

Trainer's notes

Unit No. 6a: Brain development

Unit objectives

- To learn about how the brain develops through childhood and adolescence
- To explore the implications of an understanding of brain development for practice

Outline of Unit

- Presentation: Understanding brain development
- Individual and group activity
- Presentation and discussion: Using brain science to inform practice

Resources required to deliver unit

- Hand-outs: Brain development
- PowerPoint slides: Understanding brain development; Using brain science to inform practice.

Resources required to support this unit

- PDFs: *Nmt-coreslides-2011*
- [Using a neurodevelopmental lens when working with children who have experienced maltreatment](#)

Introduction to trainer

This unit explores the neuroscience of development and behaviour and how this can help improve practice. In the last decade we have increased our understanding of brain and the impact of a range of adverse experiences on the developing brain. This provides new insights into why some looked after children present very challenging behaviour and have an impaired capacity to learn. There are also encouraging indicators from both research and practice that this knowledge can inform more effective interventions with children.

Some participants may already have some knowledge of neurodevelopment but others will struggle with the scientific basis of this material so try to find ways that can make the ideas more accessible. It is important to emphasise that the research evidence seems to be pointing strongly to the importance of very early experiences but that this is not yet definitive.

The material on adolescent brain development is even newer and again this needs further research but it points to a continuing plasticity in the brain during adolescence when important emotional and cognitive pathways are created. This may make intervention at this point in young people's lives particularly

important. Some of the material on the impact of adverse developmental experiences will be revisited in the module on loss and trauma.

Presentation: Brain Development (20 minutes)

Use the PowerPoint slides 1-17 and hand-outs to develop a presentation on brain development. In the last ten years there has been an explosion in knowledge about the development of the brain. Some of this has come about as a result of new technology that can measure the activity of the brain as it functions.

This can provide clear images of the brains of different children and match the observed activity with the type of experiences that children have had in their very early months and years. It now seems likely that children who have been abused and/or neglected have brains that have developed very differently from those of children who have had more positive early experiences.

The emotional experience that children undergo can shape their brain and it seems likely that the prenatal period and the first three years of life, when the brain more than triples in size, are a very important period in this process. This is not to suggest that if children experience abuse, neglect or trauma in this time that there is no hope for recovery but it does mean that it is more difficult to help children to develop alternative ways of understanding and interacting with their world.

Another important period of brain development takes place in adolescence and very recent research is suggesting that this period may also be a time of vulnerability and potential growth and development.

Individual and group activity (30 minutes)

Ask participants to spend 5 minutes thinking about a child they work with closely and jot down as much detail as they can about the child's experiences in the womb and in the first three years of life.

Then ask them to do the same about a child who is well known to them in their personal life (preferably one of their own children if applicable) who they believe has had a very positive early experience. In small groups ask them to discuss the differences in experience between the children and try to consider the possible outcomes for each of the children in terms of behaviour, current emotional state, and ability to make relationships or capacity to learn.

Emphasise that you are not just looking for headline events but ask them to imagine what it felt like to be the children and what their daily lives were like.

Ask for feedback. It is likely that participants will be able to recount much richer and more detailed experiences for the children they know well in their personal lives. It may be that some participants have absolutely no idea what happened to children they work with in their earliest years.

Where people are able to describe neglect, abuse or domestic violence ask them to imagine the terror and helplessness these infants experienced and the impact on their brains compared to the developing feelings of security, enjoyment and the sense of being known that the more fortunate babies experienced.

Use the idea that children may have missed out on crucial developmental experiences and this has left them with a brain that functions in a more primitive way than those of other children their own age. Rather than expecting children in our care to be able to behave consistently at their chronological age it is important that we respond to their developmental needs at the stage they actually are not the stage we wish they had reached.

Presentation and discussion: Using brain science to inform practice (30 minutes)

Use the *Using brain science to inform practice* PowerPoint slides, hand-outs and internet resources to create a presentation about the core elements identified by Bruce Perry from the Child Trauma Academy as contributing to developmentally informed practice. Ask the participants if their own or their organisation's practice fits these core elements. What can they do improve the experience of children in their own settings?

Key Messages on Brain Development

- Babies' brains develop very rapidly in the first three years of life.
- Early emotional experiences have a direct effect on the developing brain.
- Brain cells communicate information to each other by making synaptic connections.
- The brain learns through patterned, rhythmic, repetitive activity. Repeated experiences lay down particular neural pathways in the brain.
- Over time synaptic connections that are frequently used are strengthened but those that are not used are lost.
- Young children who are neglected or abused develop pathways that are related to stress and fear rather than trust, soothing or pleasure.
- The effects of adverse experiences on the developing brain make it harder to learn in a formal school environment.
- There is a further rapid period of brain development in adolescence that is focused mainly on the prefrontal cortex, where higher reasoning takes place, and the limbic system that governs emotion.
- Young people are particularly vulnerable and at risk at this age but are also open to substantial growth and development.
- The most effective interventions with young people are those that are built on an understanding of brain development.

- Children have unique developmental experiences and their brains are different even if their behaviour is similar.
- Adults working with children should respond to them at their developmental level rather having expectations of them based on their chronological age.
- It is easiest to make changes when the brain is still organising than to change an already organised brain.