

Too Much Too Soon

Drawing on research findings about the brain, **Dr Michael Nagel** argues that filling very young children's days with formal and directed activities can actually inhibit their development.

In a society that prides itself on providing its children with great opportunities to learn, grow and develop, is it possible that we might be doing more harm than good? On more than one occasion I have paused to reflect on this very question, given some current trends and ideas about children as little sponges of learning. Recently, I saw a current-affairs show in which there was much hype about teaching two year olds to read, and was mystified at the parents who gleefully expressed how they were paving the way for their children's future by having them participate in this program. Interestingly, many of these children were also in the throes of extracurricular overload, being shuffled from one form of tuition to another as their parents espoused how important it was to give them the best start in life... Remember – these kids were two! Adding to this type of hype are news stories and advertisements telling parents about particular toys and 'educational' activities that will build better brains and turn their children into little geniuses. Moreover, schools are increasing academic demands on children of very young ages, apparently with the aim of ensuring that children have the skills and knowledge needed for the future. The truth of the matter, however, is that any agenda that forces learning upon young children may actually be doing them more harm than good.

than good.

In 1837, Friedrich Froebel founded his own school and called it "kindergarten", or the children's garden. Froebel described his educational philosophy as "self-activity", and it was premised on the notion that children were to be led by their own interests and free to explore them. For Froebel, the teacher's role was to be a guide, and his most important legacy was a philosophical position where the classroom was viewed as a lovely, thriving garden needing a teacher to take on a role akin to that of a loving and supportive parent. It would be interesting to hear Froebel's opinions regarding child-rearing and education in the 21st Century, where growing up has never been so competitive. Arguably, Froebel's 'educational gardens' have metamorphosed into educational superhighways – where success is paramount and the quicker formal training and education takes place the better.

Almost two decades ago, American scholar Professor David Elkind noted that "education is not a race". Elkind has become synonymous with the term "hurried child", and has spent much of his life documenting the problems inherent in trying to get children to do too much too soon. Much of Elkind's work focuses on psychological pitfalls for children who engage in activities long before they are mature enough to do so. Based primarily on his research in



cognitive science and psychology, Elkind is very concerned with ensuring that childhood activities and childhood learning remain developmentally appropriate and not aimed primarily at improving or hurrying opportunities for academic, sporting or social prowess. Elkind believes that generations of children are increasingly missing out on free time, unstructured play and opportunities to daydream and to discover themselves and their world

field of neurology in recent years is the recognition of the important influence of experience on brain development and learning. In one sense, this seems rather intuitive; most people have always known that we learn from experience. What is truly amazing, however, is the way in which the architecture of the brain is shaped, and that this process starts long before a child takes piano lessons or an academic test.

...schools are increasing academic demands on children of very young ages, apparently with the aim of ensuring that children have the skills and knowledge needed for the future. The truth of the matter, however, is that any agenda that forces learning upon young children may actually be doing them more harm than good.

through the environment around them; growing up has become a competition, a race for success.

Elkind's views stem primarily from the context of education in America, where early learning and education focus upon children gaining a competitive edge. Surely such matters cannot be of such concern here in Australia? We don't have pockets of suburbia where groups of children spend every day of the week and much of the weekend rushing from one activity to the next. We don't have preparatory programs, early-childhood centres and schools that compete with each other and market themselves around the idea of 'the more schooling – and the earlier they get it – the better'. And surely parents here are not over-extending their children to the point that they have dance lessons one night, tennis the next, swimming the next and academic tuition the next? We don't push our children too much and too soon. A growing body of research suggests otherwise: Australians may indeed be overzealous in their desire to raise future stars or academic overachievers.

But perhaps this is not in the best interests of children, especially in light of recent neurological findings that lend support to the romanticism of Froebel and the concerns of Elkind; too much too soon and too fast may do more harm than good. One of the most fascinating findings in the

In fact, children's brains begin to take shape about three weeks after conception. In utero, babies have actually begun their lifelong learning journey via sensory stimuli received from the world inside and outside of the womb. Upon birth, learning really takes off, with the growth of connections (synapses) between some 100 billion neurons. These connections are influenced by individual experience and the more repetitive an experience, the greater the opportunity for connections to become permanently hardwired. It is widely recognised that children need developmentally appropriate environmental stimuli to facilitate their learning and neurological functioning. Importantly, overstimulation and activities that are introduced to children too early can actually hinder their learning. In other words, 'appropriate' does not necessarily mean 'more' and the effectiveness of activities is dependent on windows of neurological opportunity facilitated by the growth of a fatty material called myelin.

As noted above, neurons provide the basis for learning by building connections in the brain. Throughout life, neurons become differentiated to assume specialised roles and they form connections with other neurons, enabling them to communicate and store information. Stimulating experiences activate certain connections;



repetition consolidates these connections and the brain learns. However, there is also a neurological timetable that extends from birth into the second decade of life. Through early childhood and into adolescence this timetable is significantly influenced by myelin. This important material insulates an equally important part of the neuron known as the 'axon'. Research has shown that the escalation of myelin occurs in various stages and there is actually a 100 per cent increase in myelin during adolescence. In other words, the build-up and acquisition of myelin that leads to full brain maturation is more of a marathon than a sprint, and no measure of extra tuition or early training in any activity will influence this developmental timeline.

You may be wondering why myelin is so significant. As an insulator, myelin aids in the transmission of information from one neuron to another, and the more 'myelinated' axons in the brain, the greater the opportunity for neural information to be transmitted quickly. The end result of all of this is that certain activities may be easier to learn when regions of the brain are sufficiently myelinated – when our brains become 'fatter'. The expansion of myelin, otherwise known as myelination, is very important. When we are born, we have very few myelinated axons. This is one reason why visual acuity and motor coordination are so limited at birth – the neural networks responsible for facilitating vision and movement aren't working fast enough.

Another important factor relating to myelin is that different regions of the brain myelinate at different ages. For example, when the region of the brain responsible for language production myelinates, children are able to develop speech and grammar. These times of myelination have become referred to by neuroscientists as "learning windows" and, amazingly, a healthy brain knows which areas need to be myelinated first and that myelination cannot happen all at once – it takes time to become a 'fathead'. So claims about the success of teaching two-year-old children to read seem to be questionable. Any success in this regard would be highly dependent on a child's neural development. Someone stating that it is possible does not make it so.

Given the importance of experience, some might suggest that the earlier that children are introduced to certain experiences or stimulation (read 'enrichment'), the greater the propensity for learning and early success. However, while we know that input from the environment

helps shape the brain, we must also remember that brain maturation and overall development does not follow a nice, neat agenda. Significantly, each child is different, and simply bombarding a child with endless stimuli may do more harm than good. Think of penmanship as an example. There is no denying the importance of providing a child with opportunities to colour, doodle and mimic letter-making with developmentally appropriate tools such as large crayons or chalk. However, many children often get hold of or are presented with writing instruments designed for the manual dexterity of an adult. This becomes even more problematic if a child is introduced to formalised writing lessons too soon. In these situations, the child compensates for a lack of fine-motor-skill development and finds a grip that is useful, causing the brain to adapt. This adaptation is neurologically hardwired into the brain and becomes problematic when the child enters school, only to be told that they have an "incorrect" pencil grip. This problem is often exacerbated when a teacher or parent tries to correct this problem and finds it frustratingly difficult, if not impossible to do so. In this situation, a child's brain is being asked to 'unlearn' something already programmed because the 'learning window' was forced open too early.

If something simple such as pencil grip can be hampered by moving too fast, what might happen to children who in their early years engage in other forms of endeavour beyond the developmental timetable of their brain?

A further important consideration related to developmental milestones is the maturation of the emotional part of the brain. Not unlike the growth of myelin, the emotional regions of the brain have their own timetable. Therefore, it is important to ensure that a race towards academic excellence and/or intellectual prowess does not result in exposing children to stress beyond their coping abilities. For some children, too much too soon can lead to stress-related anxieties that actually turn off thinking processes. This is why parents play such a crucial role in their child's early development and long-term mental health. This is also why some of the best ways to enhance learning rely simply on quality time rather than on an endless array of extracurricular activities. For example, in order to stimulate language comprehension, children need to be spoken to a great deal early in their lives. To help children to be more coordinated and active as they grow, they need to be encouraged to run and play



→

Not unlike the growth of myelin, the emotional regions of the brain have their own timetable. Therefore, it is important to ensure that a race towards academic excellence and/or intellectual prowess does not result in exposing children to stress beyond their coping abilities. For some children, too much too soon can lead to stress-related anxieties that actually turn off thinking processes.

games when they are young. Indeed, one of the greatest contributors to healthy neural development is self-directed play, and not endless hours of instruction.

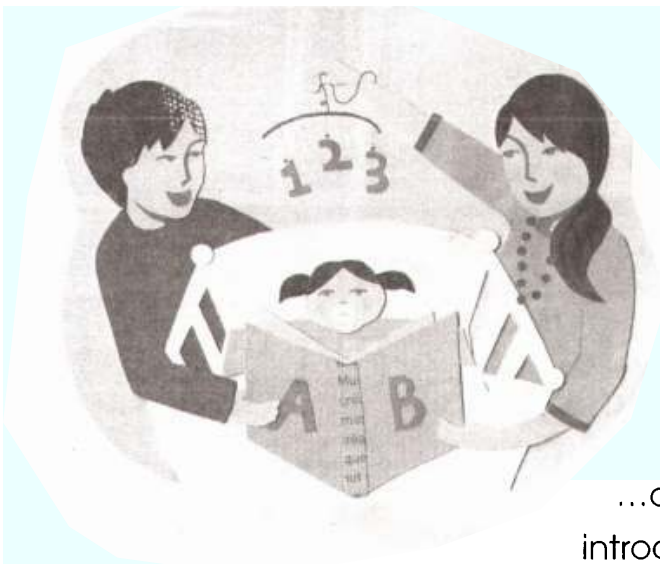
Finally, it is significant to note that parents also contribute to healthy brain development by providing routine, proper nutrition, and plenty of opportunities to talk, sing, play and listen to stories. Above all else, relationships are the most important component of healthy early brain development. Just as appropriate stimuli will enhance neural connectivity, a developing brain requires that the significant adults in a child's life talk to them, nurture them and guide them in a loving fashion. Normal neural and human development draws upon these types of everyday experience far more than those offered by educational toys, flashcards and a weekly timetable filled with activity. Moreover, future success for a child begins with a healthy parent-child relationship. As such, any initiative focusing on learning and future school success must allow parents to spend a substantial amount of time with their children. From a political standpoint, this means that funding geared towards fostering positive

early experiences for children would do well to focus on long-term maternity and paternity leave.

Children are born curious and ready to learn, and it makes sense to offer support and assistance to parents in order to encourage parent-child bonding that is as positive, nurturing and enduring as possible, not least because of the neurological benefits that this will provide. After all, children who experience warm and responsive care are more empathetic with peers later in life and learn to connect more effectively with other people. Fostering appropriate emotional responses (and the positive effects on children's brains that flow from this) is more important than hurrying children through a plethora of activities and academic curricula.

Education and learning is a gradual and incremental process, not a race, and too much too fast may actually have a detrimental impact on the development of our young people. ■

Dr Michael Nagel is Head of Education Programs in the School of Science and Education at the University of the Sunshine Coast.



...overstimulation and activities that are introduced to children too early can actually hinder their learning. In other words, 'appropriate' does not necessarily mean 'more' and the effectiveness of activities is dependent on windows of neurological opportunity facilitated by the growth of a fatty material called myelin.