THE BRAIN

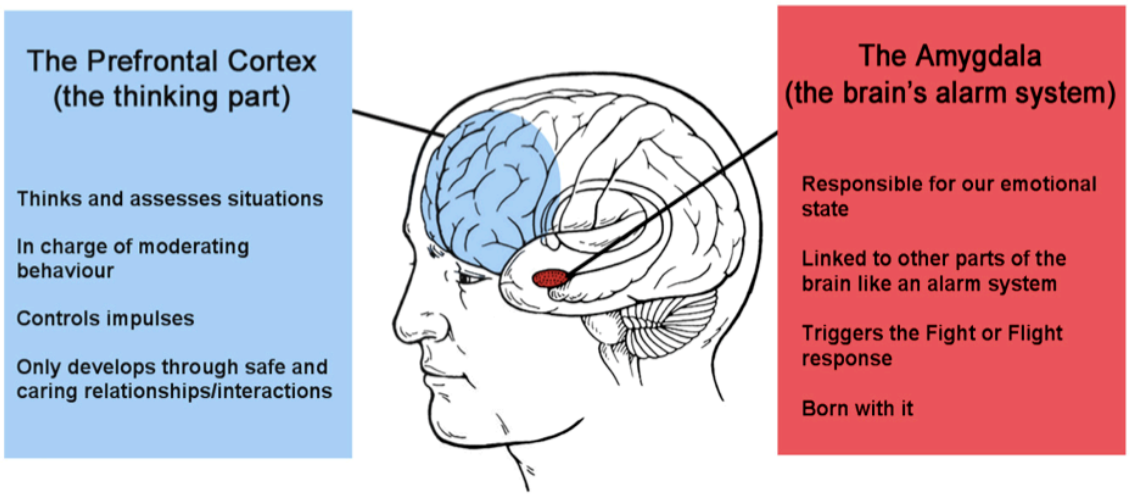
An emotional network shaped by trauma

(compliment of the Therapy Department)

Studies by neuropsychoanalysts have shown that from the day we are born, the architecture of our brain is being shaped by our experiences. In short, the child's early relational environment determines his future. If he is loved, nurtured, and protected, then he will view the world as a predominantly safe and stable place, where people are generally caring and reliable. On the other hand, if he is abused, shamed, or neglected, the child will automatically come to see the world as a battlefield, a threatening, cold, and oppressive place, populated by heartless people who can't be trusted.

If the brain can be 'pre-wired' by such traumatic childhood experiences, it's easy to understand why some troubled adolescents behave they way they do. A few key areas of the brain are implicated in this process.

The brain's amygdala is thought to be responsible for our mental and emotional state. This almond-shaped structure located deep inside the temporal lobes, is often referred to as the brain's alarm system. It is linked to other parts of the brain, just as home alarm systems are connected to police and fire services, and triggers the fight-or-flight response in threatening situations (Sylwester, 1995).



Positioned behind the eyes, the prefrontal cortex is in charge of moderating behaviour. It mediates the amygdala's influence by assessing situations and determines the best course of action: sending the information to the amygdala if there is real danger or holding back if the situation does not require a fight-or-flight response. So a non-fully functioning or under- developed pre-frontal cortex would mean that aggressive impulses often cannot be filtered or controlled.

It is during the first critical years of life that the growth of the pre-frontal cortex is most important. Neurobiologists have demonstrated that this crucial part of the brain mainly develops through safe, meaningful, and genuine interactions with a sensitive, responsive, caring and consistent caregiver. In fact, research now shows that brain development is so relational-experience sensitive and dependent that the pre-frontal cortex of a child who has experienced trauma or neglect appears smaller in size than that of a child who has been raised in a stable and loving environment. Gerhardt emphasises, '*The earlier the child experiences abuse or neglect, the smaller the brain volume, particularly of the pre-frontal cortex which is so vital in controlling and calming the more urgent fear reactions of the amygdala'*. (2004)

But fortunately, this is not the whole story. Neurobiologists believe that considering the significant plasticity of the brain and because connections between the prefrontal cortex and the other parts of the emotion systems continue to be made throughout life, there is very often the possibility that the emotional wound can be healed.

When the adolescent is exposed to a consistent, safe, warm, robust, and loving environment, those crucial areas of the brain that deal with emotional reactions are stimulated. By having his feelings and emotions acknowledged and validated by an empathic, accepting, and caring other, the connections in the young person's cortex have the best chance of positive growth; this, in turn, begins to foster the development of a stress regulator system and allow the adolescent to channel intense emotions such as rage or fear in healthy ways.

Naturally this is a slow process; a deep mistrust in others and a shattered sense of self can't just be restored overnight. For new connections to be established in the brain, new and positive emotional experiences need to be consistent and frequent until they are fully integrated. And of course our interventions aren't all likely to go smoothly. Having been badly let down by the people whom he once depended upon, there will be huge mistrust on behalf of the adolescent; he will consistently be on his guard, and extremely suspicious of anybody who attempts to get too close to him.

But over time, and with many difficult feelings, failures and mistakes on both sides, there is a real possibility for a gradual lessening of vigilance and stress and a noticeable increase of mutual trust, understanding, and respect which will help to plant the seeds for a strong, safe, and healing relationship.

Nurturing the pre-frontal cortex and building a stress regulator system

The ability to self-regulate is an essential part of emotional development. As babies and young children, we don't have the capacity to meet our own needs. We depend on external resources, like our parents or caregivers, to protect us, comfort us, provide us with genuine feedback, and help us understand and regulate our physiological and emotional states. Transitioning from external regulation to self-regulation is one of the most important aspects of our development.

Positive interactions are essential for healthy emotional and neurobiological development. So the child who hasn't been reassured, mirrored, loved, or soothed enough during infancy doesn't possess the necessary tools to monitor his emotional responses, tolerate some level of anxiety, manage his feelings in relation to the problem at hand, and respond to situations creatively and flexibly. As Gerhardt states: *"It is impossible to generate the attitude of self-care and awareness of one's own feelings if someone else hasn't first done it to you."*

Signs of poor self-regulation include

Hyper-activity – Impulsiveness - Hypersensitivity (especially to change) - Poor concentration - A tendency to over-react - Poor self-awareness - Difficulties relating to others – Lack of empathy for self and others - An inability to cope with minor stressors and anxieties - Excessive/addictive behavior. (John, et al., 2008)

Helping the adolescent to self-regulate (re-building a frontal cortex)

There are three areas we need to address to help the adolescent build a stress regulator system. We need to:

a) provide a safe environment

b) provide experiences that the adolescent has missed in his early years

c) provide healthy stimulation through fun and creative activities

a) PROVIDING A SAFE ENVIRONMENT

When we experience a threat, we either freeze, try to escape, or fight back. When we are in any of these modes, we lose access to the part of our brain that is responsible for rational, logical thought (the frontal cortex). So, unless the adolescent feels safe and contained with us, he will be unable to self regulate, instead he will employ all his skills to take our power away through domination, control, or manipulation.

So we must aim to:

Build a safe and genuine relationship based on mutual trust, respect, care and hope.

> Given the brain's natural plasticity, positive experiences that contradict a traumatised child's negative expectations can undo the neurobiological effect of trauma and help put psychological development back on track (Teicher, 2000). In other words, emotionally nourishing interactions ripple back in time; they alter the structure of the brain through the growth of new neural pathways, heal emotional wounds and reawaken attachment needs.

Adopt self-control and self-regulation in our own words, tone of voice, and actions, particularly when we feel frustrated or challenged.

> Morgan notes there is a fascinating type of neuron called a mirror neuron. Mirror neurons fire up when we simply watch someone else perform an action. Those same mirror neurons will also be used when we perform the action ourselves. So if we watch someone do something a few times, when we come to do it ourselves it may be easier because some of our neurons have already actually practised the action.
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> What we now know about mirror neurons also suggests that when we watch others exercising self-control it helps our brain develop in that way. In other words, we often learn by imitation. Therefore our young people are educated by what we are and not just by our talk (Jung 1949); thus we aim to live as an example of tolerance, patience, respect, humility, and understanding.

Provide a safe environment based around structure, stability and predictability, as well as maintain clear and robust boundaries the child can test and re-test.

> A meaningful relationship within a secure environment promotes growth, fosters behavioural changes and allows for experiences of closeness and autonomy (Basham & Miehls, 2004). Yet we ought to acknowledge that adolescents whose

sense of trust and safety have been shattered, will inevitably need to test our abilities to hold the boundaries of such space. Thus when challenged, we hold on to the thought that their disruptive behaviour serves to assess how reliable their environment is. We strive to remain empathically present, promote their active participation in the problem-solving process and demonstrate our capacity to respond flexibly and creatively to external stimuli and internal states. For the way we influence others most deeply is by example (Hendrix, 1991).

Work on understanding rather than reacting

Our willingness to form a meaningful relationship within a safe holding environment is conveyed implicitly and explicitly through our tolerance, patience, unconditional acceptance and our ability to respond in non-disruptive and non-retaliatory ways to threats or efforts at manipulation (Langs, 1976). In other words, when we find ourselves under attack the first rule is not to fight back (Khan, 2001). The negative feelings adolescents direct towards us shouldn't be met with a defensive countermove. Instead we must aim to adopt an attitude of acceptance and curiosity as to where they originate from and be open to the possibility that we might have (consciously or unconsciously) contributed to the situation.

b) PROVIDING EXPERIENCES THAT THE ADOLESCENT HAS MISSED

We must aim to:

Remain empathic: see his point of view and put ourselves into his world while remaining in touch with our own individuality.

The first step towards cultivating an empathic approach is to consider others as equal to ourselves while accepting that their realities might be different from ours. Rogers explains, '*it means entering the private perceptual world of the other and becoming thoroughly at home in it [...] It means temporarily living in the others life, moving about in it delicately without making judgments*' (1980). He adds it also implies '*communicating [our] sensing of the person's world as [we] look with fresh unfrightened eyes at elements of which he or she is fearful*'.

So in order to help adolescents develop healthier relational patterns we need to enter into a wholehearted engagement with them and put ourselves in their internal worlds of perception. We also need to communicate our understanding for their experiences in a language attuned to those current feelings (Rogers *et al*, 1967). This means we need to experience their

helplessness, insecurities and their rage as if they were our own, but without our own helplessness, insecurities or rage taking over us. Then we need to let them know that, given their personal histories, those feelings are understandable and normal responses (Khan, 2001).

This empathic understanding is the essential element that allows adolescents to stay connected with anxiety-provoking materials and tolerate painful affects without acting out and with time enables them to develop their capacities to regulate powerful emotions.

Help the adolescent find the right words to name and tolerate sensations, feelings and experiences.

By putting sensory details and feelings into words, painful memories are brought more under control of the cortex, where the reactions they kindle can be rendered more understandable and so more manageable. Basically once we have a **specific and precise** word to label an emotion, that emotion can be more easily controlled.

Provide affectionate physical intimacy

Touch is as essential to our survival and growth as food and water. Researchers at the University of Miami Touch Research Institute found that adolescents who experience significant daily amount of positive physical intimacy, such as a hug or a friendly handshake, exhibit far less depression symptoms and aggressive behaviour than those who have minimal physical affection with their caregivers.

Affectionate physical intimacy activates serotonin, a neurotransmitter that promotes pro-social behaviour when its levels are high and aggression and depression when its levels are low (Fortuna & Knafo, 2014). Positive touch also floods our bodies with oxytocin, a bonding hormone that reduces levels of the stress hormone cortisol, fosters feelings of calm happiness and promotes trust.

Guide without controlling and engage his creative thinking

As with many things in life, often the problem is not the problem, the problem is how we react to the problem (if the reaction is that of a deer frozen in the headlights of an oncoming car, the chances of ending up as road kill are greatly increased). Therefore we aim to engage our students creative

thinking and promote their active participation in the problem solving process rather than rescue, dictate, or give in to force.

Support him in recognising the hidden and undeveloped abilities that lie beneath his anti-social behaviour.

The more we help him to discover his own potential for growth and happiness, the less likely he is to rely on rigid coping mechanisms, or turn to rage when faced with a frustrating, humiliating or challenging situation.

c) PROVIDING HEALTHY STIMULATION THROUGH FUN AND CREATIVE ACTIVITIES

The brain keeps developing long after we leave adolescence and play promotes that growth. Play creates new neural connections and tests them. It creates an arena for social interaction and learning. It creates a low-risk format for finding and developing innate skills and talents. Play activity actually helps sculpt the brain. Research by John Byers has shown that the amount of play is directly correlated to the development of the brain's frontal cortex.

So we must aim to

Give the adolescent the space, safety, freedom and flexibility to engage in spontaneous, creative play within a secure environment

Allowing kids to play also doesn't mean that there is no structure to their time. Part of the license to play freely comes from being in an environment that is structured enough to provide a feeling of safety, so that the child is confident that nothing bad is going to happen.

Encourage the adolescent to think metaphorically

The more we engage and nurture his imagination, the more he will develop his problem-solving skills and his ability to manage powerful emotions. A large body of research highlights the link between pretend play and impulse control. Person (1995) notes that these games counter feelings of powerlessness. They allow the

child to regulate emotional turmoil and permit him to replace passivity with activity and helplessness with mastery. Singer (1973) observes that the more children engage in fantasy play, the more controlled their overt behaviour and the more empathetic they are towards the suffering of others. Conversely, children who lack opportunities to play show high egocentricity, poor self-soothing abilities and low interpersonal skills (Fisher & Fisher, 1993). May (1998) adds that those who do not have the freedom to explore and work out their destructive urges in fantasy act them out in reality.

Use play and the creative arts to explore painful experiences

By re-enacting elements of his early traumatic experiences through play, painful memories get relived; but this time they are felt in the presence of a caring other and in the context of low anxiety, allowing the individual to come up with new outcomes, and increasing his sense of mastery over past traumatic moments of helplessness (Goleman, 1996).

Use play and the expressive arts to explore with him alternative solutions to old methods of thinking, and to stimulate creativity and reasoning (Goleman, 1996).

Play can become a doorway to a new self, one much more in tune with the world. Because play is all about trying on new behaviors and thoughts, it frees us from established patterns. As Dr Stuart Brown, the founder of the National Institute for Play, remarks, '*Play is called recreation because it makes us new again, it re-creates us and our world*' (2010).

Thanks,

The Therapy Dpt.