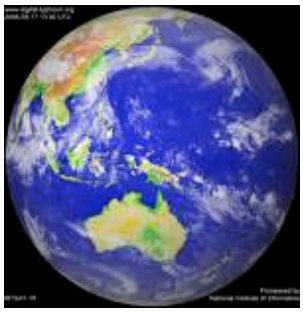

International Network for School Social Work

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Infant Attachment and School Success: The biological link.

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Advances in technology such as Magnetic Resonance Imaging (MRI) and Positron Emission Tomography (PET) scans have resulted in a huge burst in our understanding of how the human brain works. To summarize the research in simple terms, it is the child who spends the first 3 years immersed in relationship whose brain cells become most effectively organized through the creation of brain connections (synapses). This sensitive period of birth to three years is the basis for school success. The child who does not experience this quality of relationship in the early years or at some later point has not received the best input to be ready for school.

The brain adapts to the environment, and being immersed in relationship is the environment most humans experienced in their first three years of life for most of human history. The move in the last 20 years to meet the needs of infants and toddlers by placing them in institutions/centres so they have playmates and teachers to introduce numbers and literacy (something the brain is not ready for until around 3 years) shows that we are undervaluing the importance of the attachment to a key caregiver in infancy. We can see the significance of attachment in the first three years, and later, success at school, when we understand how the brain works and grows.

It is helpful to imagine the brain as being in four key sections. At the base of the brain is the brainstem. This is the oldest part of the brain and the first part to evolve. It is also the first part of the brain to grow from conception. Basic body functions are maintained there (breathing, heart rate, level of arousal, temperature) and it is the home of the 'fight, flight or freeze' survival function. Growing immediately after, and on top of, the brainstem is the midbrain. This is the motor skill part of the brain that allows us to move. Next to grow in the upward sequence of the human brain is the limbic system. This is the emotional part of the brain.

The three sections defined so far are the sections that are already largely grown when a child is born. They continue to develop significantly and come online in the first three years, but the final section, the cortex or thinking brain does not reach maturity until about 26 years of age. It is this part of the brain that contains all the features of human intelligence that distinguish humans from other mammals, such as understanding long term consequences, abstract thought, language and literacy, regulation of emotion and empathy. Because the cortex is the last to grow and mature, it is the part of the brain that is most influenced by the environment, including caregivers/teachers/social workers. The most significant part of this influence is in the first three

years of life. The old saying "give me the boy and at 7 I will give you the man" can be changed to "….and at 3 I will give you the man".

The key to understanding how to achieve a lifetime of greatness in the first three years is to understand how the cortex develops in relationship to the brainstem. As the oldest part of the brain, the brainstem is in many ways in charge because survival is a prime directive of the brain. For the brain this means that any time the brainstem is aroused, it will correspondingly suspend the thinking function of the cortex to first deal with the survival need. For the child's brain that is developing so rapidly in the first three years it is vital that the brainstem remain relatively calm with the child experiencing safety and well being for most of the time for the cortex to develop to its full potential. This is because the human brain is unique in that it is not ready at birth like that of other animals. It spends three years gathering experience on how often it needs to use the brainstem or cortex, and at around three years will hardwire the brain for a lifetime full of whatever has been happening in the first three years of life. It is attachment that provides the buffer to the stressful experiences of life, so the more time the child spends in an attached relationship in the early years the less their brainstem is needed. The calmer the brainstem stays in the first three years, generally the more the cortex will develop and maintain synapses for lifelong use, with greater empathy, self regulation and higher cognitive functioning as a result.

When the brainstem is aroused, for example from a loud noise, a new experience, feeling alone and vulnerable or unsafe, the ability to access the cortex correspondingly goes down. The reverse is also true. Children who have not had this sense of safety and relationship as infants are likely to operate more often in the lower regions of the brain as they move through school. This can make not only literacy difficult, but will just as easily affect other functions of the cortex such as control of emotions and seeing things from someone else's point of view. Regardless of the age of the individual, if we wish to encourage growth and learning, and access to the advanced social skills, empathy and literacy of the frontal cortex, then we must meet the biologically determined conditions for this. Safety, freedom of movement and emotional engagement are necessary before thinking and learning.

This contrasts with the approach taken too often in the last 100 years of trying to punish or scare a child into learning. This will likely send the child further into the lower regions of the brain and move him or her away from the pro-social and higher functions of the frontal cortex. Most of us know from experience that it was the teacher/social worker/professional who treated us with the most respect and compassion that we actually learnt the most from. The neurosequential model offers a scientific explanation of how children grow and learn best in the context of high quality relationships, and remain focused on survival until they experience this quality relationship.

The message that a school social worker can take from this is to aim for high quality relationships with children. Fostering positive relations between teacher and child is also a key. However as the social worker and teachers are not likely to have a long-term relationship with the child, we need to also enhance relationships the child has already. Too often we restrict our focus to the parents and immediate caregivers whereas it may be the grandparent, an uncle, a family friend or a neighbour with whom the basic ingredients of a quality relationship already exist. Finding out who this person is and putting systems in place to enhance the relationship may be the best secondary prevention we can do to build long term resilience when the window of opportunity for primary prevention (0-3 years) has passed.

How would you apply this information to this recent case?

http://www.newstalkzb.co.nz/newsdetail1.asp?storyID=164787