

It is Hard to be a Teenager

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Being an adolescent now is very different from being one just one or two generations ago and we will not understand the teenage years if we project our own experiences on to them.

That makes it hard to be a parent, it makes it hard to be a teenager and it is making for some very difficult challenges for our society. It means we need to fundamentally rethink how we structure our social organisations to give every child the best chance of navigating their way through the teenage years successfully.

Sadly about 20% of New Zealand children come to significant grief during those years in ways that will affect their future lives, and we really have only the beginning of an understanding why. One of the problems is that we have treated this problem as series of separate issues: health, education, justice, social welfare..., rather to taking an integrated approach to understanding two questions.

Firstly, why is it is that some children show resilience in the challenging transition from child to adult while others do not? Secondly, why is it that New Zealand has particularly disappointing rankings in measures of adolescent health such as teenage pregnancy, suicide, binge drinking, car accidents? These are all measures where we rank amongst the worst in the developed world.

One of the first challenges the Prime Minister gave me was to think about these issues. It is an area my own research team has been active in at the Liggins Institute for several years.

Simply put, adolescence today has got longer and the society adolescents find themselves has changed dramatically. For many, the situation is one in which their capacity to cope is severely challenged.

Why has adolescence got longer? It has extended from perhaps two years a hundred years ago to at least a decade now. The age of puberty has also fallen – where girls had their first period at the age of 15 or 16 a hundred years ago, they now have it between 11 and 13.

This means they start going into puberty around the age of 7 to 9. That is when they start making hormones that will change their bodies and their brains. The same thing is happening in boys. Our research suggests this is nothing worrisome – it is not about toxins or hormones in the water supply – it is simply a reflection of our mothers and children being much healthier than they used to be.

The age of puberty now is little different from what we think it was 20,000 years ago. It rose with the development of towns and cities and the associated rise in childhood malnutrition and disease, and started to fall again when public health started to improve. It may fall a bit more, as there is a suspicion that being obese as a child

accelerates the onset of by about 6- 12 months. We may be facing situation where, within a generation or so, more than half our children are well into puberty before they leave primary school. We are not prepared for that.

When puberty starts, boys start making testosterone and girls estrogens. This affects their brains. Not only do they start having psychosexual thoughts but the parts of their brain associated with risk taking and reward seeking behaviours become turned on. However, the parts of the brain associated with judgement and reflection and impulse control are not – so the brain is out of kilter.

Perhaps the biggest surprise in adolescent biology over the last decade of research has been the discovery of what Professor Hanson and I, in our book *Mismatch*, termed 'the mismatch of puberty'. For adolescence ends when people are treated as adults, and people are treated as adults when they have the wisdom and behaviours that make them fully responsible members of their society. In many aboriginal societies this happens soon after puberty. One hundred years ago in England this was soon after puberty. In Nelson's navy midshipmen were often only 13 or 14 - would Dr Mapp let a 14 year old loose on one of his warships?

But in modern society, the end of adolescence clearly does not occur until well into the third decade of life. Tests of wisdom, judgement, and responsibility suggest that there is a significant change in these skills soon after the age of 20.

When, over the past five years, scientists started to use fancy MRI techniques to study the brain, we were surprised to learn that the last parts of the brain do not mature until 25-30 years of age. These parts of the brain are the very ones that give impulse control, wisdom and judgement.

This raises some very interesting questions.

Did it always take that long for the brain to mature? Perhaps it did, but because society is now immeasurably more complex, those last parts did not matter until now. Or, have we done something as a society to slow down the maturation of the brain? My bias is that both explanations are true.

Let us think about how our brains work.

There is very strong evidence that our brains evolved to cope with groups of no more than about 120 people. Indeed, until the development of motorised transport and the phone, we really did live within communities of that size, even when we lived in cities. But technology has changed everything. Now most communication is electronic: by phone, the net, TV, radio and texting. We have changed the way we communicate from verbal and personal to electronic and without body language. We suspect this is very difficult for many brains, especially developing brains, to cope with. Yet it is the developing teenager who has the largest networks – the net, YouTube, Facebook have changed everything.

And what about brain maturation? I have advanced the thesis that while puberty occurs at a young age and hormones stimulate risk taking and reward pathways, the wisdom, judgment and impulse control pathways take longer to mature. Could it be

that the way we bring up our children has changed so much that it has affected how the brain matures? I suspect it has.

In two generations we have shifted from a system of child rearing where primary school children had relatively uncontrolled environments (think about what we did after school as youngsters) and teenagers had very controlled environments, to one where risk taking for primary children is avoided at all costs while teenagers are swamped with freedom, autonomy and choice. The research has yet to be done, but the circumstantial evidence does suggest that this could be an important element.

Now let us pull all this together. Immature brains, raging hormones and a society in which the net, television and social networking imposes ambiguous expectations on young people. Parents and teachers are replaced by so-called celebrities (how I hate that word) and the pressure of social networks. Electronic peer pressure is far more insidious than face to face relationships; look at the epidemics of text bullying amongst girls. Market freedoms create all sorts of ambiguity around sexuality and societal compliance; look at the nature of marketing aimed at teenagers.

These effects are far more influential on the immature brain than we realise. There is, for example, overseas evidence suggesting that the younger a child completes puberty, the greater the risk for mental health disorders, suicide (indeed a 5 times higher risk for boys in one study) and many other risk taking behaviours.

And the problem will not go away. Our children will enter puberty at younger ages; society will get more complex and the electronic world more uncontrollable.

We have to really rethink what structures young people need to help them be resilient to these changes. Can we assist in changing their environment? Changing public responses to alcohol suggest we might. And there are clues to doing even more fundamental things. Increasingly, attention is focusing on the first 6 years of life when the brain develops many different types of capability. We tend to focus on the cognitive skills (intelligence if you like) reading and numeracy. But there is growing evidence that developing non-cognitive capabilities such as self regulation and motivation is even more important in that period, as is foresightedness, attention, ability to complete tasks and eusociality – the willingness to be part of society. High investment at that age pays enormous dividends later, in terms of the teenage years.

And this is where the Anglophone countries appear to be failing. Perhaps we put too much attention on cognitive rather than non-cognitive development. Perhaps we need to rebalance where and how we invest in our young people. We give no attention to life skills education in primary or secondary school – yet the most important machine a young person will drive is their own body – and this is much more than simply about 'the birds and the bees'.

These are complex issues, they are not easy, they are not those of partisan politics, they are those of accepting that it is our collective responsibility to understand and help young people through a phase of life within a context that most of us never faced and is essentially novel in our history as a species.