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INSIDE THIS ISSUE Brain development and wellbeing

Nurturing a child's developing mind

An interview with a neuroscientist

## CHILDREN'S SERVICES MAGAZINE

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## FROM THE EDITOR

Welcome to the final issue of *Foundations* for 2012. This issue focuses on brain development, which includes how children grow to think, speak, move, manage their feelings, and relate to others. Bringing together leaders in the field, both national and international, this issue shares the current developments in understanding the process and the impact of brain development on mental health and social and emotional wellbeing and the implication of this for early education and care.

Dr Mary Helen Immordino-Yang is an internationally renowned neuroscientist, and in a new feature interview, she provides a glimpse into the incredible world of neuroscience and how their findings can shape early childhood education and care practices to promote healthy brain development.

We are pleased to feature an article by Dr Michael Nagel, an Associate Professor at the University of the Sunshine Coast. Michael is an expert in the field of child brain development and his article deciphers the mysteries of the child's developing brain and cracks down on some interesting myths.

In her article, Sara Bartlett draws together the implementation of the findings of neuroscience for day to day practice through the application of the CHILD framework. Practical strategies to help children with autism across the spectrum are outlined by Tony Attwood.

Dr Victoria Whitington and Alexandra Diamond from the University of South Australia provide an insight into their course on Brain Development and highlight how understanding more about this subject has shaped early childhood educators' practice.

In the upcoming months we will be conducting a number of telephone interviews as part of our ongoing dedication to publish on topics that matter to you most. Therefore as always, but particularly at this time of year, we value your feedback and suggestions. Please feel free to share with us your ideas or an interest in writing, we always enjoy hearing from our readers.

### The Editorial Team

Everymind



# NURTURING YOUR CHILD'S Developing Mind

by Michael C. Nagel PhD

One of the most fascinating neurological findings in recent years is the important influence of experience on brain development and learning. For decades researchers have been aware of the extraordinary development of a child's brain during the first five years of life. Recent advances in neuroscience have helped crystallise earlier findings, bringing new clarity and understanding to parents and those fields concerned with early childhood brain development. For example, we now know that the way a brain develops hinges on the complex interplay between the genes a person is born with and the experiences a person has after birth. This suggests that the quality of an infant's relationship with his or her primary caregivers has a decisive impact on the architecture of the brain, affecting the nature and extent of adult capabilities; and that those early interactions directly affect the way the brain is wired. Research also tells us that early educational experiences are integral to long term success and achievement later in life. We can start to understand this by having a closer look at how the brain develops, grows and matures.

### Early Brain Development

Early brain formation occurs not long after conception when the neural tube closes, neurons generate and the brain begins to take shape. When the brain's architecture is beginning to unfold we have our first glimpse of how *learning* takes place when neurons speak to each other and form connections through electro-chemical impulses we call synapses. These connections are influenced by both genetics and the environment and the more repetitive an experience, the greater the opportunity to permanently hardwire these connections.

From birth, the 100 billion plus neurons that humans are born with continue to make synaptic connections via stimulation from the environment ultimately *wiring* the brain for action. It is important to understand that the experiences an individual has impact the types and amount of synaptic connections that are made. Synaptic connections begin prior to birth and are created at a rapid rate through to age three operating on a *use it or lose it* principle. Only those connections and pathways that are activated frequently are retained. Other connections that are not consistently used are pruned or discarded so the active connections can become stronger.

On the road to normal development the brain actually **expects** some types of experiences to occur and **depends on** others. The interplay of these experiences is the framework where nature and nurture intermingle. For example, in order for a child's visual system to develop properly the brain expects to have opportunities to see things, which obviously becomes more readily available when a child leaves the womb. Every time an infant sees, hears, smells, tastes or feels something its brain



rapidly builds a network of neural complexity that will become a superhighway for learning. In contrast to the experiences a child's brain expects to have happen, the experiences it depends on are those things that arise from the unique features of a child's individual environment whereby individual experiences help to shape the brain and develop the mind. For example, in order to be able to read the brain will depend on the types of experiences that help develop that important skill. These experiences also add to synaptic connections and neural hardwiring and in essence are the things children learn as they engage with the world around them.

### Role of Experience on Brain Development

For children's brains to become highly developed for learning, repeated experiences are essential. Connections become stronger and more efficient through repeated use. Reading to children every day, for example, helps strengthen essential connections. Connections also strengthen when children have daily opportunities to develop both large and small muscle skills, have the chance to practice developing social skills, and interact directly with their environment. This is one of the reasons why *play* is such an important component across all aspects of development. It is vital to incorporate rich language into all of these activities, since exposure to rich language creates the foundation for a child's use and understanding of words, and increases the likelihood of reading success at a later age. Research shows that the richness of a young child's verbal interactions has a dramatic effect on vocabulary and school readiness.

Stimulation from the environment is important but it is misleading to think that a child's brain can be improved or that learning can be accelerated by providing excessive levels of stimulation. The last couple of decades have seen an expansive market of brain *enriching* toys and/or tuition programs claiming to do everything from teaching two year olds to read to making bilingual babies via language DVDs. The brain actually has a neurological timetable that extends from birth through childhood and into adulthood and it is mediated by various processes.

### Role of Myelin on Brain Development

Through early childhood and into adolescence this timetable is significantly influenced by myelin, a fatty material that insulates an important part of the neuron known as the *axon*. The growth of myelin occurs in various stages, most significantly during adolescence, when it increases by 100%. **Why is myelin significant?** Myelin helps the transmission of information from one neuron to another and the more "myelinated" axons in the brain, the greater opportunity for neural information to be passed quickly. The end result being that certain activities may be easier to learn when regions of the brain are sufficiently myelinated.

Myelination is very important for children because when they are born they have very few myelinated axons. This is one reason why vision and motor coordination are so limited at birth, the neural networks responsible for facilitating vision and movement aren't working fast enough and will become much more efficient when myelin increases. As children grow older different regions of the brain myelinate at different ages. It is important to keep in mind that:

- a healthy brain knows which areas need to be myelinated first,
- myelination cannot happen all at once; and
- it cannot be accelerated via flashcards, extra tuition or the latest 'learning'.

66 Children have to be educated, but they have also to be left to educate themselves. ?? Abbe Dimnet, Art of Thinking, 1928

### Working with a Developing Brain

If experience and activity are significant factors in neural development, then surely the earlier the stimulation (or 'enrichment') the greater the propensity for learning and early success? Not exactly, we know that input from the environment helps shape the brain and that experience is important, but equally important is the fact that each child is an individual with similar but not identical developmental timelines. Emotional maturation cannot be accelerated either, since the emotive areas of the brain (limbic system) have their own time clock. As caregivers it is important to ensure that we do not push children to do things too soon that may engulf children in undue stress beyond their coping abilities. For some children, trying to do too much too soon can lead to stress related anxieties that actually turn off thinking processes. It is these types of considerations that should help inform how we nurture a child's developing mind as parents and educators.

For all children, the road to nurturing healthy brain development is simple for parents, teachers and other caregivers to follow. Children do not have to be hyperstimulated or prepped for university by the time they are five years old. What will help them are:

- regular routines and consistency
- opportunities to consolidate learning through repetition
- hands-on interactions and activities
- novel ways to learn through exploration and experimentation
- exposure to rich, interactive language, and
- most importantly, positive, reliable and supportive relationships.



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# **BRAIN DEVELOPMENT** and Social and Emotional Wellbeing

by Sara Bartlett

"All human behavior and learning, including feeling, thinking, creating, remembering and deciding, originate in the brain."

- Immordino-Yang & Fischer, 2009

Evidence suggests that children's early experiences and development, including healthy brain development, help to lay the foundations for their mental health and wellbeing. Neuroscience suggests that "children are born ready to learn"; that "the brain develops through use"; and that "children's wellbeing is critical to brain development and learning" (Education Services Australia, 2010, 4). Early childhood practitioners, including children's services, have an important role in supporting children's mental health and wellbeing, including healthy brain development, both now and into the future.

### Social and Emotional Wellbeing and Brain Development

'Social and emotional wellbeing' is an alternative term for mental health. 'Mental health' is a positive capacity that makes up part of a person's overall wellbeing, just as physical health does. Mental health is the capacity to manage our thoughts, feelings and behaviour positively so that we can enjoy life, cope with stress, maintain positive relationships and work toward our goals. The way in which we manage our thoughts, feelings and behaviour can influence almost everything that we do. Positive mental health tends to be associated with better physical health, quality of life, effective learning and positive achievements throughout life. Like our physical health, the level or quality of our mental health can change over time depending on the influences in and around us. This is because mental health, like brain development, is shaped by the impact of different biological, psychological, social and environmental factors.

Brain development occurs alongside social and emotional development, and contributes to our social and emotional wellbeing. Social and emotional wellbeing provides us with an important skill set that enables our capacity to:

- grow as a person
- form and maintain positive and respectful relationships
- identify and manage our emotions
- communicate
- resolve problems
- make decisions
- take responsibility
- set realistic and rewarding goals for ourselves.

A focus on social and emotional wellbeing for all children, from the earliest age, is generally associated with increased positive behaviour, better academic achievement and improved mental health outcomes. Supporting the development of good social and emotional wellbeing should occur alongside efforts to support healthy brain development.

### Practical Ways to Contribute to Positive Brain Development

Children's services and their staff have an important role in working to develop and support the best social and emotional wellbeing of children, including healthy brain development. An evidence based framework known as **CHILD** now exists to provide a guide for how children's services staff can support children's social and emotional wellbeing.

CHILD is informed by international research, expert opinion and public health policy. It was developed by Response Ability (www.responseability.org), an initiative of the Australian Government Department of Health and Ageing and implemented by **Everymind.** 

CHILD summarises the strategies that children's services and their staff can use in their daily practices to support children's mental health and wellbeing, including:

- CREATING safe and supportive environments for optimal wellbeing and development
- HELPING children to learn social and emotional skills and manage their own behaviour
- IDENTIFYING babies, children and families who may be in need of additional support
- LINKING families with support and information services for mental health and wellbeing
- DEVELOPING broader organisational and community strategies that support wellbeing

The remainder of the article will focus on the C element of CHILD.

### Creating Safe and Supportive Environments for Optimal Wellbeing and Development

Children's services and their staff can promote children's mental health and wellbeing by creating safe and supportive environments for optimal wellbeing and development. Feeling safe, secure and supported contributes positively to children's wellbeing, which can also benefit healthy brain development.

There are many components to creating safe and supportive environments, but excluding fear, having a trusted adult available as a secure base to return to, and providing responsive and sensitive care, will help children to feel safe. Respecting all children as individuals and acknowledging their diversity, culture, temperament and preferences are essential elements in the creation of safe and supportive environments.

When children feel safe in their environment, they are more likely to take reasonable risks to explore the world around them, particularly if they know that they have a secure base, such as a parent or carer to return to when they feel unsafe. Safe and secure environments also support the development of children's confidence and autonomy.

Another important component of a safe and supportive environment is building positive relationships and secure attachments with the children. This involves understanding children's cues and consistently making an effort to meet children's physical and emotional needs. Creating a sense of community that promotes belonging, connectedness and inclusion for all children and families contributes to an environment that is safe and supportive. This may include asking families about children's routines at home, such as favourite activities, and incorporating these in the child's daily experience in the service.

### There are many ways to create safe and supportive environments for wellbeing and development. Practices to consider include providing children with opportunities to:

- build secure attachments with one or more familiar staff
- experience predictable routines
- communicate their needs
- initiate conversations and interactions
- explore aspects of identity and develop confident self-identities
- develop their autonomy, inter-dependence, resilience and sense of agency
- learn to interact with others with care, empathy and respect
- respond to diversity with respect
- become socially responsible.

Supporting healthy brain development alongside social and emotional wellbeing has the potential for both positive and lasting effects for children. Adopting the strategies of CHILD will help children's services staff to do this in their everyday practice.

Watch out for more on CHILD in following issues of Foundations.

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# An Interview with Mary Helen Immordino-Yang

by Sara Bartlett

Dr Mary Helen Immordino-Yang is an internationally recognised cognitive neuroscientist and educational psychologist who studies the brain bases of emotion, social interaction and culture and their implications for development and education.

Mary Helen talks to **Sara Bartlett** about her insights into the world of neurobiology, neuroscience and brain development and the implications of these for early childhood care and education.

#### Q. How many times have you been to Australia? And why did you come here?

- **A.** Just once, to visit the Hunter Institute of Mental Health and to speak at the Mind and Life Conference in 2011.
- Q. Could you please tell us about your current role?
- A. I'm an Assistant Professor at the University of Southern California. My primary appointment is in the Rossier School of Education, 50% of my time is spent at the Brain and Creativity Institute, which is in Psychology. I am also on the Neuroscience Graduate Program faculty.

### Q. How did you become interested in neurobiology and education?

A. I was a seventh grade science teacher, I also taught high school French and some other things. Before graduate school, I was really interested in the way students' cultural and linguistic knowledge shaped how they interacted with new disciplinary knowledge in science. So I went to graduate school to study that.

I choose Harvard Graduate School of Education because they had really fabulous people working on language, culture, sociality, and relations to learning. I quickly learned that I was interested in emotional issues too because you can't make meaning out of material without connecting to it emotionally. As I studied these things, I realised that it would be useful to constrain our models and thinking by understanding how the brain learns and supports emotion.

I realised that if I wanted to understand culture and social emotions I wanted to do it from an interdisciplinary place and so I did a postdoctoral fellowship with Antonio Damasio for two and a half years where I studied affective neuroscience very intensively.

In my work now, I study the way social emotions work and how they connect to ideas of self, and use this information to develop theories about how children learn, in order to help design educational settings that would support the behaviours and social connectedness that facilitate learning.

## Q. Would you like to share a bit of information about your personal life?

A. I have two children, who are in primary school. My daughter is in Year 5 and my son is in Year 2. I am especially connected to education and developmental issues in a very hands on way through them [her children]. It really brings it home for me the importance of understanding the emotional and social aspects of learning, how people come to invent new knowledge and what this looks like for a real person, such as my children. They teach me more about learning and development every day!

### Q. How would you describe neuroscience?

A. Neuroscience is a very broad discipline. It covers everything from sea slugs and single neuron firing, to the way computers simulate brains, to the things that I work on like how culture shapes the way we feel. The brain science field that I am working in is social and affective neuroscience.

In this field, we study how feelings, sense of self, identity and experiences are supported by the biological underpinnings that sustain the survival of our organism, that is, our body. For instance, if the basic job of the brain is to keep your body alive and functioning well, how does this same brain go beyond bodily survival to social and cultural functioning and in essence, mental survival? Knowing it is the same neural system that makes you throw-up bad food that also allows you to feel emotions, gives you a sense of the logic that underlies what emotional feelings are.

### Q. How would you describe the insight that neurobiology research provides into brain development?

**A.** I'll focus on children and how brain development contributes to our knowledge of how they develop.

The brain has basically been used to understand the effects of different kinds of environments on children's development, for example the effects of poverty, mental deprivation or emotional abuse on children. It's also been used to understand the effects of particular kinds of learning disabilities or differences in the way children interact with educational materials.

So it gives us a window into the underlying mechanics of particular processes. It does not give us the answers as to why children are the way they are and it does not tell teachers what to do. But it does help us to tease apart alternative explanations—to have more ways to think about the fit between children and their social worlds. For example, we can distinguish several subtypes of dyslexia based on neural signatures during phonological processing and other tasks. This information is being used in very specific ways with children to target interventions much more effectively.

### Q. How would you describe the impact of these findings on the work of early childhood educators in terms of promoting mental health?

A. Your brain does not biologically develop in a social vacuum, with genes as the only factor. Instead, the development of your mind and your brain are shaped by the experiences that you engage in, and the things that you do. So it is critically important to the healthy development of humans to understand that cognitive, linguistic and scholastic abilities are intertwined with social connectedness, emotional wellbeing, and the ability to be motivated and engaged with interesting problems.

Effective early childhood educators support children in feeling connected, socially safe, grounded—to experience wellbeing. This support is directly fostering and supporting their ability to develop and adapt into organised, happy and productive people.

### Q. How will future developments in neuroscience affect the work of early childhood educators?

A. Neuroscience is moving in the direction of being able to help us better understand and tease apart the basic processes by which children learn and engage with their environment. It is also helping us to better understand the learning trajectories that children engage during certain kinds of thinking, like mathematics, so that we can support them in developing along these trajectories in the most advantageous ways possible.

A really exciting area of neuroscience which is in its infancy is neuro-prognostics. Researchers are

beginning to be able to use neuroscientific data to prescribe educational interventions for children who have different kinds of learning profiles. It's being used mainly to assist remediation of very severe learning disabilities like dyslexias, where traditional ways of teaching reading are not working. Researchers are beginning to learn that by using neural imaging with these children they can more effectively diagnose the locus of their processing difficulty and then prescribe educational interventions targeted to the needs of the child.

# Q. What would you encourage early childhood educators to do in their current and future practice?

A. Well, I think the job of an early childhood educator is to educate children. That sounds very obvious but it's actually an art form. To be able to recognise and connect with a child's current beliefs, understandings and emotional state; and encourage them to enter into a relationship with you to expand their horizons and engage in educational experiences in a meaningful, personal and relevant way that helps them to develop that's an amazing talent to have!

So the most important thing you can do with children in your centres is to develop relationships with them and really get to know them. Find ways that you can engage with and meet them where they are, so that they can make their way into the complex maze of educational experiences that will open up doors for them.

### Q. What would be your top three tips for people currently working in the early childhood care and education sector?

A. I can't emphasise enough the importance of the interconnectedness between children's emotional wellbeing, social relationships and their learning in academic and disciplinary domains. These are totally intertwined with children's ability to engage, motivate and regulate themselves within a learning environment.

I would be wary of any kind of radical or easy solutions that come your way. There are a lot of snake oil salesmen out there who are trying to use neuroscience in ways that aren't warranted. If anyone portrays neuroscience as providing the answer for what to do, it's probably not right. That's not the nature of what neuroscientists are trying to do. We are trying to learn about the nature of learning, about how children's development relates to their experiences, and how certain pathways develop in relation to certain kinds of children and experiences. Early childhood educators can use this information to think and collaborate with their colleagues and researchers about what might be the most advantageous way to design educational interventions for children.

Don't underestimate the importance of knowing who children are, connecting, understanding and being familiar with their cultural and ethnic backgrounds. Engaging them from a place of understanding their subjective perceptions and experiences, and not assuming that everyone in the world sees the world in the same way is really important. One thing we are learning is that individual differences in experiences and biological tendencies interrelate with one another, organising one another through development to make people into very different individuals. This is what makes the world go around and that's what makes us interesting. We don't want to wash that out of people. At the same time, we need to find ways to help people engage across these differences and to connect with one another.

### For more information:

http://rossier.usc.edu/faculty/mary\_helen\_immordinoyang.html http://www-rcf.usc.edu/~immordin/ http://www.learner.org/courses/neuroscience

http://www.mceecdya.edu.au/verve/\_resources/ECD\_Story-Neuroscience\_and\_early\_childhood\_dev.pdf

For information on the Australian context of early development:

# Strategies to Help Children with Autism

by Tony Attwood

We now recognise that around one child in 88 has the characteristics of an Autism Spectrum Disorder (ASD), but what are those characteristics and how can we help these children, especially in early childhood? Clinicians recognise that there are six dimensions of autism, each of which is assessed to confirm the diagnosis. Following a diagnosis, a multi-disciplinary team explores how aspects of each dimension impact on the child's daily life and designs strategies to help the child acquire specific abilities.

#### The six dimensions of ASD are:

- Social understanding
- Communication
- Cognitive abilities
- Sensory sensitivity
- Emotion management
- Motor skills.

Each child with an ASD has a unique profile of abilities based on the six dimensions of autism. This article will explain each dimension and outline some practical strategies that can be used by caregivers to help the child acquire specific abilities.

### Social Understanding

Children usually have an innate ability to socialise with their family and peers that matures throughout childhood. For children with an ASD this is not necessarily an intuitive ability; they are often confused in complex social situations. The degree of confusion can be so great that the child actively avoids social situations and remains aloof from parents and peers. Alternatively, the child avidly wants to play with other children, but does not have the same degree of maturity in friendship skills and may be perceived by peers as intrusive and disruptive. Observation and research has indicated that children with an ASD have difficulties with the following social abilities:

- reading facial expressions and body language
- understanding the codes of social conduct
- recognising the perspective of someone else
- making and keeping friends.

Caregivers can assist children with an ASD by recognising this social confusion and providing guidance in acquiring abilities that will help with socialising.

#### The key strategies are:

- make your facial expressions and body language clear, giving the child time to process your non-verbal signals.
- carefully explain the codes of social conduct in a particular situation, recognising that the child may not use other children as an example of what to do.
- explain the thoughts and feelings of another person, if you feel this is needed.
- commend the child with an ASD whenever they demonstrate friendship abilities, such as sharing, cooperation and helpfulness. Explain what they could do next time to facilitate friendship, in situations where such abilities would be expected and appreciated.

Socialising for a child with an ASD can be exhausting, so caregivers need to be aware that such children may be overwhelmed and greatly confused in large groups and will need opportunities for quiet solitude throughout the day.

### Communication

Communication skills in very young children with an ASD vary greatly. Some may have significant language difficulties and have not yet (or may never) develop fluent speech. Others will have some speech but a limited vocabulary, and some have fluent speech but problems with the art of conversation, such as not being interested in social chit chat and wanting to ask incessant questions about a favourite topic. There can also be difficulties understanding complex sentences or multiple instructions, and problems focussing on one person's voice when there are many people talking at the same time.

#### Some key strategies you could try:

- use the communication system recommended by the child's speech pathologist, such as using pictures to indicate choices.
- gain the child's attention before giving an instruction. Make sure your spoken instruction is within the child's level of comprehension and memory, and has been clearly heard, especially when there is background chatter.
- provide encouragement to acquire new words and phrases.
- guide the child in the choice of topic for a conversation.

### Cognitive Abilities

Children with an ASD have an unusual profile of cognitive or learning abilities. Some have a significant learning difficulty while others have an intellectual ability within the normal range or above average. The profile can include extremes in cognitive abilities: for example, some children with ASD are hyperlexic with advanced reading abilities, while others can be dyslexic and have great difficulty learning to read. There can be talents or deficits in mathematical abilities. Some children have conspicuous abilities with construction toys, drawing or memory for facts and information. There can also be learning issues, such as the child having a fear of failure, a 'one track mind' for problem solving (a lack of flexibility in thinking), or a compulsion for closure, ie not being able to switch to another activity until the current activity is completed. Another cognitive characteristic is the development of a special interest, such as an intense interest in dinosaurs or vehicles, or an obsession with collecting unusual objects, such as batteries.

#### The key strategies are:

- demonstrate rather than speak instructions to facilitate learning.
- provide remedial support should a specific learning disability be identified in the diagnostic assessment.
- encourage the development of specific talents in the child, such as being a natural engineer, artist or mathematician, to enhance self-esteem and admiration from peers.
- make sure your ability is not always perfect, and model how to be flexible in problem solving and coping with failure.

Have a heart that never hardens, a temper that never tires, a touch that never hurts. Charles Dickens

### Sensory Sensitivity

Children with an ASD may be extraordinarily sensitive to sensory experiences. Sounds such as the noise of a vacuum cleaner that would be easily ignored by other children, can be perceived by a child with an ASD as unbearable. This may only be alleviated by their insisting that the machine is switched off, or by placing their fingers in their ears to block the sound. The sensory sensitivity can affect all the senses. Where touch is affected, the child may have an aversion to activities such as finger painting or wearing specific items of clothing. If the child is hypersensitive to smell, they may become nauseous in response to someone's perfume. They may be extra sensitive to the taste and texture of some foods such that they have a self-imposed limited diet.

### The key strategies are:

- be aware that aspects of sensory experiences cause extreme distress to the child with ASD.
- avoid some sensory experiences but encourage the child to be brave and to tolerate other experiences.

### **Emotion Management**

Children with ASD can experience intense emotions and are vulnerable to becoming very anxious or distressed. Extreme anxiety can be associated with separation from a parent, coping with change or making a mistake. There can be explosive distress when experiencing failure or being thwarted from achieving a desired outcome. While these are characteristics of many young children, children with ASD have a greater intensity of emotional reaction and are less able to be reassured or calmed by affection, distraction or putting the event in perspective. There is a tendency to 'catastrophise.'

#### The key strategies to try are:

- check for the early warning signs of increased anxiety or agitation. Each child with ASD may have his or her own unique signals of impending emotional distress.
- remain calm in an emotional crisis.
- during an intense meltdown, patiently wait until some degree of self-control has returned.
- after the event, explore with the child how to communicate emotions in a less intense way.

### Motor Skills

A characteristic of ASD can be delayed motor coordination, difficulty planning motor actions in activities such as handwriting, and involuntary mannerisms such as hand flapping. These characteristics will affect play and educational activities. For some children, these characteristics are hardly noticeable but for others, they can cause difficulties with using playground equipment and affect the ability to play ball games.

### The key strategies are:

- provide encouragement and practice in motor skills.
- be aware that the difficulty acquiring a particular skill may be due to problems with motor coordination rather than intellectual impairment or noncompliance.

### A Team Approach

In early childhood, a team approach that includes caregivers and members of a multi-disciplinary team can achieve considerable improvement in abilities and behaviour for the majority of young children with ASD. The long-term outcomes for such children can vary immensely. Some may require high levels of support throughout their lives, while at the other end of the spectrum; some may have successful careers and be loving partners.

For more information on ASD see Foundations Issue March 2010.

# Learning About Early Brain Development at the University of South Australia

by Victoria Whitington and Alexandra Diamond

"New understanding about early child development and its effect on human development has ramifications for most university disciplines, including health sciences, economics, developmental psychology, education, other social sciences, and for government departments concerned with the economy and the health, wellbeing and competence of its citizens (quality of human capital) and our attempts to establish tolerant, healthy, pluralistic, democratic societies"

(Mustard 2008, p. 10).

The University of South Australia's online course 'Brain development in the Early Years' (BDEY) has been offered as an elective to all students since 2009. BDEY has attracted students from a wide range of disciplines including psychology, social work, nursing, medical radiations, communications, and occupational therapy. This article will look at the experience of learning and understanding about brain development and how this has influenced practice.

To date, 50% of students were in-service preschool teachers from the South Australian Department of Education and Child Development, and are either three year early-childhood-qualified or teachers without

a specific early childhood qualification. These experienced teachers returned to study as part of the Commonwealth Government's commitment to provide 4-year-olds with universal access to early childhood education programs led by 4-year early childhood degree-qualified educators. These teachers have strongly endorsed BDEY because of what it brought to them professionally. One teacher with 35 years in the field said upon completing her program:

'This course has made me much more argumentative and increased my capacity to advocate for children and early childhood.'

Drawing on multi-disciplinary knowledge, BDEY aims to increase student understanding about:

- the processes of early neurological development
- the critical nature of brain development from conception to 3 years-of-age, and
- the implications of early brain development for professional work and for communities.

BDEY aims to have students consider their practice (in whatever their discipline might be) in terms of children's needs, with the ultimate goal of enabling graduates to better support children's development. Students' comments from course assessment indicate they have found BDEY to be important to their work:

### *'[BDEY] has made me look at children in my care in a new light.'*

#### 'As a teacher I feel that I have a clearer understanding of how a child's development and behaviour are related.'

BDEY's twelve weeks of study include the following topics: introduction (including micro and macro brain structures); prenatal brain development; the roles of nutrition, sensing pathways, epigenetics, stress pathways and trauma in brain development; the roles of brain development in health, behaviour and learning; language development; and applications.

BDEY allows students to understand their lives and their work in new 'personally meaningful' ways. For example a student commented that she was now aware of 'scientific knowledge [about] the effects of early life stresses and how long term stress affects [children's] ability to cope long term.' In describing the personal impact of BDEY, she wrote: 'I am finding it very interesting to look back on my own mothering behaviours (and those of people I know very well) and think about the personalities and behaviours of our children who are now in their teens and twenties – especially those whose children show acting out behaviours or have aggressive, rebellious or addictive traits. Much of what we are learning makes sense and rings true for me- especially the importance of parents 'being present', being supportive, and giving unconditional loving acceptance to children.'

BDEY can be an emotionally demanding course for some students because it stimulates memories of their own development and that of people close to them. Students sometimes report to lecturers that BDEY content has moved them to tears because it provided them with new insights into their own lives and those of their families, and enabled them to better understand what had happened. Such learning can sometimes be very painful. In writing about a childhood friend who she later found out had been sexually abused as a child and whose life had been a downward spiral, one student wrote:

'I wish I knew then what I know now about early experiences and how they shape adult behaviour because I could have understood and helped her. ... behaviour is not what a person does to be intentionally bad or naughty, it is a person's way of communicating a developmental need that has not been met. This is true for all people of all ages.'

Another student responded to a peer in an online forum:

'Like you I have a friend in his 50s who has struggled with depression and alcohol. He suffered abuse by a paedophile as a young boy, which he was only able to talk about for the first time as an adult. No-one was previously aware of this. As a teenager he engaged in dangerous risk taking behaviour.... Learning about the effects of early abuse and trauma on the ongoing development of stress pathways, helps me to understand his, to me at times extreme responses to some seemingly ordinary situations, and like you, to be more supportive.'

In relation to practice in the early childhood field, a student reported that she had learned: *'to recognise children's cues are vital for seeing stress signs'*, and that her new knowledge about brain development and her strong relationship with a family had allowed her to effectively advocate for their child, one about which

she had concerns. She wrote: 'no one else [at work] took my concerns seriously or they did not see the signs that were so obvious to me. I was the one with the closest relationship to the girl and her family ... it took a few dramas to bring it to serious attention.'

During the course, students share ideas about how they could better support individual children who were stressed or traumatised. Ideas usually involved creation of safe, reliable, nurturing, warm, emotionally responsive environments. They also share observations and ideas for stress reduction in group settings or in families. For example:

'I see children working themselves up to stressful levels.... A common one is drop off time... it is in the power of parents to help them cope by the way they react to the child's demands or emotional pleas ...the parent continually kisses and cuddles the child and says in a very sad way 'I love you' and the child clings and says 'don't go' and the parents continues back and forth. Having a daily routine and preparing children for transition times can minimise stressful situations.'

*'If the family appears to be unsettled I would work with the adults to sort through any problems they are experiencing.'* 

Students commented on their learning about the importance of stimulating experiences for early brain development, however they also recognised that professional insights arising from BDEY increase demands on staff:

'Being 'present' for every child as part of a shared delivery is a challenge and some days it seems lots of kids are in need of this attention and emotional nurturance.'

Some wanted to share knowledge about early brain development with families and other educators:

'I feel responsibility to share my knowledge about brain and behaviour development with the other carers so that we are working to provide the children with stable and predictable interventions.'

'We can have some information pamphlets, poster and or websites for the parents to look up, visuals are always very effective and catch parents' attention....I think... flyers and

### pamphlets are perfect because [we] do not need to bombard the parents with too much information and detail, just enough to be clear and informative and if they need more information [they] can seek more.'

Another suggested that parents with concerns about their children's development be encouraged to take the lead with educators by *'meeting with staff on their needs and ideas on how they may be given support to cope with stress and reduce this on their children.'* 

Finally, students advocated community education about early brain development. A student studying to be a psychologist wrote:

'I believe that the most useful way to prevent children from being developmentally disadvantaged [by stress and trauma] is to educate people on the effects that can occur ... and teach them the appropriate ways to avoid these effects. As a future practitioner, that is my goal.'

As course lecturers, we feel positive about BDEY and have many ideas for its future development. We have been gratified to learn that BDEY has had, through the work of professionals in the field, a broad reach into the lives of young children and their families.

### References:

Mustard, JF 2008, *Investing in the early years: closing the gap between what we know and what we do*, Department of Premier and Cabinet, Adelaide. Accessed 12/7/12 http://www.thinkers.sa.gov.au/lib/pdf/Mustard\_Final\_Report.pdf

# Foundations

Evaluations are underway! It's that time of year again when we connect with our readers to find out about your experience of *Foundations*. We are interested to hear both the positive and negative aspects. We would particularly like to identify what impact *Foundations* is having on early childcare educators, centres, communities and the region.

If you would like to share your opinion with us, please contact us via email: everymind@hnehealth.nsw.gov.au or by phone 02 4924 6900.

> For more information please visit www.everymind.org.au/foundations





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