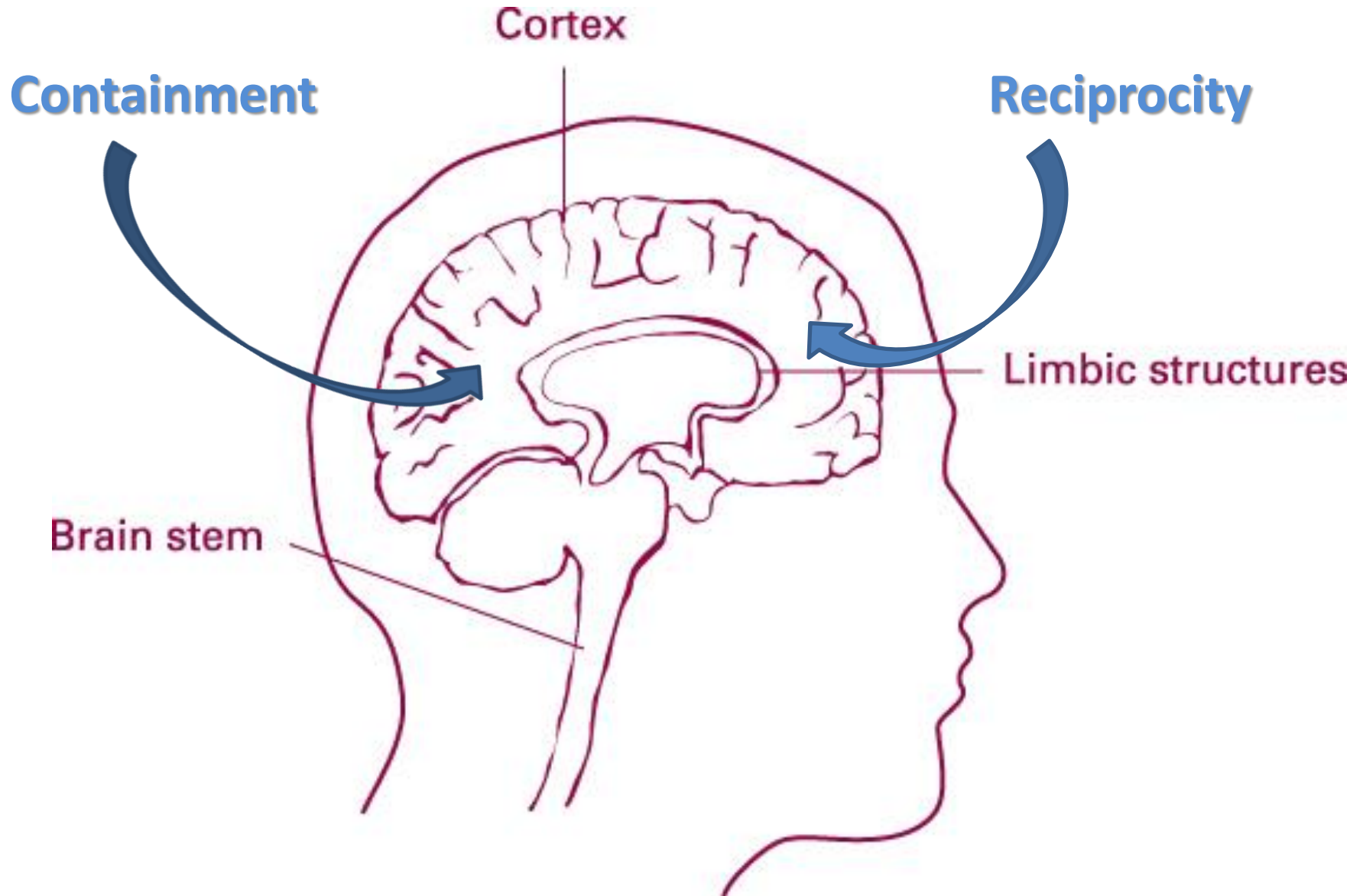
# Reciprocity

- The idea of reciprocity can be helpful in monitoring the relationship between you and the carer
- It can help you think about your relationship with the child/carer/teachers that you are engaging/working with.
- It is helpful to get a sense of how in tune you are with each other
- If you are not in tune why may that be the case?

# Co-regulation of Stress



# Soothing the Brain

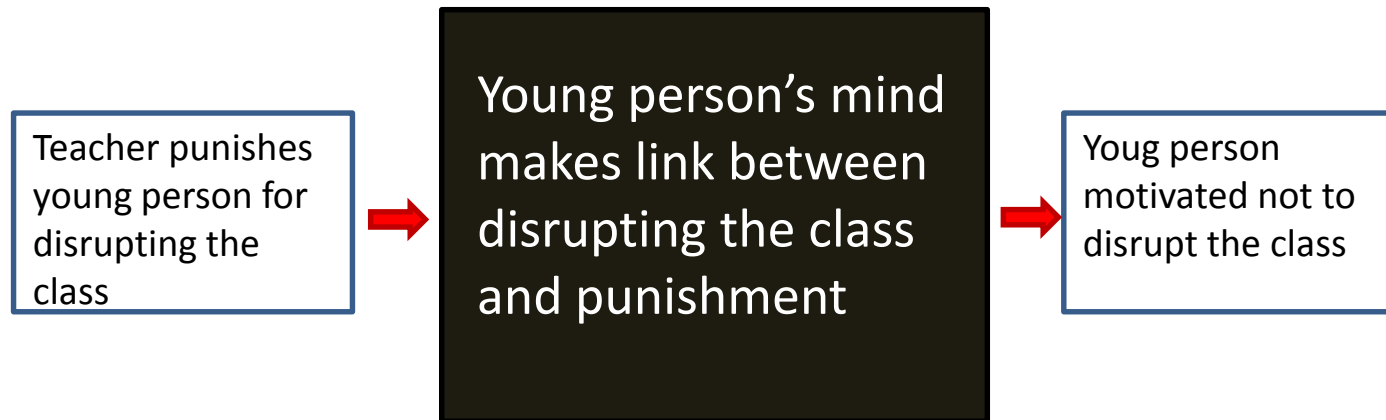


# **Implications for Behaviour Management**

# **Reward Punishment thinking**

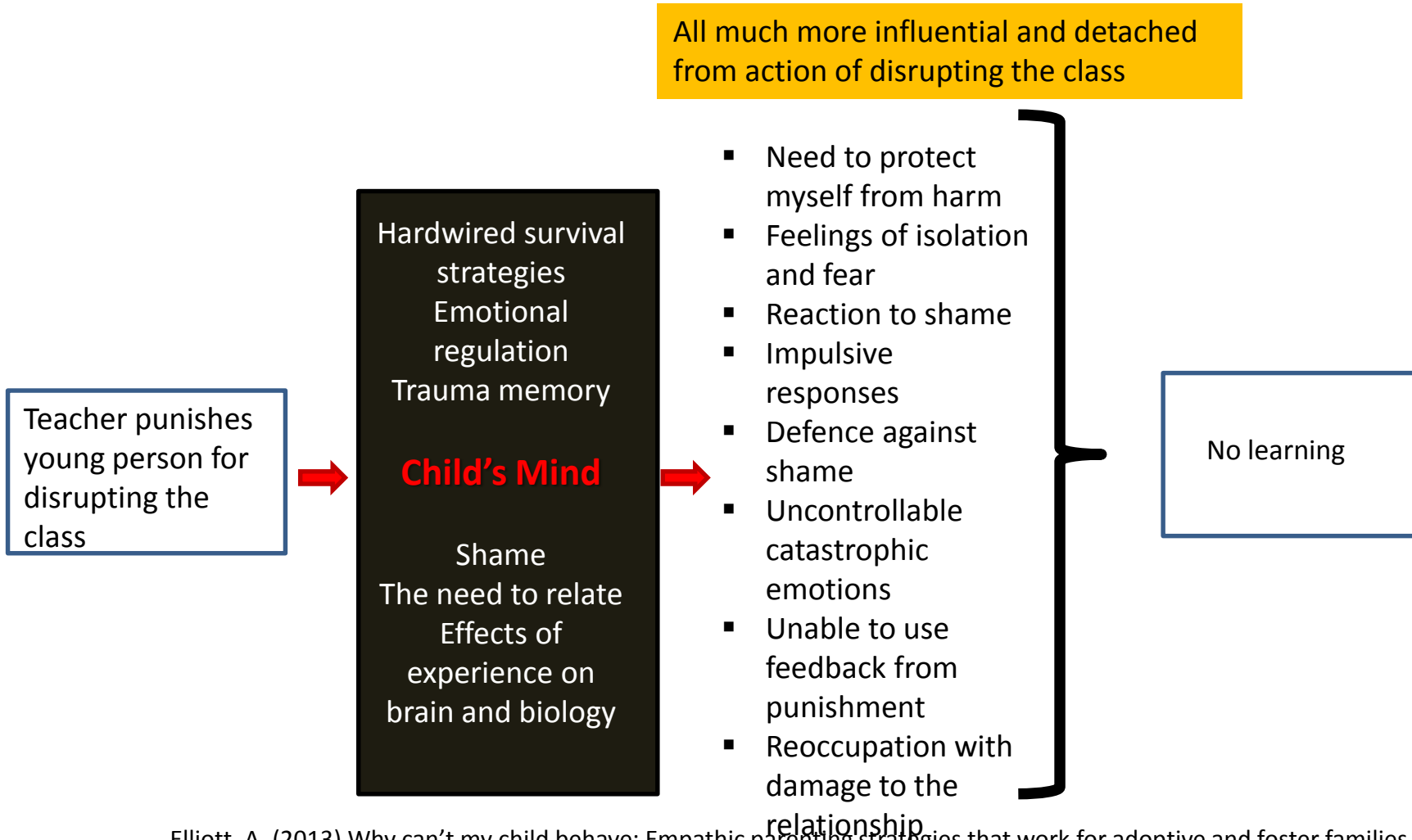
**Based on the assumption that the young person has the relational context and can make use of it**

# Reward Punishment thinking



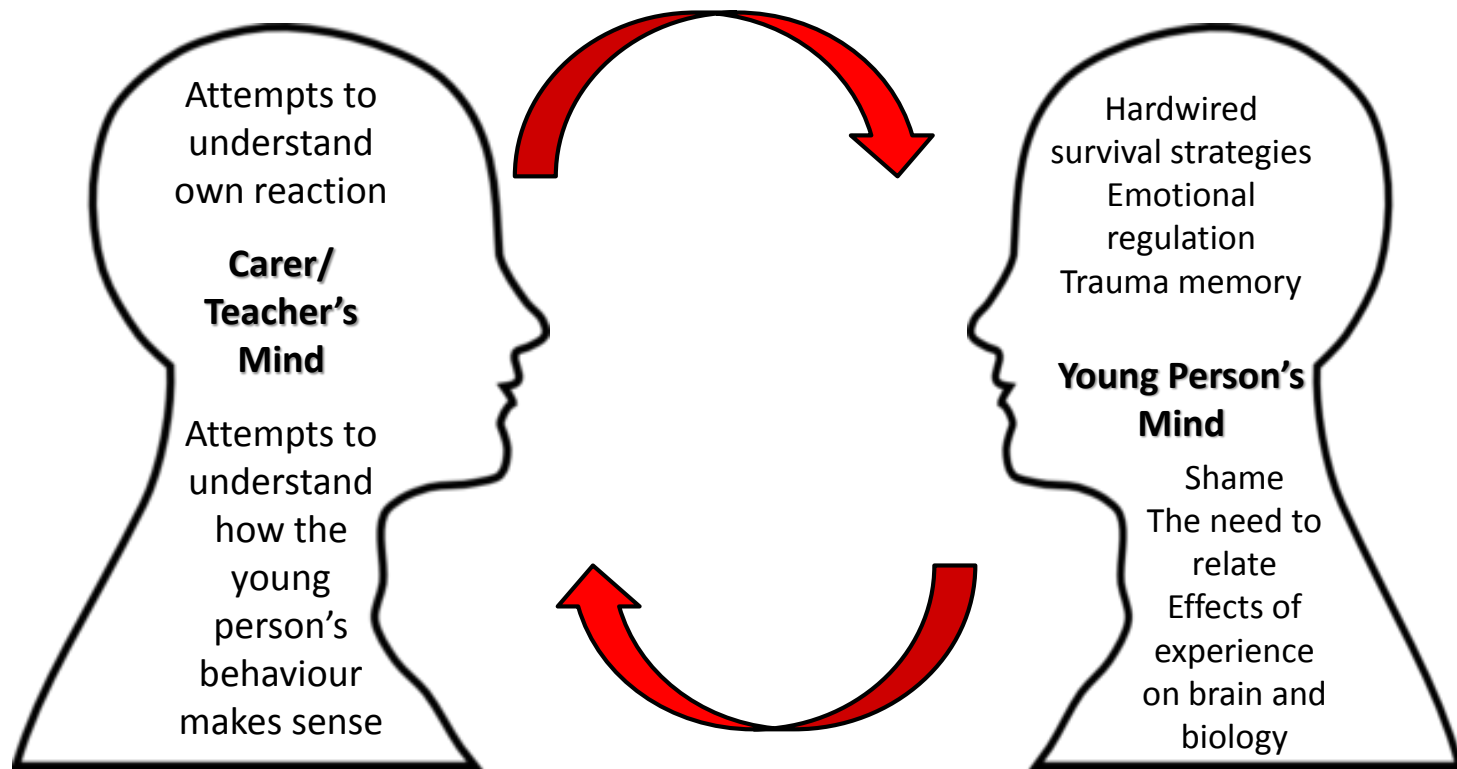
Elliott, A. (2013) Why can't my child behave: Empathic parenting strategies that work for adoptive and foster families.





Elliott, A. (2013) Why can't my child behave: Empathic parenting strategies that work for adoptive and foster families.

# Relational/Empathic behaviour management model



# In summary

- In providing containment and reciprocity one enables people to restore their capacity to think through containment, allows them to feel their emotional needs are understood and met through reciprocity.
- In doing this carer is able to focus on the issue in a reflective manner, able to learn and regulate their own emotional responses and can come up with solutions.

# It's all about relationships!

- The young people we care for and work with often have such skewed early experiences of relationships that the carers, teachers, practitioners and system needs to work with them in a way that tries to remedy some of that early damage
- These concepts from early child development provide a framework for *using relationships* at various different levels to facilitate change for the care givers' and child's benefit

# References / Resources

## Child Welfare Information Gateway

- <https://www.childwelfare.gov/>

## Bruce Perry's work

- [www.childtrauma.org](http://www.childtrauma.org) or [www.childtraumaacademy.com](http://www.childtraumaacademy.com)  
(with free on-line courses)

## Center on the Developing Child - Founded and directed by Jack Shonkoff, M.D.,

- [www.developingchild.harvard.edu](http://www.developingchild.harvard.edu)

## Kate Cairns Associates

- <http://www.katecairns.com/>



**alex.hassett@canterbury.ac.uk**

**References:**

R. Balbernie (2011) The Consequences of Early Relationships: A View from Interpersonal Neurobiology. UNICEF UK Baby Friendly Initiative. Annual Conference.

Kate Cairns: Kate Cairns Associates <http://www.katecairns.com/>