



Booze on the brain

KATE BARBER talks with neuroscience educator **NATHAN WALLIS** about the long-term damage that alcohol does to the teenage brain.

From fighting in the streets and burning couches, to domestic violence and drink driving, the disturbing images of New Zealand's binge-drinking culture are all too familiar. For parents of adolescents they present a frightening spectre.

Beyond the wreckage caused by 'a big night', Nathan is concerned with helping parents understand the damage that alcohol abuse is doing to teenager's brains.

Despite their sense of invincibility, the teenage brain is under construction, he says, rendering certain parts of it particularly vulnerable to the effects of alcohol.

As Nathan explains, for 80 per cent of the population, drinking alcohol before the age of 18 causes lasting damage to the hippocampus (one's memory) and the frontal cortex (responsible for higher intelligence). For various reasons, like having experienced physical trauma, there are some young people for whom that age can be as high as 21.

"I don't mean having one sip of Dad's beer," he says. But, the threshold is a lot lower than you might expect. Damage is done when a young person drinks one unit within an hour — an average that is based on body weight. By way of contrast, Nathan says, an adult male can drink on average eight units over an hour before causing damage.

Neuroscience presenter and director of X-Factor Education, Nathan Wallis encourages parents to think about their own attitudes and habits around drinking, and to talk to their kids about the damage that drinking does to their young brains.

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Unlike other parts of the brain, the size of the hippocampus correlates directly with how well it functions: the larger it is, the better one's memory, explains Nathan. "The earlier you take in alcohol, the more shrivelled up the hippocampus. We can line up the hippocampi of people who've donated their organs to science, smallest to largest, and the size correlates with the age at which they started drinking alcohol," he says.

Societal issues born directly from alcohol abuse, like addiction and domestic violence, would disappear if we could stop the drinking when people are teens. Nathan expands on this idea, saying that the 35-year-old man who gets drunk — and effectively "wipes out his frontal cortex" (and along with it his capacity for empathy and self restraint) — then beats his wife, wouldn't have wiped out his frontal cortex had he not abused alcohol and "severely compromised his cortex" in his teens.

In New Zealand it is illegal for a person under the age of 18 to purchase alcohol. It is also illegal to supply alcohol to someone under the age of 18 unless you are, or have "the express consent of, a parent or guardian of the minor, and (. . .) the alcohol (is supplied) in a responsible manner" (Sale and Supply of Alcohol Act 2012). However, in New Zealand, there is no age at which it is illegal to drink alcohol (alcohol.org.nz).

The cultural assumption that it's okay for our 16-year-olds to have a few drinks, along with the absence of any law prohibiting drinking under a particular age, certainly puts parents in a difficult

position as they process information about the damage alcohol causes to young people's brains.

"It is not realistic to tell your kids to abstain [from drinking] until they are 21," says Nathan. "And, while they can stay under the [one-unit-per-hour] threshold, it is unlikely that your 16-year-old son is going to nurse a stubby from 7pm till after 8."

So what can parents do? Nathan encourages parents to talk with their kids about the issue, but qualifies this by saying that teens aren't necessarily going to be receptive to the information. "Sure, show them the brain scans," he says, "but be aware that teens operate in their limbic system (their emotional, non-rational brain). They're not going to say, 'Oh, I had better pull my socks up!'"

When it comes to helping young people make good choices — around relationships, studying, and drinking (including whether or not to drink)

— Nathan talks about the importance of giving them opportunities to rehearse scenarios. What would you do if you won a million dollars? What would you do if you were offered a drink at the party? What would you do if your intoxicated friend offered you a lift home? "Let teens think of solutions when they're calm, when they have time to rehearse and practice — like when you're in the car together," says Nathan.

In such moments "when their cortex is online," he says, you can offer information about what alcohol does to the young brain — and they might just imbibe that message.

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Parenting Adolescent Seminars involve two-hour interactive presentations, ideal for schools to host for their parents.

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